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medical tourism today

India's Cardiac Care Revolution

Where Medical Excellence Meets Groundbreaking Innovation

Cutting-edge cardiac interventions, world-renowned specialists, and accessible excellence are positioning India at the forefront of global cardiac care.

INTERVIEW

RISHABH GUPTA
Managing Director,
ShardaCare - Healthcity



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FROM THE EDITOR'S DESK

A STRONGER HEARTBEAT **FOR A HEALTHIER WORLD**



> **India is emerging as a global cardiac care destination, combining advanced medical technology, renowned specialists and affordable treatment to deliver world-class heart care, renewed hope and a healthier future.**

The heart never pauses. It beats through every moment of our lives, sustaining us with a quiet, extraordinary rhythm. When that rhythm is threatened, timely diagnosis, medical expertise and compassionate care can make all the difference. As cardiovascular diseases continue to pose a significant healthcare challenge worldwide, India is strengthening its capabilities in cardiac care and rapidly emerging as a global hub for specialised heart treatment and complex cardiac surgery.

With internationally accredited hospitals, renowned specialists, cutting-edge technology and cost-effective treatment, the country is attracting patients from around the world. For international patients, India offers more than access to complex heart procedures; it brings together clinical expertise, personalised care and renewed hope, making it an increasingly compelling destination for cardiac treatment.

In this edition of Medical Tourism Today, we explore the evolving landscape of cardiac care, shaped by robotic surgery, artificial intelligence, advanced interventions and a growing focus on patient-centred treatment. From complex coronary procedures to aortic surgery and heart-failure management, the frontiers of cardiac care continue to expand.

A landmark achievement captures this progress: the world's first dual-console, five-arm robotic Totally Endoscopic Coronary Artery Bypass procedure on a beating heart, performed at Medanta, Gurugram. This milestone reflects India's growing capabilities in advanced cardiac surgery and its ambition to deliver world-class treatment.

This edition's Cover Story, "From Complex Heart Surgery to Global Healthcare Excellence," examines India's growing stature in specialised cardiac treatment and international medical tourism, highlighting the expertise and infrastructure supporting this progress.

In our exclusive interview, Dr. Varun Bansal, Senior Consultant – Minimally Invasive and Robotic Cardiac Surgery at Indraprastha Apollo Hospitals, New Delhi, discusses how robotics, artificial intelligence and advanced therapies such as LVADs and ECMO are shaping modern cardiac treatment.

We also bring you insights from Dr. Mohammed Idhrees, Cardiothoracic and Vascular Surgeon at SIMS Hospitals, Chennai. In "The Aorta: The Fine Line Between Risk and Rescue," he discusses complex aortic conditions, evolving surgical and endovascular techniques, and personalised care.

In our Expert Insights section, Dr. Pradeep Pokharna, Senior Consultant – Cardiovascular and Thoracic Surgery at Kokilaben Dhirubhai Ambani Hospital, discusses advanced heart surgery, CABG, valve replacement and improving patient outcomes.

Beyond surgical innovation, this edition examines the broader dimensions of heart health. Dr. Soniya Attarde explores the decentralisation of cardiac care, while Dr. Pawan Poddar highlights early warning signs and advances in treatment. Dr. Nithin V. Adithiyaa examines the genetic risk associated with Lipoprotein(a). We also feature important perspectives on women's heart health, diabetes-related cardiac risks, heart-attack warning signs and seasonal cardiovascular risks, with contributions from Dr. Laxman Gaikwad, Dr. Ashwin Karuppan, Dr. Bipeenchandra Bhamre and Dr. Anjan Siotia.

Together, these contributions reinforce an essential truth: the future of cardiac care is not defined by technology alone. It is measured in lives saved, hope restored and healthier futures made possible. As India advances in cardiac care, ensuring that innovation goes hand in hand with accessibility, affordability, safety and compassion remains vital.

We hope this edition informs, inspires and encourages greater awareness of heart health.

Because every heartbeat matters. And every life deserves the best chance to keep it beating.

We welcome your feedback, comments and suggestions.

Happy Reading!

Shinto Kallattu
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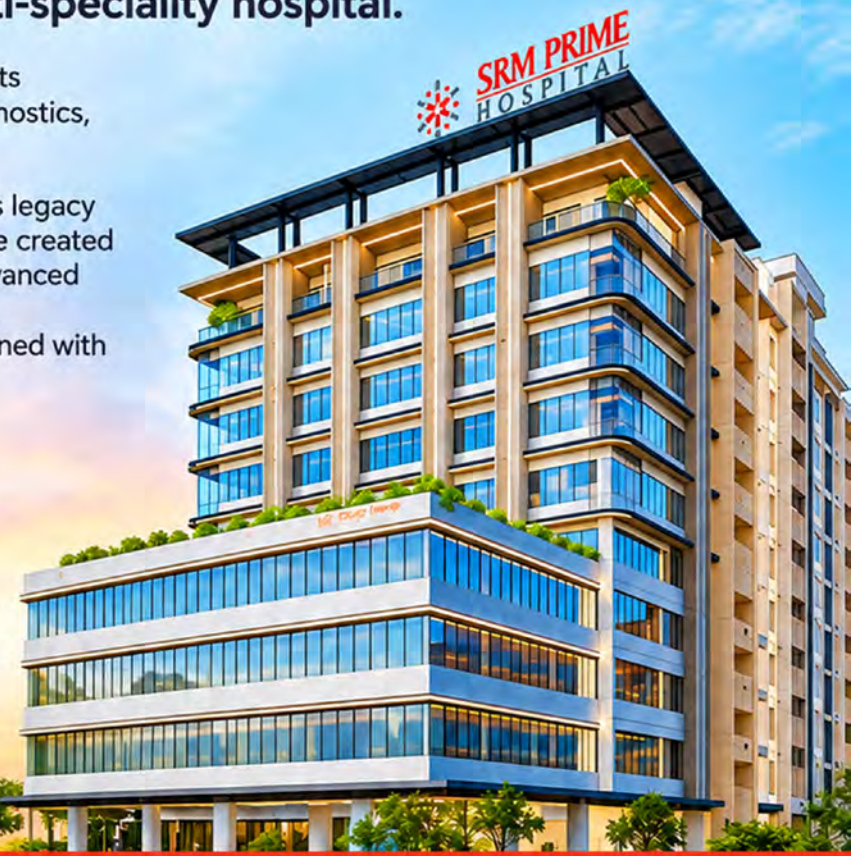
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Medanta Performs World's First Dual-Console Robotic Beating-Heart Bypass Surgery

India has marked a significant advancement in robotic cardiac surgery with the successful completion of the world's first dual-console, five-arm robotic Totally Endoscopic Coronary Artery Bypass (TECAB) procedure on a beating heart. The surgery was performed at Medanta Hospital, Gurugram, on November 18, 2026, using the indigenous SSI Mantra Surgical Robotic System.

The complex procedure was jointly led by Dr Nitin Kumar Rajput, Associate Director, Robotic and Minimally Invasive Cardiac Surgery, Medanta, and Dr Lalit Malik, Chief Cardiac Surgeon, Manipal Hospital, Jaipur, under the supervision of Dr Sudhir Srivastava, Founder, Chairman and CEO, SS Innovations International. Both surgeons operated simultaneously from separate consoles, coordinating all five robotic arms. A specialised heart stabilisation system helped maintain precision while the heart continued beating.

TECAB enables surgeons to perform coronary artery bypass surgery through small incisions without opening the chest through the conventional breastbone incision. The beating-heart approach can also eliminate the need for a heart-lung machine. The dual-console configuration allows two surgeons to collaborate during complex procedures while creating opportunities for practical training and skill development in robotic cardiac surgery.

Medanta reported encouraging patient recovery progress over the first 15 days. However, long-term clinical outcomes will be important in assessing the procedure's overall benefits. Dr Naresh Trehan, Chairman and Managing Director,



Medanta, described the achievement as a reflection of the hospital's commitment to surgical innovation and advanced technology. He noted that robotic techniques could enable complex cardiac procedures to be performed through less invasive approaches.

Dr Nitin Kumar Rajput highlighted the precision, coordination and teamwork required to complete the surgery, adding that the patient's recovery had been encouraging.

Dr Sudhir Srivastava said the achievement demonstrated the capabilities of the SSI Mantra platform in advanced minimally invasive cardiac procedures. He added that it supported the company's vision of 'Make in India, for the World' and its mission to make robotic surgery more accessible and affordable. Dr Lalit Malik described the dual-console approach as an important development in robotic cardiac surgery, highlighting the role of coordinated control and the five-arm configuration in meeting the demands of the complex procedure.

Fortis Healthcare Appoints Ajey Maharaj as Brand Custodian

Fortis Healthcare has entrusted Ajey Maharaj with an additional leadership responsibility, appointing him as Brand Custodian alongside his current position as Senior Vice President and Group Head – Corporate Communications, PR & Corporate Administration.

In his new role, Maharaj will oversee initiatives to strengthen and safeguard the Fortis brand across its hospital network. He will also work closely with different teams to maintain consistent brand communication, ensure compliance with brand guidelines and reinforce the organisation's identity



among stakeholders. Maharaj brings over 30 years of experience in corporate communications, reputation management and brand development. He joined Fortis Healthcare in December 2015 and has since led the group's communication and public relations functions, including media engagement, crisis management, leadership communication, internal communications and investor relations. He also oversees Corporate Administration.

Prior to Fortis, Maharaj headed Corporate Communications at Tata Power Delhi. His professional career also includes key assignments with Bharti Tele Ventures, Reliance Energy, ABB and Steel Authority of India.

The additional responsibility reflects Fortis Healthcare's focus on strengthening its corporate identity and maintaining a unified brand presence across its healthcare network.

AIIMS Delhi Makes History with India's First Reported Fetal Spinal Cord Surgery

In a significant advancement in fetal medicine and neurosurgery, doctors at the All India Institute of Medical Sciences (AIIMS), Delhi, have successfully performed India's first reported open fetal spinal cord surgery. The complex procedure was undertaken on a 25-week-old foetus diagnosed with myelomeningocele, a congenital condition in which the spinal cord and its surrounding membranes protrude through an opening in the developing spine.

Performed on November 12 at the AIIMS Neurosciences Centre, the six-hour operation brought together more than 30 specialists, nurses and healthcare professionals from several departments. The primary objective was to protect the exposed spinal nerve tissue from further damage before birth.

Myelomeningocele is a serious form of spina bifida that can lead to lower-limb paralysis, impaired mobility and hydrocephalus, which involves the accumulation of excess fluid in the



brain. Although corrective surgery is traditionally performed after delivery, exposure of the spinal cord during pregnancy can result in progressive neurological damage. Fetal intervention offers an opportunity to address some of these risks before birth.

The multidisciplinary surgical team was headed by Professor Deepak Gupta from the Department of Neurosurgery. Maternal-fetal medicine and obstetric management were overseen by Professor Neena Malhotra and Professor K. Aparna Sharma. Anaesthesia teams were led by Professor Vimi Revery, Professor Rashmi Ramachandra, Professor Mihir Prakash Pandia and Professor Gyanendra Pal Singh. The operation was performed with high-capacity surgical microscopy and continuous ultrasound guidance. AIIMS stated that the entire treatment was provided free of charge under the central government's Janani Shishu Suraksha Karyakram scheme.

The achievement also draws attention to the importance of preventing neural tube defects through timely intervention. The neural tube, which develops into the brain and spinal cord, normally closes within approximately 28 days after conception, often before a woman knows she is pregnant.

The milestone demonstrates India's growing capabilities in highly specialised fetal interventions and multidisciplinary surgical care. While such procedures remain complex and suitable only for selected patients, advances in prenatal surgery offer new possibilities for managing serious congenital conditions and improving outcomes for children before they are born.

Bajaj Group Plans ₹2,500 Crore Healthcare Investment, 500-Bed Hospital in Pune

A new healthcare venture backed by the Bajaj Group is set to add a major player to India's hospital industry. Under its proposed brand, Nivara, the group is developing a long-term expansion strategy that aims to establish a presence in 10 cities over the next 15 years.

Pune will be the starting point of this initiative, with plans for a 500-bed hospital expected to become operational by 2030. The proposed development will be supported by a wider network of six to seven clinics, diagnostic centres and ambulatory care facilities.

The group is planning to invest up to ₹2,500 crore in its Pune healthcare projects. The initiative will be led by Bajaj Integrated Health System Pvt Ltd.

Nirav Bajaj, Managing Director of the company, outlined the expansion strategy in an interview, indicating that the proposed network would gradually extend beyond Pune to other cities.

The healthcare initiative is part of the group's broader diversification strategy. The Bajaj Group had earlier indicated plans to commit up to ₹10,000 crore towards its healthcare business.

Established in 1926, the Bajaj Group has business interests spanning automobiles, financial services and insurance, with companies such as Bajaj Auto, Bajaj Finserv and Bajaj General Insurance.

Nivara is also expected to explore synergies with the group's insurance business and establish partnerships



with other companies to support its healthcare operations, according to Nirav Bajaj.

The proposed venture marks a significant step in the Bajaj Group's diversification into healthcare. Its planned hospital network and multi-city expansion ambitions could make Nivara an emerging participant in India's rapidly evolving healthcare sector.

Max Hospital Achieves India's First Same-Day Bilateral Hip Replacement with AI Navigation



A 40-year-old patient from Myanmar has undergone simultaneous replacement of both hip joints at Max Super Speciality Hospital, Saket, and returned home on the day of surgery. The hospital describes the procedure as India's first day-care bilateral total hip replacement performed using Smart AI Navigation technology.

The patient, Mr Juya Mani, was diagnosed with avascular necrosis (AVN) in both hips. The condition occurs when an inadequate blood supply damages bone tissue, potentially leading to progressive deterioration of the affected joints. He had experienced persistent pain and increasing difficulty with movement over several years, with his symptoms becoming more severe in recent months. The operation was conducted by a team headed by Dr Sujoy Bhattacharjee, Chairman and Chief, Max Institute of Robotic Joint Replacement. Following detailed clinical and radiological assessments, both hips were replaced in a single session using uncemented implants from the Meril Libertas Hip Replacement System. The surgery took approximately three and a half hours. The surgical team used Smart AI Navigation to assist with implant positioning and alignment. The patient began walking under medical supervision within four hours of being transferred to the recovery room.

His postoperative progress was assessed against established clinical and functional discharge requirements. After meeting these criteria, he was discharged later that day with prescribed medication, recovery instructions and a planned rehabilitation programme.

Explaining the role of technology in the procedure, Dr Bhattacharjee said Smart AI Navigation helped achieve precise implant positioning and alignment. He added that careful planning and a structured recovery protocol enabled early mobilisation and same-day discharge in this case, demonstrating the potential of day-care joint replacement in carefully selected patients.

The case brings attention to the changing landscape of orthopaedic surgery in India, where technology-assisted procedures and evolving postoperative care practices are creating new possibilities for treating complex joint conditions.

(Photo courtesy: facebook/MaxHospitalsIndia)

Former South African Cricketer Jonty Rhodes Launches SSO Cancer Hospitals' New Centre in Thane

Recognising the need to bring expert cancer treatment closer to communities, SSO Cancer Hospitals has launched its new centre in Thane, bringing comprehensive cancer care under one roof. Supported by a team of over 30 experienced cancer specialists, including surgical and hemato-oncology experts, the centre will focus on personalised treatment, multidisciplinary consultations and coordinated care, helping patients access the expertise they need at every stage of their cancer journey.

The centre was inaugurated in the presence of Dr Chaitra Shetty, Head and Neck Cancer Surgeon, Dr Nilesh Chordiya, GI and Gynaecological Cancer Surgeon, and Jonty Rhodes, Former International Cricketer and Brand Ambassador of SSO Cancer Hospitals. The occasion was also graced by Dr. Rajendra Achyut Badwe, a renowned Indian surgical oncologist and cancer researcher who served as Director of TMC Mumbai, for approximately 15 years. The panel discussed the importance of accessible, specialised cancer care, the evolving landscape of cancer treatment and the need for a more connected approach to managing the cancer care journey.

With the growing burden of cancer across Maharashtra and the country, the centre aims to offer a range of clinical services, including specialist OPD consultations, advanced and specialised cancer surgery, chemotherapy, radiation therapy coordination, multidisciplinary cancer care, diagnostic and specialised testing, as well as genetic and hereditary cancer risk testing. The hospital's approach is centred on individualised treatment planning, informed by the patient's diagnosis, clinical findings and the expertise of the treating team.

Beyond treatment, SSO Cancer Hospitals also focuses on supporting patients and their families through recovery and ongoing care. Services include rehabilitation, physiotherapy, post-operative follow-up, home-care coordination, patient assistance, insurance and financial aid support, international patient services, a 24×7 pharmacy, round-the-clock medical support and pan-India ambulance services.

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Even Hospitals Unveils India's First Live Public Hospital Performance Dashboard



Patients evaluating a hospital may look at its facilities, doctors, reputation and accreditations. But understanding how consistently a hospital delivers care requires another level of information: its actual performance.

Bengaluru-based Even Hospitals is attempting to address this gap with the launch of Even Spotlight, a public dashboard that allows people to follow selected aspects of the hospital's clinical and operational performance.

The platform brings hospital data into the public domain, offering a window into areas that are usually monitored internally by healthcare management teams. Its indicators cover patient outcomes, care experience and day-to-day hospital operations. Even Spotlight displays performance against predefined goals, with information refreshed daily. A colour-coded system helps users identify whether a particular measure is meeting expectations, close to its target or needs improvement.

The system draws its data from Even Hospitals' own digital operating platform, which tracks performance across different hospital functions. The dashboard currently includes indicators from outpatient and inpatient care, while the hospital plans to expand its coverage with more measures.

The launch follows Even Hospitals' announcement of a $50 million Series B investment led by Khosla Ventures. The company is pursuing a healthcare model in which quality is assessed through evidence and outcomes, rather than relying solely on a hospital's reputation or physical infrastructure.

Even Spotlight is also intended to show how hospital performance is evaluated. As the platform develops, new indicators will be introduced, making the measurement framework more comprehensive and visible to the public.

By making selected performance data accessible beyond hospital walls, Even Hospitals is bringing greater openness to the way healthcare quality is monitored and communicated. The initiative could also encourage patients to consider measurable performance when making healthcare decisions.

Manipal Hospitals Brings Karnataka's First Toumai Robotic Surgery System to Bengaluru



Manipal Hospital Millers Road, Bengaluru, has installed the MicroPort MedBot Toumai Robotic Surgical System, marking the technology's first installation in Karnataka.

The system will support minimally invasive procedures across general surgery, gynaecology, urology and bariatric surgery. It combines high-definition 3D imaging with precision robotic instruments, while an integrated smoke evacuation mechanism helps maintain visibility during operations.

A key feature is its ability to measure the force applied by surgical instruments to tissues. This feedback, displayed on the surgeon's console, helps doctors adjust pressure while handling delicate structures and may also support surgical training. Dr. Giridhar CM, Consultant – Surgical Oncology, used the platform to perform an abdominoperineal resection for rectal cancer, a complex procedure involving the deep pelvic region. Doctors from other specialities also highlighted the system's potential applications. Dr. Balakrishna S, Consultant – Gastrointestinal Surgery, discussed its use in procedures such as robotic laparoscopic cholecystectomy. Dr. Geeth Monnappa, Lead Consultant – Obstetrics & Gynaecology, emphasised enhanced magnification and precision.

Dr. Mohan K, Consultant – Urology Transplant & Laparoscopic Surgery, and Dr. Shashikala Ksheerasagar, Consultant – Obstetrics & Gynaecology, highlighted improved camera control, allowing surgeons to adjust the operating view without relying on assistants.

Depending on the procedure and patient condition, minimally invasive robotic surgery may help reduce blood loss and postoperative pain, support recovery and potentially shorten hospital stays.

Apollo Spectra Jaipur Introduces MISSO Robotic Knee Replacement Technology

Apollo Spectra Hospital, Jaipur, has expanded its orthopaedic surgical capabilities with the introduction of Meril Lifesciences' MISSO robotic-assisted system for knee replacement procedures.

The technology combines advanced surgical assistance with the expertise of orthopaedic surgeons, supporting personalised planning, precise bone preparation and accurate implant placement.

MISSO uses CT scan data to create a patient-specific 3D model of the knee, helping surgeons plan the procedure according to the individual's joint anatomy. During surgery, the system assists with bone cutting and implant alignment, offering submillimetric positioning accuracy and real-time assessment of joint gaps. The platform also enables surgeons to evaluate and adjust joint balance during the procedure, supporting greater control over implant positioning and alignment.



The hospital said the technology is intended to enhance surgical precision and may contribute to smaller incisions, quicker recovery and a lower risk of complications.

Dr Sangita Reddy, Joint Managing Director of Apollo Hospitals, said, "The introduction of robotic-assisted knee replacement at Apollo Spectra, Jaipur, reflects our commitment to taking advanced surgical capabilities beyond metropolitan centres."

Apollo Spectra clarified that MISSO functions as a surgeon-controlled system and does not perform operations autonomously. The surgeon remains responsible for patient evaluation, clinical decisions and all critical surgical steps.

Rupinder Kaur, Chief Operating Officer of Apollo Spectra Hospitals, said, "The focus is on building comprehensive surgical programmes, from specialist evaluation and diagnosis to non-surgical management, advanced surgery and structured rehabilitation. Not every patient with knee pain requires surgery, and our endeavour is to ensure that patients receive the most appropriate treatment based on their individual condition."

Indira IVF Joins Global Research Initiative to Study Sperm DNA Damage and Male Infertility

Indira IVF Hospital Limited has launched a collaborative research initiative with three organisations from Brazil, Taiwan and India to investigate the genetic factors contributing to male infertility and their implications for fertility treatment outcomes.

The research will focus on double-strand DNA breaks (DSBs) in sperm and examine how this type of genetic damage influences reproductive outcomes and the success of assisted reproductive technology (ART).

The collaboration brings together Brazil-based Androfert, Taiwan's Bonraybio Co Ltd and India's ADVY Bioscience Private Limited. The partners will undertake prospective clinical studies to gain deeper insights into sperm DNA integrity and its role in male reproductive health.

Prof. Sandro C. Esteves, Medical Director of Androfert and an internationally recognised specialist in male infertility and reproductive medicine, will co-lead the initiative alongside Dr. Vipin Chandra, who will head the research from Indira IVF.

According to the company, male infertility contributes to nearly 40% of infertility cases globally. However, the clinical significance of sperm DNA double-strand breaks is not yet fully understood. While conventional sperm DNA fragmentation tests provide useful information about sperm health, further research is needed to understand the specific impact of this form of DNA damage.



The study aims to improve scientific understanding of sperm genomic integrity and pave the way for more accurate diagnostic methods and targeted treatment strategies in assisted reproductive technology.

The need for such research is underscored by rising infertility trends in South Asia. Data from the Global Burden of Disease study, led by the Institute for Health Metrics and Evaluation (IHME), Washington, indicate that male infertility prevalence in the region increased by approximately 47% between 1990 and 2021.

Aster Medcity Hosts ASTRA Nxt, Showcasing the Future of Spine Surgery



(Photo courtesy: asterhospitals.in)

Around 100 doctors and spine specialists from across Kerala gathered at Aster Medcity for the second edition of ASTRA Nxt, a two-day scientific conference dedicated to the latest developments in spine surgery.

Organised by the Aster Spine Centre, the event provided a platform for medical professionals to exchange knowledge on emerging treatment approaches, surgical advancements and technology-driven innovations in spine care.

The scientific programme covered three major areas: endoscopic spine surgery, robotic-assisted procedures and neuromodulation. Experts discussed evolving techniques, recent research and the growing role of advanced technologies in improving the precision and effectiveness of spinal treatments.

A key highlight of the conference was the formal inauguration of the Kerala Chapter of the Neuro Spinal Surgeons Association (NSSA), marking an important step towards strengthening professional collaboration among spine specialists in the state.

Dr. Shuhaib Khader, COO of Aster Medcity, inaugurated the conference. The scientific proceedings were led by Dr. Anup P. Nair and Dr. Anoop Thomas, Senior Consultants in Neurospine Surgery, and Dr. Renjith K.R., Consultant in Orthopaedic Spine Surgery at Aster Medcity. ASTRA Nxt was designed to promote scientific interaction and encourage deeper engagement with the latest advancements in spinal surgery.

With its focus on innovation, clinical knowledge and professional collaboration, ASTRA Nxt highlighted the growing importance of advanced technologies in shaping the future of spine care.

Fortis Hospital Noida Launches Specialised Lung Failure Clinic for Advanced Lung Diseases



(Photos credits: fortishealthcare.com)

In a move to strengthen specialised care for patients with complex respiratory conditions, Fortis Hospital Noida has launched a dedicated Specialised Lung Failure Clinic, bringing together experts from multiple disciplines to provide comprehensive evaluation, individualised treatment and long-term patient management.

The clinic will adopt a multidisciplinary approach, with specialists from Pulmonology, Critical Care and Cardiothoracic Surgery working together to manage patients with advanced and complex lung diseases. The initiative is designed to ensure coordinated clinical decision-making and personalised treatment pathways based on individual patient needs.

Key services offered through the clinic will include comprehensive evaluation of advanced lung diseases, individualised treatment planning for complex respiratory conditions, assessment of eligible patients for lung transplantation, multidisciplinary consultations and long-term follow-up.

By bringing different medical specialities under one coordinated care pathway, the clinic aims to facilitate timely interventions and improve access to advanced treatment options for patients with serious lung conditions. The launch was attended by Dr. Govini Balasubramani, Director and Head – Cardiothoracic and Vascular Surgery; Dr. Rahul Sharma, Director – Pulmonology and Critical Care; and Mr. Mohit Singh, Regional Director.

With advanced lung diseases often requiring complex, long-term care, the new clinic seeks to bridge the gap between diagnosis, specialised treatment and continued patient support. Its multidisciplinary model underscores the importance of bringing together clinical expertise to offer patients more coordinated care, greater treatment options and renewed hope for a better quality of life.

Kairali Ayurvedic Healing Village Earns Six Global Honours at World Luxury Awards 2026

India's growing presence in the international wellness tourism sector has received another boost, with Kairali – The Ayurvedic Healing Village in Palakkad, Kerala, winning six honours at the World Luxury Awards 2026.

The retreat secured three prestigious Global Winner titles: Best Luxury Ayurveda Retreat, Best Luxury Wellness Centre and Best Luxury Yoga Retreat. It also received three regional awards: Best Luxury Wellness Healing Retreat in Asia, Best Luxury Yoga Experience in Asia and Best Luxury Wellness Hotel in South West Asia.

Established in 1999, Kairali spans 65 acres and offers a range of traditional Ayurvedic therapies and personalised wellness programmes. Its services combine Ayurveda, yoga, meditation and nutrition-based approaches, with a focus on improving physical health, mental well-being and overall lifestyle. The retreat welcomes wellness seekers from India and international markets.

Commenting on the achievement, Abhilash K Ramesh, Executive Director, Kairali Ayurvedic Group, said the six awards made 2026 a memorable year for the organisation and reflected the team's commitment to delivering authentic Ayurveda-based treatments.

The latest recognition follows several other achievements for the group this year, including the APSWC Award for Wellness Centre or Clinic of the Year, the PATWA International Travel Award for Best Retreat – Wellness (India), and the Tripadvisor Travellers' Choice Award. Kairali has also received the Global Tourism Excellence Award 2026.

The international recognition further highlights the potential of India's traditional healing systems in the expanding luxury wellness tourism market. As global travellers increasingly explore preventive healthcare, stress management and holistic well-being, destinations offering authentic Ayurveda-based experiences have an opportunity to strengthen India's position as a leading wellness tourism destination.

(Logo: facebook/KairaliTheAyurvedicHealingVillage)

Niva Bupa Unveils Global Health Cover with Access to International Hospitals

Access to medical care across countries is becoming an important consideration for people with international lifestyles. Addressing this need, Niva Bupa Health Insurance has launched Meridian, a global medical insurance product developed in collaboration with Bupa Global.

The plan is designed for individuals and families who may require healthcare in different parts of the world. It combines international hospital access with coverage for specialist consultations, outpatient care and hospital treatment.

Meridian brings together three organisations to support its international operations: Niva Bupa, Bupa Global and Blue Cross Blue Shield. Their responsibilities are divided by geography, with Niva Bupa managing claims in India, Bupa Global handling claims internationally outside the US, and Blue Cross Blue Shield facilitating claims in the US.

The insurance offering extends to a range of medical needs, including advanced treatments deemed medically necessary, diagnostic investigations, maternity services, newborn care and selected preventive health benefits.

A feature of the highest-level plan is genetic testing for inherited cancer risk. This includes screening for BRCA1 and BRCA2 mutations, supported by related consultations.

Customers will be able to use international healthcare networks and a 24-hour concierge service for assistance with treatment arrangements and insurance coordination.

The launch reflects a broader shift towards health insurance products that combine treatment coverage with preventive services and support for patients navigating healthcare in different countries.

For hospitals serving overseas patients, international insurance products such as Meridian may help create additional referral opportunities and simplify coordination around treatment payments and specialist care.

As global healthcare needs continue to evolve, integrated insurance solutions could play a growing role in connecting patients with medical services beyond their home countries.

(Logo: facebook/NivaBupa)

Max Healthcare and CMC Dubai Join Hands to Expand Specialist Care

Max Healthcare, India, has partnered with Clemenceau Medical Center Hospital (CMC), Dubai, to improve access to specialised medical treatment for patients in the UAE. The agreement will bring Indian specialists to Dubai for consultations and surgical procedures, enabling patients to receive advanced care closer to home.

The initial focus will be on orthopaedics and urology, with Max Healthcare doctors visiting CMC, Dubai, for three days each month. The specialists will conduct outpatient consultations and independently perform selected robotic surgeries identified by CMC's medical team. CMC, Dubai, will manage pre- and post-operative care to ensure continuity throughout the treatment process. The partnership may gradually expand to cover additional medical specialties.

Located in Dubai Healthcare City Phase 2, Al Jaddaf, CMC is a 100-bed multispecialty hospital equipped with modern medical technology and supported by internationally trained physicians. The collaboration will strengthen its existing services by bringing in expertise from Max Healthcare's extensive Indian hospital network, which covers oncology, cardiac sciences, neurosciences, orthopaedics, transplantation and robotic surgery.

Sreekumar Brahmanandan, Board Director, CMC, Dubai, said: "This collaboration reflects our commitment to building partnerships that create meaningful value for patients and the wider community. By bringing together the clinical capabilities of CMC, Dubai and Max Healthcare, we aim to expand access to specialist expertise and further strengthen the range of medical services available to patients in the UAE."



(Press photo / Max Healthcare)

Dr Taha Al-Hazrmerdi, CEO, CMC, Dubai, said the partnership would improve access to treatment options and strengthen robotic surgery capabilities while supporting coordinated patient care.

Raj Raina, Executive Vice President – Sales & Marketing, Max Healthcare, said the collaboration could also support CMC, Dubai, in developing its transplant programme and bringing more specialists to the UAE.

The partnership is expected to evolve into a broader clinical alliance, combining specialist expertise and advanced treatment capabilities to enhance healthcare access for patients across the UAE.

Over 200 Surgeons Attend First GI Robotic Live Surgery Workshop

More than 200 gastrointestinal surgeons, robotic surgery specialists and healthcare professionals from across India gathered in Visakhapatnam for a workshop showcasing the latest developments in robotic-assisted gastrointestinal surgery.

Organised by Care Hospitals in association with IMA Vizag, the first GI robotic live surgery workshop featured live surgical demonstrations, expert lectures, interactive discussions and hands-on training. The CME programme highlighted the expanding use of robotic technology in treating complex gastrointestinal conditions, including cancers, hernias and gallbladder diseases. Sessions covered robotic approaches to oesophageal and gastric cancers, as well as advanced hepatopancreatobiliary (HPB) procedures. Experts discussed how robotic systems offer surgeons enhanced 3D visualisation, greater precision and improved instrument control, particularly when operating in complex anatomical areas.

BB Das, Director, Department of Surgical Gastroenterology and Robotic Surgery, said robotic technology is transforming the management of challenging gastrointestinal conditions.

"Robotic surgery is opening new possibilities, particularly in certain cancer surgeries and procedures involving difficult anatomical areas. It allows surgeons to operate with greater precision and control, potentially reducing surgical trauma and supporting faster recovery," he said. A major highlight was the Intuitive Experience Centre, which included a dedicated bus equipped with a robotic surgery demonstration setup. Participants also experienced single-port robotic technology, gaining insights into emerging surgical systems and their potential applications. G Sukesh Reddy, Chief Operating Officer of Care Hospitals, said the workshop reflected increasing interest in advanced surgical techniques and the need for continuous medical education. An interactive panel discussion on robotic surgery and insurance examined treatment costs, coverage and ways to make robotic procedures more affordable and accessible.

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INDIA'S CARDIAC CARE REVOLUTION

FROM COMPLEX HEART SURGERY TO GLOBAL HEALTHCARE EXCELLENCE



From advanced cardiac imaging and minimally invasive interventions to complex heart surgery and specialised heart-failure management, India's cardiac-care landscape is evolving rapidly. Supported by experienced specialists, expanding clinical infrastructure and technological advancements, the country is strengthening its capabilities in managing complex heart conditions while emerging as an important destination for international patients seeking advanced and comparatively affordable cardiac treatment.

By **MTT Research Desk**

Cardiac care is entering an era in which early diagnosis, precision-based interventions and specialised treatment approaches are expanding the possibilities of patient care. Advances in imaging, surgical techniques, catheter-based procedures and critical-care technologies are enabling specialists to manage an increasingly complex range of heart conditions.

India has made significant progress in this evolving field. With an expanding network of specialised cardiac centres, experienced cardiologists and cardiac surgeons, and access to advanced diagnostic and treatment technologies, the country has developed capabilities across several areas of cardiac care. These include coronary artery disease, complex valve disorders, aortic conditions, structural heart interventions and advanced heart-failure management.

This progress has implications beyond clinical advancement. As India strengthens its ability to deliver specialised cardiac treatment, it is also creating opportunities to improve domestic access to care and serve international patients seeking experienced specialists, modern hospital infrastructure and comparatively affordable treatment. The next priority is to make these capabilities more accessible, integrated and consistently patient-centred.

A growing burden calls for a stronger response

Cardiovascular diseases (CVDs) are the leading cause of death worldwide. According to the World Health Organization (WHO), an estimated 19.8 million

people died from cardiovascular diseases in 2022, representing approximately 32% of all global deaths. Heart attacks and strokes accounted for 85% of these deaths. More than three-quarters of cardiovascular deaths occur in low- and middle-income countries, where access to timely diagnosis and effective treatment remains a significant challenge.

India faces a considerable cardiovascular disease burden of its own. Risk factors such as hypertension, diabetes, tobacco use, unhealthy diets, physical inactivity and air pollution contribute to cardiovascular risk. An ageing population and the increasing prevalence of lifestyle-related conditions add further pressure on healthcare services.

The challenge is not limited to the number of patients. Cardiovascular disease encompasses a wide range of conditions, including coronary artery disease, heart valve disorders, rhythm abnormalities, congenital heart defects, diseases of the aorta and heart failure. Each requires a different clinical approach, and many patients need coordinated care involving cardiologists, cardiac surgeons, imaging specialists, anaesthesiologists, intensivists and rehabilitation teams.

Late diagnosis can make treatment considerably more complex. Patients who reach hospitals after significant damage to the heart muscle or with advanced disease may require more extensive interventions and prolonged recovery. Strengthening public awareness, routine risk assessment, early diagnosis and timely referral is therefore as important as expanding advanced treatment facilities.

Technology is transforming diagnosis and decision-making

Modern cardiac care increasingly depends on the quality of information available to clinicians. Advances in diagnostic imaging and monitoring are helping specialists identify cardiovascular conditions earlier, assess their severity and determine the most appropriate treatment.

Echocardiography remains central to evaluating heart structure, valve function and pumping capacity. Three-dimensional and transoesophageal echocardiography provide additional anatomical detail in selected cases, particularly when assessing complex valve disorders and planning interventions.

Cardiac computed tomography (CT) helps evaluate coronary arteries, aortic conditions and structural abnormalities, while cardiac magnetic resonance imaging (MRI) provides detailed information about heart muscle structure, function, inflammation and tissue damage. During selected coronary interventions, intracoronary imaging techniques such as intravascular ultrasound (IVUS) and optical coherence tomography (OCT) provide detailed information about coronary artery structure and plaque characteristics, helping specialists guide treatment.

Artificial intelligence (AI) is increasingly being explored and applied in selected areas of cardiovascular care. Potential applications include image analysis, identifying patterns, supporting risk assessment and assisting clinicians in interpreting complex medical information. These technologies can strengthen clinical decision-making, but they do not replace specialist judgement or patient-specific assessment.

The integration of advanced imaging, clinical data and specialist expertise is helping move cardiac treatment towards greater precision, with the ultimate objective of improving diagnosis, guiding appropriate interventions and supporting better patient outcomes.

INDIA HAS BECOME A POPULAR DESTINATION FOR CABG DUE TO ITS HIGHLY SKILLED CARDIAC SURGEONS AND THE AVAILABILITY OF ADVANCED TECHNOLOGIES SUCH AS ROBOTIC-ASSISTED SURGERY, WHICH OFFERS IMPROVED PRECISION AND FASTER RECOVERY TIMES.



From conventional surgery to precision-based interventions

Cardiac treatment has moved well beyond a one-size-fits-all approach. The choice of treatment depends on the nature and severity of the disease, the patient's overall health, anatomical considerations and the potential benefits and risks of available options.

For patients with significant coronary artery disease, treatment may

WHY INDIA LEADS IN
CARDIAC SURGERY



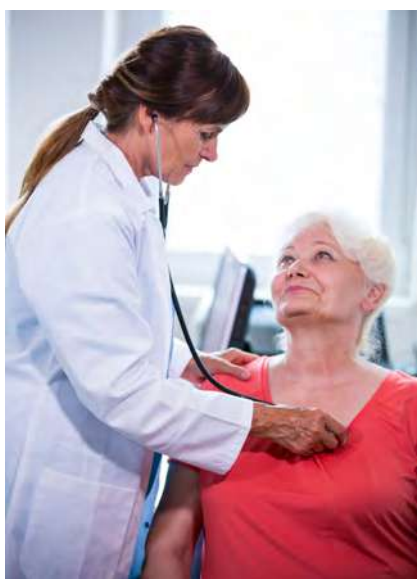
- **World-Class Expertise:** India has a large pool of highly skilled cardiac surgeons trained at leading global institutions.
- **Advanced Technology:** Many hospitals are equipped with cutting-edge cath labs, robotic surgery systems, and hybrid operating theatres.
- **Affordable Treatment:** Cardiac procedures in India often cost 60–80% less than in many Western countries, without compromising quality.
- **High Success Rates:** Major cardiac centres report outcomes comparable to global benchmarks in bypass surgeries, valve replacements, and complex interventions.
- **Short Waiting Time:** Patients can access consultations, diagnostics, and surgeries much faster compared to long waiting lists in several countries.
- **Comprehensive Care:** Multidisciplinary teams provide end-to-end treatment including diagnostics, surgery, rehabilitation, and follow-up care.
- **Strong Medical Tourism Ecosystem:** Dedicated international patient services, language support, and streamlined visa processes make India accessible to global patients.

involve medication, coronary angioplasty and stenting, or coronary artery bypass grafting (CABG), depending on the extent and complexity of the disease. Angioplasty offers a catheter-based approach to opening narrowed arteries, while bypass surgery remains an important option for selected patients with complex or extensive coronary artery disease.

Cardiac surgery has also advanced in the management of heart valve disorders. Valve repair and replacement procedures are used to treat conditions affecting the aortic, mitral, tricuspid and pulmonary valves. Depending on the affected valve, the severity of the condition and the patient's overall health, treatment may involve conventional surgery, minimally invasive surgery or catheter-based interventions.

Transcatheter aortic valve implantation (TAVI), also known as transcatheter aortic valve replacement (TAVR), has expanded treatment options for selected patients with severe aortic stenosis. It provides an alternative to surgical aortic valve replacement in appropriately assessed patients. The choice between transcatheter and surgical approaches depends on several factors, including the patient's age, valve anatomy, overall health, procedural risk, life expectancy and long-term treatment considerations. Such decisions are best made through a multidisciplinary heart team assessment.

Similarly, transcatheter edge-to-edge repair (TEER) offers a catheter-based treatment option for selected patients with mitral regurgitation. Its suitability depends on the severity and mechanism of mitral regurgitation, valve anatomy, the patient's symptoms and overall clinical condition.



These developments reflect a broader shift towards individualised cardiac care. The objective is not simply to perform a procedure, but to identify the most appropriate intervention for each patient, considering long-term clinical needs, recovery and quality of life.

The expanding role of minimally invasive and robotic cardiac surgery

One of the notable developments in modern cardiac surgery is the growing use of minimally invasive techniques. Traditionally, many major heart operations required a median sternotomy, in which the breastbone is divided to provide access to the heart. Minimally invasive approaches allow selected procedures to be performed through smaller incisions.

For appropriately selected patients, these techniques may reduce surgical trauma and support recovery. Their suitability, however, depends on several factors, including the patient's anatomy, the complexity of the disease, previous operations and the experience of the surgical team.



Robotic-assisted cardiac surgery represents another advancement. Using specialised instruments and high-definition three-dimensional visualisation, surgeons can perform selected procedures with enhanced visualisation and precise instrument control. These techniques are being used in carefully selected valve, coronary and other cardiac procedures.

Minimally invasive and robotic-assisted approaches are not suitable for every patient or every cardiac condition. Technology alone does not determine the success of an operation. Patient selection, surgical expertise, institutional experience, anaesthesia, intensive care and post-operative monitoring remain essential. The most appropriate approach is the one that offers the best balance of safety and clinical benefit for the individual patient.

Complex aortic disease demands specialised expertise

The aorta is the body's principal artery, carrying blood from the heart to the rest of the body. Conditions such as aneurysms, dissections and other forms of aortic disease can be life-threatening and may require highly specialised surgical or endovascular treatment.

Aortic procedures are among the more complex areas of cardiovascular care. They may involve the aortic root, ascending aorta, arch or descending aorta, sometimes requiring extensive reconstruction. Advanced imaging, careful operative planning, specialised perfusion techniques and coordinated critical care are central to managing these cases.

Developments in open surgery, endovascular techniques and hybrid approaches have expanded treatment possibilities for patients with complex aortic conditions. Depending on the location and nature of the disease, specialists may undertake open reconstruction, endovascular repair or a combination of both approaches.

In India, specialised cardiac centres have developed capabilities in managing complex cardiovascular conditions, including selected aortic procedures. These services depend on experienced cardiac and vascular surgeons, advanced imaging, specialised operating facilities, perfusion support and multidisciplinary critical-care teams.

Continued investment in specialist training, surgical infrastructure and integrated treatment programmes will be important in further strengthening the country's capacity to manage these challenging conditions.

Advanced heart failure: beyond conventional treatment

For some patients, heart disease progresses despite medication and other interventions. Advanced heart failure can significantly affect daily activities and may require specialised management.



Treatment begins with careful assessment and optimisation of guideline-directed medical therapy. Depending on the patient's condition, additional options may include device-based treatment, mechanical circulatory support or heart transplantation.

Cardiac resynchronisation therapy (CRT) can improve the coordination of heart contractions in selected patients, while implantable cardioverter-defibrillators (ICDs) can detect and treat life-threatening arrhythmias, helping reduce the risk of sudden cardiac death.

Technologies such as left ventricular assist devices (LVADs) can support the pumping function of the heart in selected patients. Extracorporeal membrane oxygenation (ECMO) can provide temporary support to the heart and lungs in certain critical situations, although it is generally used as short-term support rather than a long-term heart-failure treatment.

Heart transplantation remains an important option for carefully selected patients with end-stage heart failure who meet the required clinical criteria. These therapies require more than surgical capability. They depend on multidisciplinary cardiac-care teams, intensive-care facilities, trained nursing staff, infection-control protocols, long-term monitoring and structured follow-up. As treatment becomes more complex, the importance of an integrated cardiac-care programme becomes even greater.

Taking specialised cardiac care beyond metropolitan centres

In earlier years, advanced cardiac treatment was largely concentrated in major urban hospitals. Consequently, patients from smaller cities and remote regions often had to travel considerable distances to access specialised procedures.

The healthcare landscape is gradually evolving, with regional hospitals and public institutions working to strengthen their cardiac capabilities.

This expansion is creating opportunities to improve access to specialised cardiac care services beyond traditional metropolitan centres.

Such facilities require more than operating theatres and diagnostic equipment. Experienced specialists, round-the-clock emergency services, intensive-care units, blood-bank services, trained support staff and established referral systems provide the clinical foundation needed to manage complex cardiovascular conditions.

Continuity of care is equally important. Early diagnosis, rapid identification of patients requiring urgent intervention, coordinated referrals to tertiary centres and structured post-treatment follow-up can strengthen patient management across different levels of the healthcare system.

Expanding regional capabilities also offers an opportunity to reduce delays in accessing specialist care. However, sustained investment in infrastructure, specialist availability, clinical protocols and quality standards remains essential to ensure that geographical expansion translates into reliable treatment access.

India's opportunity in global cardiac healthcare

India has emerged as an important destination for international patients seeking advanced cardiac treatment, with cardiology and cardiac surgery among the key areas of medical travel. The country's appeal is supported by experienced cardiac specialists, advanced medical technology, modern hospital infrastructure and comparatively affordable treatment costs.

Its clinical capabilities cover a broad range of cardiovascular services, from coronary interventions and valve procedures to complex cardiac surgery and selected advanced heart-failure therapies. For international patients, access to multidisciplinary specialists and hospitals equipped to manage complex conditions can be an important consideration when choosing a treatment destination.

However, global healthcare competitiveness involves more than clinical expertise and affordability. International patients also require transparent treatment estimates, clear communication, assistance with travel and hospital coordination, language support where necessary, and reliable arrangements for follow-up after returning home.



INDIA IS WELL POSITIONED TO STRENGTHEN ITS ROLE AS A MAJOR CENTRE FOR ADVANCED CARDIAC CARE, COMBINING STRONG CLINICAL EXPERTISE, SOPHISTICATED MEDICAL TECHNOLOGY AND AN EXPANDING HEALTHCARE INFRASTRUCTURE.

Building international patient confidence therefore requires a comprehensive approach that combines clinical standards, patient-centred services and continuity of care throughout the treatment journey. India's opportunity lies in strengthening this entire experience while maintaining the quality and safety of its cardiovascular services.

The next frontier: integrated, accessible and patient-centred care

The future of cardiac care will not be defined by a single operation, device or technological breakthrough. It will depend on how effectively healthcare systems bring together prevention, diagnosis, intervention, critical care, rehabilitation and long-term management.

For India, the priorities include strengthening preventive cardiology, expanding specialist training, improving access to emergency services, supporting regional cardiac centres and ensuring that advanced treatment is backed by robust clinical systems. Continued investment in research, technology and multidisciplinary expertise will also be essential to sustain progress.

India is well positioned to strengthen its role as a major centre for advanced cardiac care, combining strong clinical expertise, sophisticated medical technology and an expanding healthcare infrastructure. Its next challenge is to extend these capabilities beyond leading urban hospitals, making high-quality cardiac treatment more accessible across the country while continuing to serve patients from around the world. By investing in innovation, strengthening preventive healthcare and maintaining the highest standards of clinical excellence, India can further enhance its global reputation in cardiac care. Ultimately, its success will be measured not only by medical breakthroughs and complex procedures, but by lives saved, better patient outcomes and the ability to make advanced heart care accessible to more people.

From Metros to Small Cities: The Decentralisation of Cardiac Care in India



For decades, access to advanced cardiac care in India largely depended on geography, with specialised procedures, expert teams and cutting-edge technology concentrated in major metropolitan hospitals. For millions of patients living beyond these urban centres, serious heart disease often meant travelling long distances in search of specialised treatment. That landscape is changing. From Mizoram to Dehradun and Chandigarh, regional centres are developing advanced cardiac capabilities, bringing expertise, technology and life-saving care closer to patients.

By **Dr. Soniya Attarde**

India has one of the world's highest cardiovascular disease burdens. According to the World Heart Federation's World Heart Observatory, an estimated 3.17 million people died from cardiovascular diseases in India in 2024. CVDs accounted for 24.5% of all deaths in the country, highlighting the scale of the challenge facing India's healthcare system.

This creates a paradox. India needs more cardiac care at precisely the time when the nature of that care is becoming increasingly complex. Yet, alongside rising demand, the delivery model is beginning to change. Cardiac expertise and technology that were once heavily concentrated in a handful of metropolitan tertiary hospitals are increasingly reaching regional centres, state hospitals and public healthcare systems.

One of the most striking examples is Mizoram. The state recently witnessed its first-ever open-heart surgery at Zoram Medical College and Hospital (ZMC&H) in Aizawl. A six-and-a-half-hour coronary artery bypass graft (CABG) procedure was performed on a 69-year-old patient who had suffered a heart attack six months earlier and was diagnosed with severe triple-vessel coronary artery disease.

A heart-lung machine was used during the successful procedure, which was supported by ZMC&H's cardiology, anaesthesia, nursing and operation-theatre teams. The achievement marks an important step towards meeting the growing need for advanced cardiac care within Mizoram itself. Building such local capabilities can reduce dependence on metropolitan hubs and strengthen regional healthcare capacity.

This highlights the importance of strong infrastructure. Infrastructure, however, is meaningful only when patients can afford to access it. Maharashtra provides an important example of how public financing can expand access to advanced cardiac interventions.

Mumbai's state-run Sir J.J. Hospital achieved a major milestone by performing its first Transcatheter Aortic Valve Implantation (TAVI) procedure under the Mahatma Jyotirao Phule Jan Aro-

gya Yojana (MJPJAY). The minimally invasive procedure was performed on a 63-year-old patient from Jalna suffering from severe aortic valve stenosis and complex coronary artery disease. As the patient was considered high-risk for conventional open-heart surgery, a multidisciplinary team opted for TAVI after first performing coronary angioplasty.

The achievement underlines an important reality: healthcare infrastructure is not only about buildings, equipment and specialists. Financial protection is also a critical part of access. This milestone represents an important step towards making advanced cardiac care more accessible through India's public healthcare system.

A state-of-the-art cath lab is of little use to a patient who needs urgent treatment but is stuck waiting in the wrong queue. When it comes to emergency cardiac care, the way hospitals are structured can be just as important as the technology they employ.

At the Postgraduate Institute of Medical Education and Research (PGIMER), Chandigarh, a dedicated Cardiology Triage Unit at the Advanced Cardiac Centre handled 3,049 patients between March 9 and July 29, 2026. Of these, 1,108 patients were transferred to the Coronary Care Unit, while 1,513—or 49.6%—were treated and discharged after assessment. The unit also enabled 26 primary PCI procedures and redirected patients with non-cardiac emergencies to the appropriate emergency pathway.

The value of this approach is evident in the way it improves patient flow. Rather than routing all suspected cardiac emergencies through a general emergency department, a dedicated unit can provide rapid specialist assessment and direct patients to the level of care they actually need.

This can help reduce unnecessary admissions, conserve critical resources and enable high-acuity patients to access specialised treatment more quickly.

India is not only expanding access to cardiac care but also increasing the complexity of treatments available



beyond major metropolitan centres. In Dehradun, Uttarakhand, Shri Mahant Indiresh Hospital recently performed the state's first mitral Transcatheter Edge-to-Edge Repair (TEER).

This minimally invasive catheter-based procedure offers a less invasive treatment option for selected patients with severe mitral regurgitation who may be at high risk for traditional open-heart surgery.

The procedure required the combined expertise of cardiology, cardiothoracic surgery, cardiac anaesthesia, echocardiography, cath-lab, nursing and technical teams. It demonstrates another important transformation in Indian cardiac care: the emergence of specialised structural-heart programmes and multidisciplinary Heart Teams.

For patients, such advances could provide new treatment options with the potential for less invasive procedures and shorter recovery periods than conventional surgery, when clinically appropriate.

The challenge now is to connect the dots

More cardiac centres alone will not solve India's cardiovascular crisis if patients continue to arrive late, multiple risk factors remain uncontrolled and advanced procedures are available only as isolated "firsts".

The country needs to build a seamless continuum of care—from prevention and early detection to triage, diagnosis, treatment, rehabilitation and long-term surveillance.

That is the real significance of what is happening now. India is witnessing not only an increase in the number of cardiac beds, cath labs and advanced procedures but also a fundamental shift in their distribution.

While the cardiovascular disease burden continues to rise, advanced treatments are becoming more widely available. Cardiac care is no longer confined to a few metropolitan centres. Complex procedures are increasingly being performed in public institutions, regional hospitals are developing advanced capabilities, and healthcare systems are adopting innovative ways to ensure that the right patient reaches the right level of care at the right time.

The next—and perhaps most important—test will be whether these pockets of innovation can be connected into a truly nationwide cardiac-care system rather than remaining isolated milestones.



Dr. Soniya Attarde (PT) is a Gold Medalist in Physiotherapy and is currently pursuing an MBA in Hospital & Healthcare Management. Drawing on her strong clinical background, she is passionate about integrating patient care with healthcare management to strengthen health systems and improve patient outcomes.



Cardiac care is entering a new era, with robotics, minimally invasive techniques, artificial intelligence and precision medicine redefining how heart disease is treated. In an interview with Medical Tourism Today, ***Dr. Varun Bansal,*** *Senior Consultant – Minimally Invasive and Robotic Cardiac Surgery, Indraprastha Apollo Hospitals, New Delhi, discusses the evolution of cardiac surgery and the technologies shaping its future—from robotic procedures and precision surgery to LVADs, ECMO and transplantation.*

THE HEART, REIMAGINED: ROBOTICS, AI AND THE NEXT FRONTIER OF CARDIAC CARE

Q Dr. Bansal, what are the most important lifestyle changes people can make to prevent heart disease, and how can early diagnosis and timely intervention help prevent the condition from progressing to complex surgery?

A The most important point I would emphasise is that cardiovascular disease is not simply a disease of the heart—it is, to a large extent, a disease of lifestyle and cumulative risk exposure. Prevention therefore has to begin much before symptoms appear.

A heart-healthy lifestyle means maintaining an appropriate body weight, exercising regularly, eating a balanced diet with adequate vegetables, fruits, whole grains and fibre, avoiding tobacco in every form, limiting excessive alcohol consumption, sleeping adequately and learning to manage chronic stress. Equally important is controlling the major cardiovascular risk factors—blood pressure, diabetes, cholesterol and obesity.

Regular health screening becomes particularly important when there is a family history of premature coronary artery disease or when a person has risk factors such as diabetes, hypertension, smoking or dyslipidaemia.

Early diagnosis can fundamentally change the trajectory of cardiovascular disease. Coronary artery disease, for example, can often be identified before a patient develops a major heart attack. Similarly, valvular heart disease can be detected before irreversible changes occur in the heart muscle.

Timely intervention does not necessarily mean surgery. It means choosing the right treatment at the right time—whether that is lifestyle modification, medication, interventional cardiology or surgery.

When patients present late, we frequently have to deal with damaged heart muscle, impaired ventricular function, complications of previous heart attacks, severe valve disease or other advanced pathology. In such situations, treatment becomes more complex. So, my message to patients is simple: do not wait for symptoms to become severe before taking your heart health seriously. Prevention and early detection are among the most powerful forms of cardiac treatment.

Q Cardiac surgery has traditionally been associated with large incisions and prolonged recovery. How have minimally invasive and robotic techniques changed the surgical experience for patients, and which cardiac conditions are currently most suitable for these approaches?

A The fundamental objective of cardiac surgery has not changed—we still need to perform the operation safely and achieve a durable cardiac result. What has changed dramatically is how we can reach the heart.

One of the most important advantages of the robotic cardiac surgery is three-dimensional, high-definition magnified visualisation. The surgeon can see structures in considerably greater detail than may be possible with conventional two-dimensional visualisation.

Traditional cardiac surgery often requires a median sternotomy, in which the breastbone is divided. Minimally invasive surgery allows us to perform selected procedures through much smaller access points, avoiding or reducing the need for a full sternotomy. Robotic surgery takes this concept further by using specialised instruments and a high-definition three-dimensional visualisation system.

For appropriately selected patients, this can translate into smaller incisions, less surgical trauma, reduced postoperative pain, earlier mobilisation, shorter hospitalisation and a faster return to normal activities. Importantly, however, minimally invasive surgery should not be equated simply with a smaller incision. The real objective is to achieve the same—or in selected circumstances better—surgical result with less physiological trauma.

Today, robotic and minimally invasive approaches are particularly well established for selected mitral valve repair and replacement procedures, certain tricuspid valve procedures, atrial septal defect closure, selected coronary artery bypass procedures, and some cardiac tumour and other structural heart operations.

The suitability depends on the patient's anatomy, disease complexity, previous operations, associated illnesses, ventricular function and the surgeon and centre's experience. I strongly believe that the operation should be tailored to the patient, rather than forcing every patient into a particular technology.

Q Robotic cardiac surgery is often described as one of the most technologically advanced frontiers in modern heart care. From a surgeon's perspective, what specific advantages does robotic assistance offer in terms of precision, visualisation and surgical manoeuvrability?

A Robotic surgery is essentially an extension of the surgeon's capabilities. The robot does not operate independently; the surgeon remains completely responsible for every surgical decision and every movement.

One of the most important advantages is three-dimensional, high-definition magnified visualisation. The surgeon can see structures in considerably greater detail than may be possible with conventional two-dimensional visualisation.

The robotic instruments also provide multiple degrees of freedom of movement. Human wrists have a relatively limited range of motion, particularly when working through small ports. Robotic instruments can articulate

inside the chest and reproduce wrist-like movements in a confined space.

Another important advantage is motion scaling and tremor filtration. Large movements made by the surgeon's hands can be translated into very small, controlled movements at the instrument tip. These characteristics become particularly valuable when performing delicate reconstructive procedures—for example, suturing or repairing a mitral valve through a very small access route.

But technology by itself does not produce good surgery. The robot is an enabling technology; surgical judgement, experience, anatomical understanding and a highly trained team remain the decisive factors.

Q How do you decide whether a patient is best treated through conventional open surgery, minimally invasive surgery or robotic cardiac surgery?

A This is one of the most important decisions we make, and I would never choose the surgical approach simply because a particular technology is available.

My first question is always: What is the safest and most effective way to treat this particular patient's disease?

We assess the pathology, anatomy, severity of disease, ventricular function, age, previous operations, comorbidities, body habitus, pulmonary function and other relevant factors. We also study the imaging carefully, because the same operation may be straightforward in one patient and technically inappropriate in another.

The expertise and experience of the treating centre are equally important. A minimally invasive or robotic operation should not be undertaken merely to avoid a sternotomy if doing so compromises safety or the quality of the repair.

There are also patients for whom conventional surgery remains the best option—particularly when disease is extremely complex, when extensive reconstruction is required, or when the minimally invasive route does not provide an appropriate margin of safety.

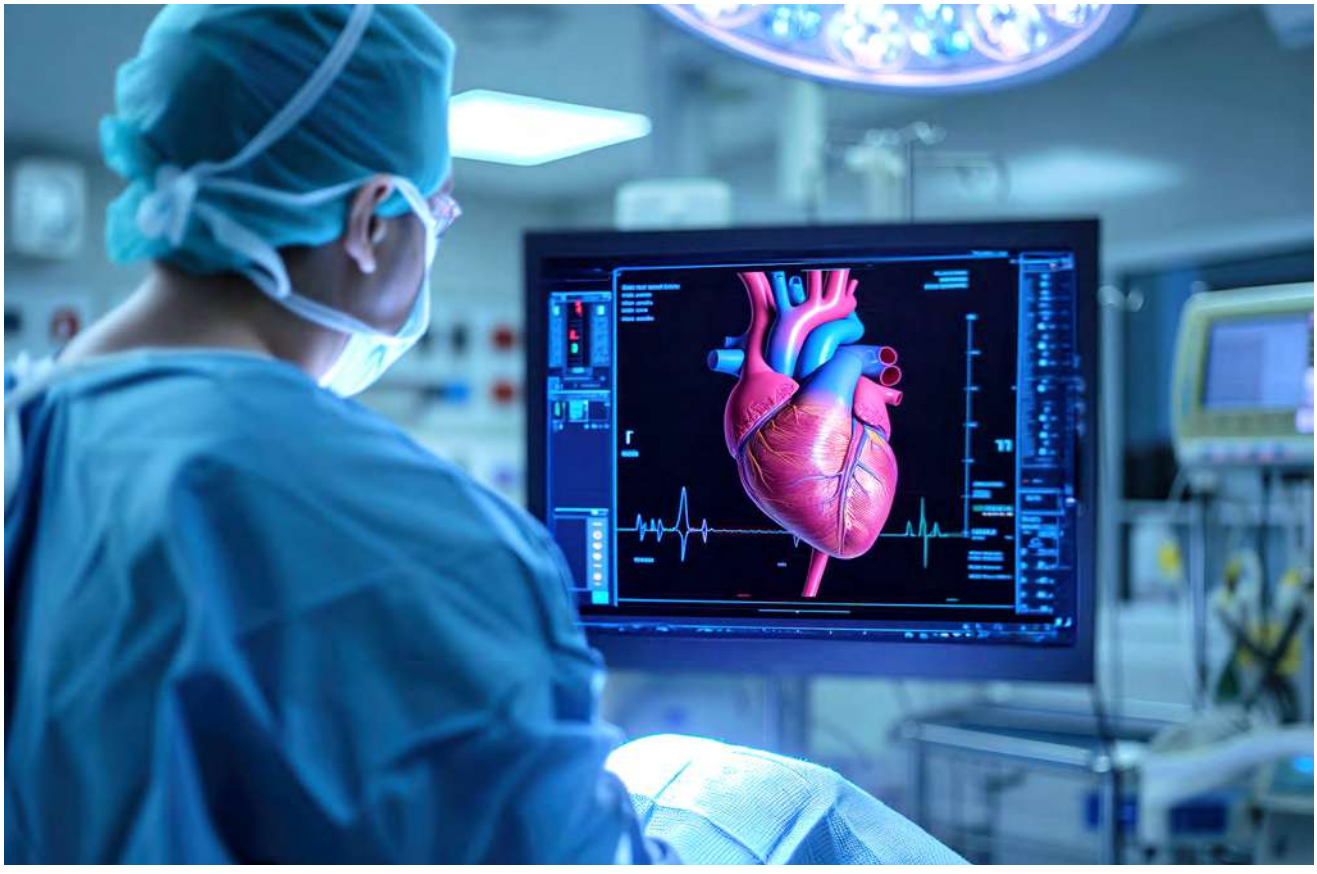
I therefore look at the three approaches not as competing philosophies but as different tools in the cardiac surgeon's armamentarium.

The correct question is not, "Can this operation be done robotically?" The more important question is, "What approach will give this patient the best combination of safety, durability and recovery?"

Q How is minimally invasive coronary bypass surgery changing treatment options for patients with coronary artery disease, particularly in terms of recovery and long-term outcomes?

A Coronary artery bypass surgery remains one of the most effective treatments for appropriately selected patients with advanced coronary artery disease, particularly those with complex multivessel disease, diabetes or certain patterns of coronary anatomy.

Minimally invasive and robotic techniques have expanded the ways in which coronary bypass can be performed. In





Coronary artery bypass surgery remains one of the most effective treatments for appropriately selected patients with advanced coronary artery disease, particularly those with complex multivessel disease, diabetes or certain patterns of coronary anatomy.

selected patients, we can harvest the internal mammary arteries using minimally invasive or robotic techniques and perform coronary anastomoses through a limited access approach.

One of the major attractions is reducing the surgical trauma associated with a full sternotomy. Patients can often mobilise earlier, experience less chest-wall disruption and return to normal activities sooner.

However, when discussing CABG, we must not lose sight of the most important endpoint: the long-term quality and durability of myocardial revascularisation. The goal is not to perform a minimally invasive operation at any cost. The goal is to combine the benefits of less invasive access with excellent coronary revascularisation.

As technology, imaging and surgical expertise continue to develop, I believe minimally invasive and robotic coronary surgery will become an increasingly important component of the spectrum of treatment available to appropriately selected patients.

Q How is personalised treatment changing cardiac care, particularly when patients with the same heart condition may require very different treatment approaches?

A Personalised medicine is particularly relevant to cardiac surgery because two patients with what appears to be the same diagnosis may have completely different biological, anatomical and clinical circumstances.

For example, two patients may both have severe mitral regurgitation, but one may be an excellent candidate for repair through a robotic approach, while another may require a different surgical strategy because of the valve anatomy, ventricular function, previous surgery or associated disease.

Similarly, coronary artery disease cannot be treated simply by counting the number of blockages. We have to consider the patient's age, diabetes, ventricular function, anatomy, arterial conduits, kidney and lung function, previous interventions and expected long-term benefit.

Modern cardiac care therefore increasingly relies on detailed imaging, advanced cardiac assessment, multidisciplinary decision-making and, where appropriate, computational and artificial-intelligence-based tools.

The future is moving away from a "one operation fits all" philosophy towards precision cardiac surgery, in which the procedure, access route and perioperative strategy are tailored to the individual patient.

Q What are some of the most challenging complex cardiac cases you manage, and how have advances in technology expanded the possibilities for treating such patients?

A The most challenging patients are often those in whom several problems coexist—for example, severe coronary disease combined with poor ventricular function, complex valve disease, previous cardiac surgery, pulmonary hypertension or advanced heart failure.

Redo surgery can be particularly challenging because previous operations alter the normal anatomy and create adhesions, increasing the technical complexity and potential risks.

Patients with end-stage heart failure present another major challenge. Some may require advanced mechanical circulatory support, ECMO or transplantation, sometimes as a bridge from one therapy to another.

Technology has significantly expanded what we can accomplish. High-resolution imaging allows us to understand anatomy before entering the operating room. Three-dimensional reconstruction can assist planning. Modern perfusion technology, mechanical circulatory support systems, advanced anaesthesia and intensive care have transformed the management of critically ill patients.

Robotic and minimally invasive platforms have also expanded our ability to perform complex procedures through smaller access routes in appropriately selected patients.

But I would emphasise that complex cardiac surgery is rarely about one

piece of technology. It is about integrating imaging, surgery, anaesthesia, perfusion, intensive care, cardiology and nursing into a highly coordinated team.

Q You have extensive expertise in heart transplantation, LVADs and ECMO. How do these advanced therapies fit into the modern management of patients with end-stage heart failure?

A End-stage heart failure is a spectrum, and advanced therapies are used when conventional medical and interventional treatment is no longer sufficient.

For appropriately selected patients, heart transplantation remains the gold-standard definitive treatment for end-stage heart failure, but the availability of donor organs is limited. This is where mechanical circulatory support has become extremely important.

LVADs—left ventricular assist devices—can provide mechanical support to the failing ventricle. Depending on the clinical situation, an LVAD may be used as a bridge to transplantation, as a bridge to recovery in selected circumstances, or as long-term destination therapy.

ECMO occupies a somewhat different but complementary position. In patients with severe cardiac or cardiopulmonary failure, particularly those who deteriorate acutely, ECMO can provide temporary circulatory and/or respiratory support and may allow time for the underlying condition to recover or for a more definitive strategy to be implemented.

The critical issue is timing. Advanced heart failure therapies work best when patients are referred before irreversible multiorgan failure develops.

Modern heart failure care therefore requires close collaboration between heart-failure specialists, cardiologists, cardiac surgeons, intensivists, transplant teams, perfusionists and specialised nursing teams.

The most important message for patients and referring physicians is: advanced heart failure should not be considered a point at which treatment options have ended. In the right patient, there may be several sophisticated treatment pathways available.



DR. VARUN BANSAL

Dr. Varun Bansal is a Senior Consultant – Minimally Invasive and Robotic Cardiac Surgery at Indraprastha Apollo Hospitals, New Delhi, with extensive experience in cardiothoracic and vascular surgery. He holds a DNB in Cardiothoracic Surgery and has completed a Fellowship in Cardiovascular Surgery from Toronto.

He has completed programs in Healthcare Management and Analytics from IIM Kozhikode and AI in Healthcare from NBEMS. He has also completed an advanced fellowship in cardiac surgery, heart transplantation and TAVI at Toronto General Hospital, University of Toronto, and is a Console Surgeon certified for the da Vinci Xi Robotic Surgical System.

His areas of special interest include minimally invasive and robotic cardiac surgery, complex cardiac surgery, heart transplantation, LVAD and ECMO.

Dr. Bansal has contributed to research and presentations in areas including robotic coronary surgery, LVADs, ECMO and complex cardiac procedures, reflecting his commitment to technology-driven, minimally invasive and precision cardiac care.

Q Looking ahead, what do you believe will define the next major chapter in cardiac care—from robotic surgery and artificial intelligence to advanced mechanical circulatory support and transplant-based therapies?

A I believe the next chapter of cardiac care will be defined by integration rather than by any single technology.

Robotic surgery will continue to evolve, with improved instrumentation, imaging and potentially increasing automation of repetitive components of surgery. Artificial intelligence will increasingly help us interpret imaging, predict risk, identify patients who may benefit from particular interventions and assist with surgical planning.

But AI will not replace the cardiac surgeon. Its greatest value will be in helping clinicians make better-informed decisions and potentially identifying patterns that may not be immediately apparent to the human eye.

Mechanical circulatory support will also continue to advance. Devices are becoming smaller and more sophisticated, and we are moving towards increasingly durable forms of support for patients with advanced heart failure.

Transplantation will remain a critical component of advanced cardiac care, while innovations in organ preservation, donor management and potentially xenotransplantation and bioengineering may eventually expand the availability of donor organs.

Perhaps the most exciting development is that these technologies will increasingly come together. We will have better imaging, better prediction, less invasive surgery, more sophisticated mechanical support and more personalised treatment.

But despite all this technology, the central principle will remain unchanged: the patient comes first.

The future of cardiac surgery is not simply about operating through smaller incisions or using more advanced machines. It is about achieving better outcomes with less physiological trauma, intervening earlier, preserving quality of life and making treatment increasingly precise and individualised.

That, in my view, is the real promise of modern cardiac surgery.



Heart Health:
Early Warning Signs and Advances in Modern Cardiac Care



Dr. Pawan Poddar
Director of Cath Lab and Senior Consultant Interventional Cardiologist, Yashoda Hospitals, Hyderabad

Heart disease rarely announces itself with a single dramatic moment. In most cases, the body sends out quiet signals for weeks, months, or even years before a serious cardiac event occurs. The trouble is, these signals — mild chest discomfort, unusual tiredness, breathlessness, or a fluttering heartbeat — are easy to dismiss as stress, acidity, poor sleep, or simply "getting older."

Recognising these early warning signs, understanding who is most at risk, and knowing what modern cardiac care can offer are essential steps toward protecting long-term heart health.

Understanding Heart Disease

Heart disease is an umbrella term for a range of conditions affecting the heart and blood vessels, including:

- Coronary artery disease
- Heart attack
- Heart failure
- Arrhythmias (irregular heartbeats)
- Heart valve disorders
- Cardiomyopathy (disease of the heart muscle)
- Congenital heart defects

Some of these conditions develop gradually and remain silent for years, which is exactly why routine health

monitoring matters — particularly for people with known risk factors.

Early Warning Signs You Shouldn't Ignore

1. Chest Pain or Discomfort
This is the symptom most people associate with heart trouble, and for good reason. It may feel like pressure, tightness, heaviness, squeezing, or a burning sensation — not always sharp pain. It can occur during activity or at rest and may spread to the shoulder, arm, back, neck, jaw, or upper abdomen. Seek emergency care immediately if chest discomfort occurs alongside sweating, breathlessness, nausea, dizziness, or weakness.

2. Shortness of Breath
Breathlessness during routine activities, while climbing stairs, lying down, or even at rest can signal that the heart isn't pumping efficiently. This symptom sometimes appears before chest pain, making it an important early clue rather than one to brush aside.

3. Unusual or Persistent Fatigue
Feeling tired after a poor night's sleep is normal. Persistent exhaustion that doesn't improve with rest — especially when routine tasks suddenly feel difficult — is different. This is a particularly common but overlooked symptom in women.

4. Irregular or Rapid Heartbeat
Palpitations may feel like a racing heart, fluttering, skipped beats, or pounding. Occasional episodes may be harmless, but frequent or persistent palpitations — especially with dizziness, fainting, chest pain, or breathlessness — need evaluation.

5. Dizziness or Fainting
Sudden light-headedness or fainting can stem from low blood pressure, abnormal heart rhythms, or other causes. Repeated episodes, particularly alongside chest pain or palpitations, warrant prompt medical attention.

6. Swelling in the Legs and Feet
When the heart struggles to pump efficiently, fluid can accumulate in the lower limbs. Persistent swelling — especially combined with breathlessness or rapid weight gain — should be checked by a doctor.

7. Reduced Exercise Tolerance
A gradual decline in your ability to do things you once managed easily — walking short distances, climbing stairs, or completing daily chores — shouldn't automatically be blamed on age.

8. Excessive Sweating
Unexplained cold sweats, particularly paired with chest discomfort, nausea, or dizziness, can be a warning sign requiring urgent evaluation.

9. Nausea or Indigestion-Like Symptoms
Some cardiac events present with nausea, upper abdominal discomfort, or indigestion-like sensations rather than classic chest pain — a pattern more common in women and often mistaken for a stomach issue.

Heart Attack: Know the Signs

A heart attack occurs when blood flow to part of the heart muscle is severely restricted or blocked. It is a medical emergency. Warning signs include:

- Chest pressure or discomfort
- Pain spreading to the arm, shoulder, jaw, back, or neck
- Shortness of breath
- Cold sweating
- Nausea
- Dizziness
- Unusual weakness

Symptoms can vary between individuals — older adults and people with diabetes, in particular, may experience less typical presentations. If you suspect a heart attack, don't wait for symptoms to pass. Call for emergency help immediately, and never drive yourself to the hospital.

Who Is at Higher Risk?

Certain factors increase the likelihood of developing cardiovascular disease:

- High blood pressure – often produces no obvious symptoms, making regular monitoring essential
- Diabetes – damages blood vessels over time
- High cholesterol – contributes to plaque buildup in arteries
- Smoking – significantly damages blood vessels
- Obesity – linked to hypertension, diabetes, and abnormal cholesterol
- Physical inactivity – contributes to weight gain and poor cardiovascular fitness
- Family history – especially heart disease in close relatives at a younger age
- Age – risk increases over time, though younger adults are increasingly affected too





Notably, heart disease is no longer confined to older populations. Sedentary lifestyles, poor diets, chronic stress, and rising obesity rates mean younger adults are seeing cardiac events more often than in previous decades.

Advances in Modern Cardiac Diagnostics

Cardiac care has evolved considerably, offering doctors more precise tools to detect problems early:

1. Electrocardiogram (ECG) – records the heart's electrical activity to identify rhythm abnormalities
2. Echocardiography – uses ultrasound to assess heart chambers, valves, and pumping function
3. Stress testing – evaluates how the heart performs under physical exertion
4. Coronary angiography – assesses blood flow through the coronary arteries when blockage is suspected
5. Advanced imaging (CT/MRI) – provides detailed views of heart structure when needed
6. Blood tests – cardiac biomarkers, cholesterol, and blood sugar levels offer valuable risk insights

Emerging technology is also playing a growing role. Smartphone-based ECG devices and wearable sensors now allow some patients to track heart rhythm and share data with their doctors remotely, potentially catching abnormalities earlier than traditional check-ups alone.

Specialised Areas of Cardiac Care

Modern cardiology extends well beyond general check-ups:

- Electrophysiology focuses specifically on heart rhythm disorders such as atrial fibrillation, tachycardia, and bradycardia.
- Cardiothoracic surgery becomes necessary when medication or minimally invasive procedures aren't sufficient — covering conditions affecting the heart, lungs, and chest structures.
- Interventional procedures, such as angioplasty with stent placement, can restore blood flow through blocked arteries without major surgery.
- Cardiac rehabilitation programmes combine supervised exercise, nutrition guidance, and counselling to support recovery after a cardiac event.

HEART DISEASE OFTEN PROGRESSES QUIETLY, AND ITS EARLIEST SIGNALS — MILD CHEST DISCOMFORT, BREATHLESSNESS, FATIGUE, PALPITATIONS, OR SWELLING — ARE EASY TO EXPLAIN AWAY.

When to See a Cardiologist

You don't need to wait for symptoms to become severe. Consider a consultation if you experience:

- Recurrent chest discomfort
- Unexplained breathlessness
- Frequent palpitations
- Repeated dizziness or fainting
- Persistent swelling
- Reduced exercise tolerance
- A strong family history of heart disease
- Abnormal results from routine screening

Protecting Your Heart

Prevention remains one of the most powerful tools available:

- Eat heart-healthy — emphasise vegetables, fruits, whole grains, lean proteins, and limit salt, added sugar, and saturated fats
- Stay physically active — aim for regular activity such as walking, cycling, swimming, or yoga
- Avoid tobacco — smoking cessation is one of the single most effective steps for heart health
- Maintain a healthy weight
- Manage stress through relaxation techniques, exercise, and adequate sleep
- Get regular screenings for blood pressure, blood sugar, and cholesterol, particularly after age 35–40

Taking Heart Symptoms Seriously

Heart disease often progresses quietly, and its earliest signals — mild chest discomfort, breathlessness, fatigue, palpitations, or swelling — are easy to explain away. But these symptoms, when persistent, recurrent, or combined with other warning signs, deserve proper medical evaluation rather than assumption.

The encouraging reality is that modern cardiac care has never been better equipped to detect problems early and manage them effectively. Combining awareness of your body's signals with regular check-ups, healthy lifestyle choices, and timely consultation with a cardiologist gives you the best possible foundation for long-term heart health. The right time to pay attention to your heart is before a serious problem develops — not after.

THE AORTA: THE FINE LINE BETWEEN RISK AND RESCUE



INTERVIEW

DR. MOHAMMED IDHREES ON THE ART AND SCIENCE OF COMPLEX AORTIC SURGERY

Aortic surgery is among the most complex and high-stakes frontiers of cardiac care, where planning, precision, speed and teamwork can make the difference between life-threatening complications and successful recovery.

*In this exclusive conversation with Medical Tourism Today, **Dr. Mohammed Idhrees**, Cardiothoracic and Vascular Surgeon at SIMS Hospitals, Chennai, shares his insights on complex aortic disease, advances in surgery and endovascular treatment, personalised care, and India's growing role in advanced cardiac and aortic care.*

Q Dr. Mohammed, to begin with, what makes aortic surgery such a challenging area of cardiac surgery?

A Aortic surgery is, by its very nature, an extremely complex undertaking — there is hardly a procedure in this field that can truly be called simple. I like to compare an aortic surgeon to a plumber called out to repair a major pipeline supplying an entire hospital or neighbourhood: once the line is opened, there is only a limited window to finish the repair before the interruption starts to cause real harm downstream.

The same logic applies to the aorta. Once we open it and interrupt blood flow, we are temporarily reducing or stopping the supply to vital organs — the brain, kidneys, spinal cord, and intestines. We have a strict time limit in which to complete the repair and restore circulation, because even a technically flawless operation can lead to irreversible organ damage if that window is exceeded. This time pressure is one of the defining challenges of the specialty.

Q Are there particular types of patients or aortic conditions that make these operations even more difficult?

A The difficulty compounds in certain patients. Those with connective tissue disorders often have fragile tissue that does not hold sutures well, and elderly patients frequently have brittle, poor-quality aortic walls that make reconstruction more demanding. Extensive operations — the David procedure, the Bentall procedure, and thoracoabdominal aortic replacement — add another layer of complexity, sometimes requiring us to work through both the chest and abdomen to reach and replace large portions of the aorta.

Q How have advances in surgical techniques and technology changed what is possible for these high-risk patients?

A The field has advanced enormously. Refinements to techniques such as the David valve-sparing aortic root replacement, and major progress in aortic arch surgery through approaches like the Frozen Elephant Trunk (FET) procedure, have transformed what used to be extremely high-risk surgery.

Protecting the brain during arch reconstruction has always been one of our biggest challenges. Techniques such as antegrade cerebral perfusion now let us selectively maintain blood flow to the brain while the arch is opened and reconstructed, which has considerably improved the safety of these procedures. Newer hybrid prostheses and Frozen Elephant Trunk devices give surgeons sophisticated tools to treat extensive aortic disease in a single stage or in planned stages.

The critical point is that aortic disease can remain silent for a long time. Many patients have no symptoms at all until the aneurysm becomes very large or begins pressing on a neighbouring structure — and for some, the very first sign is a catastrophic event such as dissection or rupture.

So, while aortic surgery remains among the most technically demanding areas of cardiac surgery, better techniques, improved strategies for protecting the brain and other organs, and increasingly refined prostheses now let us safely treat patients who, not long ago, would have had very few options.

Q Every complex cardiac case requires careful planning before surgery. How do you evaluate a high-risk patient, and what role do advanced imaging, multidisciplinary expertise and personalised treatment planning play in deciding the best surgical approach?

A Every complex operation begins long before the patient enters the operating theatre — with careful evaluation, discussion, and preparation. Abraham Lincoln is often credited with saying that if he had six hours to chop down a tree, he would spend the first four sharpening the axe. That principle captures exactly how I think about aortic surgery.

It starts with the patient's history, and no detail is too small. A seemingly minor symptom or an apparently unrelated medical event can point to an important underlying condition or reshape our surgical strategy, so we take great care to document everything relevant.

The CT scan is just as critical, and I insist on personally reviewing the imaging rather than relying on the radiology report alone. We assess the entire aorta systematically — the extent of disease, the anatomy of the arch vessels, the relationship to nearby structures, the quality of the surgical "landing zones", and which strategies are actually feasible.

That assessment then goes to a multidisciplinary team meeting, where we discuss the clinical history, imaging, operative risks, and possible approaches — deciding not just what can be done, but what is best for that particular patient. Two people with the same disease pattern may need very different approaches, since age, comorbidities, prior surgery, anatomical variation, and tissue quality all shape the plan. In aortic surgery, there is rarely a one-size-fits-all solution.

Even with the best planning, we always expect the unexpected — the strategy we walk in with may need to change once we are in the operating theatre. That is why, alongside a clear primary plan, we always keep a Plan B, and sometimes a Plan C. That level of preparedness is only possible with an experienced, dedicated team in which every member understands the anatomy, the strategy, and their own role should something need to change.

Q Aortic disease and other serious cardiovascular conditions can

sometimes remain undetected until they become life-threatening. What symptoms or warning signs should people never ignore, and who should be particularly alert to their risk of developing aortic or cardiovascular disease?

A To understand the symptoms of aortic disease, we need to understand the anatomy of the aorta in the human body. Unlike an organ such as the thyroid, which is confined to the neck and quickly produces an obvious swelling when enlarged, the aorta travels through nearly the entire body — beginning at the heart, arching toward the head, then descending along the spinal vertebrae through the chest and abdomen before dividing into the arteries that supply the legs.

Along that long course, it sits close to several vital structures: it connects directly to the heart, gives rise to branches that supply the brain, runs near the nerves that control the voice, lies beside the lungs and airways, and eventually passes near several major abdominal organs. That is why symptoms of aortic disease vary so widely, depending on exactly where the problem is and what it happens to compress.

An aneurysm near the aortic root, close to the heart, may cause chest pain or breathlessness. One involving the aortic arch can affect the nerves supplying the vocal cords and cause hoarseness of voice. Compression of the oesophagus can cause difficulty swallowing, while compression of the airway can cause breathlessness. Disease in the descending thoracic aorta can trigger a persistent cough or back pain when structures around the spine are affected. When the abdominal aorta is involved, abdominal pain is often the presenting symptom.

The critical point, however, is that aortic disease can remain silent for a long time. Many patients have no symptoms at all until the aneurysm becomes very large or begins pressing on a neighbouring structure — and for some, the very first sign is a catastrophic event such as dissection or rupture.

Some risk factors are modifiable: smoking and uncontrolled hypertension are the two most important, and addressing them meaningfully lowers risk. Others are not — age, certain patterns of atherosclerosis, connective tissue disorders, and genetic or family history. We cannot change these, but recognising them helps us identify who needs closer surveillance.

The essential message is that the absence of symptoms does not mean the absence of disease. Because the aorta runs through such a large and vital part of the body, its disease can present in many different ways, or not present at all until it is advanced. Understanding risk factors, watching for unusual symptoms, and identifying high-risk individuals early are what ultimately prevent catastrophic aortic events.



DR. A. MOHAMMED IDHREES

Dr. A. Mohammed Idhrees is a distinguished Cardiothoracic and Vascular Surgeon at SIMS Hospitals, Chennai. Trained at leading institutions including Sree Chitra Tirunal Institute for Medical Sciences and Technology, Thiruvananthapuram, and PSG Institute of Medical Sciences, Coimbatore, he specialises in complex cardiac, aortic and vascular surgery, with particular expertise in Bentall and David procedures, aortic arch and thoracoabdominal surgery, Frozen Elephant Trunk and redo aortic surgery.

An accomplished academician and researcher, Dr. Idhrees is the first Indian cardiac surgeon to complete a PhD from a foreign nation. He has authored 136+ national and international publications, with an H-index of 16 and more than 800 citations. He has also contributed six innovative surgical techniques and proposed a new embryological concept in congenital heart disease. He serves as Assistant Editor and Section Editor for Aorta at the *Indian Journal of Thoracic and Cardiovascular Surgery* and as Academic Editor for the *Journal of Cardiac Surgery.*

Q High blood pressure, smoking, obesity, family history, age and certain genetic conditions can influence cardiovascular and aortic health. Which risk factors concern you most, and what practical steps can people take to reduce their risk and protect their heart and blood vessels?

A Of all the risk factors linked to aortic disease, two concern me most because they are common, significant, and modifiable.

The first is hypertension. High blood pressure is one of the most important drivers of aortic dissection: the higher the pressure, the greater the mechanical stress placed on the aortic wall. In a patient who already has an aneurysm, uncontrolled hypertension can accelerate its growth and raise the risk of dissection or rupture. That is why controlling blood pressure is always our first priority once a patient with an aneurysm comes under our care — it is one of the simplest and most effective ways to slow the disease and prevent catastrophic complications.

The second is smoking. Anyone diagnosed with an aortic aneurysm who continues to smoke should be strongly advised to stop immediately. Smoking damages blood vessels and accelerates aneurysmal disease, and the risk becomes even more concerning when it coexists with uncontrolled hypertension.

Beyond these two, screening has an important role. Depending on the location involved, CT imaging or abdominal ultrasound helps us track an aneurysm's size and growth and tells us when intervention may be needed. For patients with known aneurysms or connective tissue disorders, I would add one further precaution: avoid heavy isometric weightlifting. Straining against resistance can raise blood pressure sharply, placing sudden additional stress on an already weakened aortic wall and, in susceptible patients, contributing to further dilatation or even dissection.

So, the message for anyone living with an aortic aneurysm is simple: control your blood pressure, stop smoking, keep up with imaging surveillance, and avoid activities that cause sudden, extreme spikes in blood pressure. These may sound like modest measures, but in aortic disease, they can make a profound difference.



Q When a patient is diagnosed with an aortic aneurysm or another major cardiovascular condition, surgery is not necessarily the immediate answer. How do you determine whether a patient needs surgery, can be safely monitored, or may benefit from a less invasive or endovascular approach?

A Treatment for an aortic aneurysm generally falls into three categories — medical management, open surgery, and endovascular repair — and the right choice depends on the aneurysm's location and size, the patient's clinical condition, the underlying pathology, how quickly it is growing, and the patient's overall risk profile.

If an aneurysm has not reached the threshold for intervention and shows no high-risk features, we manage it with strict blood pressure control and regular imaging, typically every six to twelve months depending on its location.

Open surgical repair generally comes into consideration once an ascending aortic aneurysm reaches around 5.5 cm, although the exact threshold varies with the underlying disease. In patients with a strong family history, a known genetic or connective tissue disorder, rapid growth, or other high-risk features, we may intervene earlier — sometimes at 5 cm or even smaller, depending on the condition.

Endovascular treatment is the third option, and it is particularly valuable for selected aneurysms of the descending thoracic aorta. Rather than opening the chest, we thread a stent graft through the femoral or iliac arteries and exclude the aneurysm from within the aorta — a procedure known as Thoracic Endovascular Aortic Repair, or TEVAR.

There is no single treatment that suits every aneurysm: anatomy dictates the procedure, pathology dictates the strategy, and the patient's clinical condition determines how aggressively we need to act. Our goal is always to identify, before the aneurysm progresses to dissection or rupture, who can be safely monitored, who needs open surgery, and who is best served by an endovascular approach.

Q Looking ahead to the next five years, what breakthrough in cardiac and aortic surgery do you believe could be the next game-changer, and how could it transform the treatment of patients with complex heart conditions?

A Several developments in aortic surgery excite me, and a few are particularly relevant to Indian patients. I recently completed a PhD at the University of Amsterdam studying aortic dimensions specifically in the Indian population, which raised an important question: are the size thresholds we currently use for intervention, commonly around 5.5 cm for ascending aortic aneurysms, really appropriate for every population?

Indian men and women are, on average, smaller in stature than many Western populations, and my research found that Indian aortic dimensions tend to be smaller too, by roughly three to four millimetres across several segments. If we simply wait for an Indian patient to reach the same absolute diameter of 5.5 cm before considering intervention, we may effectively be allowing the aorta to become disproportionately enlarged for that individual.

I like to explain this with an analogy: imagine a 100-metre race in which one runner starts several metres behind the line, yet both are expected to finish at the same point — the runner who starts behind is already at a disadvantage. A smaller person, with a smaller baseline aortic size, held to the same absolute 5.5 cm cut-off used for someone larger, may be exposed to proportionally greater aortic enlargement before we intervene.

This is why I have proposed incorporating an "aortic index" — a measurement that relates aortic size to an individual's body size — into future guidelines, alongside absolute diameter, to make intervention thresholds more patient-specific. It is a concept that still needs validation through larger, longer-term studies, but I believe population-specific and indexed thresholds will become increasingly relevant.

There is real progress on the technology side as well. Indigenous, Indian-made vascular grafts and prostheses could meaningfully lower the cost of complex aortic surgery and make it accessible to far more patients, while sophisticated prostheses that were once

difficult to obtain are becoming more widely available. Patient-specific, fenestrated graft technology — custom devices built to an individual's exact anatomy — used to take a long time to manufacture; improving technology and availability are now narrowing the gap between diagnosis and treatment.

So, the future of aortic surgery is not just about better operations. It is about understanding our own population better, personalising thresholds, building indigenous technology, and getting advanced treatment to patients faster and more affordably.

Q For patients undergoing major cardiac or aortic surgery, recovery is an important part of treatment. What does the recovery journey typically involve, and when can patients expect to return to work, exercise, travel and normal daily activities? What lifestyle changes are essential for protecting their long-term cardiovascular health?

A Recovery depends on how complex the procedure was, the patient's overall health, and the extent of the aortic disease. Most major aortic procedures involve a hospital stay of about seven to ten days: roughly seven days after a Bentall procedure, around eight after a Frozen Elephant Trunk procedure, and ten to fourteen days for more extensive surgery such as thoracoabdominal aortic replacement.

Once home, recovery continues gradually. The breastbone typically takes six to eight weeks to heal fully after a median sternotomy, so heavy lifting and strenuous activity are restricted during that period. Many patients return to light or office-based work and driving around the six-to-eight-week mark, and by roughly three months, most people are back to their normal routine. Air travel is generally possible from around six to eight weeks onward, provided the patient is clinically stable. For international patients, we usually recommend staying locally for about two to three weeks after surgery so we can manage early recovery and follow-up before they travel home, after which their local physicians can take over ongoing care.

Surgery, though, is only one part of the picture — long-term lifestyle change and surveillance matter just as much. Quitting smoking completely is the single most important change a patient can make; continuing to smoke keeps exposing the cardiovascular system and the aorta to significant risk. Patients who receive a mechanical valve as part of a Bentall procedure need lifelong anticoagulation with regular monitoring, tailored to their specific valve and circumstances.

Taken together, world-class expertise, advanced infrastructure, growing indigenous technology, cost-effectiveness, genuine hospitality, dedicated international patient support, and strong global connectivity make India an increasingly compelling destination for complex cardiac and aortic care.

Ongoing aortic surveillance is essential too. Even after a successful operation, the remaining segments of the aorta can continue to enlarge or develop new disease, so periodic imaging and clinical review remain necessary. Patients should also stay cautious about moderate-to-heavy static or isometric exercise and heavy weightlifting, since these can cause sudden blood pressure spikes that place extra stress on the aortic wall.

So, the message after aortic surgery is not simply, "the surgery is over." It is the start of a lifelong partnership between the patient and the care team, built on regular surveillance, sensible lifestyle choices, and careful attention to blood pressure and physical activity.

Q A major cardiac operation is a life-changing decision. When would you recommend that a patient seek a second opinion, and what medical records, scans and test reports should patients — particularly those travelling from overseas — share with the treating team before coming to India?

A Cardiac surgery is a life-changing decision, and in many situations, a second opinion is genuinely worthwhile. Being advised to have major surgery does not always mean surgery is the only option — a careful reassessment can sometimes change the whole strategy. I have seen patients initially advised to undergo very major procedures, including transplantation, who, after further evaluation, instead underwent a more appropriate operation such as CABG and are doing well years later. I have also seen patients initially told they needed surgery who, after closer evaluation, were managed medically instead and have remained stable for years without an operation; whether they will eventually need one is something continued surveillance will tell us.

This is especially relevant in aortic surgery. Patients advised to undergo complex redo surgery, aortic arch surgery, or procedures where the native aortic valve might potentially be preserved can benefit from a second opinion from an experienced aortic surgeon or a high-volume aortic centre.

For that second opinion to be useful, the specialist needs complete information. For aortic disease, that means the original DICOM files of the CT angiogram — a printed image on a single sheet of paper is rarely enough for detailed surgical planning, since the surgeon needs to review the anatomy in multiple planes across the entire aorta and its branches. A recent echocardiogram, including the actual imaging or video footage rather than just the written report, is equally valuable, along with a detailed clinical summary, previous operative records where applicable, current medications, and relevant blood investigations.

A second opinion is not about doubting the first surgeon; it is about making

the most informed decision when the stakes are this high. In complex cardiac and aortic surgery, where one decision can shape the rest of a patient's life, taking the time to gather the right information and, where appropriate, consult an experienced high-volume centre can make a genuine difference.

Q For complex cardiac and aortic procedures, the expertise of the surgical team and the hospital's supporting infrastructure can be critical. What should patients and families look for when choosing a hospital and surgeon? How important are multidisciplinary care, advanced imaging, cardiac anaesthesia, perfusion, intensive care and interventional expertise?

A Aortic surgery is always a team effort — I often say there is no "I" in aortic surgery, only "we." In this field, time is the aorta: every minute matters once the operation begins, and how well the whole team coordinates determines how efficiently we complete the repair and restore blood flow to vital organs.

That teamwork starts well before the patient reaches the operating theatre, involving the diagnostic radiologist interpreting the imaging, the interventional radiologist if an endovascular approach is needed, and the full cardiac surgical team. Inside the theatre, it extends to surgeons, surgical assistants, anaesthetists, perfusionists, scrub nurses, theatre staff, and the intensive care team. Every person has a specific role, and nothing in aortic surgery happens in isolation; it demands constant communication, anticipation, and coordination.

This kind of coordination develops most reliably in high-volume aortic centres, where teams regularly manage complex pathology and are prepared for both routine and unexpected situations. Experience from high-volume centres in the UK, North America, and elsewhere consistently shows that complex aortic procedures tend to have better outcomes when performed by experienced teams at centres that handle a high volume of this work, compared with centres performing only a handful of aortic operations each year.

This matters because the wrong procedure can become the start of a new problem — an inappropriate strategy or inadequate treatment of the underlying pathology can lead to repeat interventions and lasting complications. So, when choosing where to have aortic surgery, patients should look beyond simply finding a hospital that offers the operation, and instead look for a high-volume aortic centre with an experienced surgeon, a dedicated multidisciplinary team, the right technology and infrastructure, and round-the-clock surgical and critical-care coverage.



In a disease this complex and time-sensitive, the right centre and team make a profound difference: in aortic surgery, expertise is not an individual achievement, it is a team capability.

Q India is increasingly becoming a destination for international patients seeking complex cardiac treatment. What strengths does India offer in advanced cardiac and aortic surgery, and what advice would you give international patients and their families when considering India for treatment?

A India today offers world-class treatment in cardiac and aortic surgery, particularly at established centres of excellence, where patients can access sophisticated surgical techniques, advanced critical care, and outcomes comparable with leading centres in the West. The infrastructure needed for complex aortic surgery, including advanced imaging, hybrid operating rooms, sophisticated perfusion systems, intensive care facilities, and modern surgical and endovascular technology, is now well established here.

One growing advantage is the increasing availability of indigenous medical technology and locally manufactured prostheses. As more Indian-made grafts and devices reach the market, the cost of complex procedures has real potential to fall while maintaining high standards, making advanced aortic surgery more accessible not only to Indian patients but to those travelling from abroad as well.

India also offers something beyond medicine: genuine hospitality and patient support. International patients need more than treatment alone — they need help with travel, accommodation, communication, and family support, and many Indian hospitals now have dedicated international patient services to help manage that journey smoothly. And, of course, there is the food: India's regional cuisines offer enormous variety, which makes a real difference to comfort during a long stay. Strong international connectivity is another advantage, with cities such as Chennai well linked to much of the world, making the journey to a specialist centre, and back home again afterwards, considerably easier.

Taken together, world-class expertise, advanced infrastructure, growing indigenous technology, cost-effectiveness, genuine hospitality, dedicated international patient support, and strong global connectivity make India an increasingly compelling destination for complex cardiac and aortic care.

For international patients, the message is simple: you can come to India not only for world-class surgery, but for a complete, well-supported medical journey.

INTERVIEW

PIONEERING THE FUTURE OF PATIENT-CENTRIC HEALTHCARE

MR. RISHABH GUPTA ON AI-DRIVEN HEALTHCARE, CLINICAL EXCELLENCE, AND MAKING ADVANCED TREATMENT MORE ACCESSIBLE

In this exclusive interview with Medical Tourism Today, ***Mr. Rishabh Gupta****, Managing Director, ShardaCare - Healthcity, shares his vision for building a future-ready healthcare ecosystem driven by clinical excellence, digital innovation and patient-centric care. He discusses the strategic priorities shaping ShardaCare - Healthcity's growth, the role of AI in transforming healthcare delivery, and the opportunities to strengthen India's position as a global healthcare destination.*



Q Mr. Gupta, as a healthcare business leader, what is one leadership principle you consider non-negotiable when making decisions that directly affect patients, doctors and the long-term sustainability of a healthcare organisation?

A Every decision we make must ultimately translate into better patient outcomes. For us, long-term business sustainability and quality of patient care are not competing priorities; they are fundamentally interconnected. Every decision should strengthen clinical excellence, empower doctors and healthcare professionals, improve patient safety and the patient experience, and create long-term value for the organisation. I also believe leadership requires creating a culture where innovation and technology support people in making better, faster and more informed decisions, without losing the human element of healthcare.

Q ShardaCare - Healthcity has been strengthening its presence in the healthcare sector. What is the larger business ambition for ShardaCare - Healthcity, and what would you like the organisation to be known for in the Indian healthcare market over the next three to five years?

A Our ambition is to build ShardaCare - Healthcity as a future-ready healthcare ecosystem that brings together advanced clinical expertise, technology, innovation, research and patient-centred care. Over the next three to five years, I would like ShardaCare - Healthcity to be recognised for delivering intelligent, connected and personalised healthcare, where technology is meaningfully integrated into the patient journey. More importantly, we want to build an institution where innovation is not an initiative but part of the organisational culture, with a clear focus on measurable value for patients, clinicians and the wider community.

Q As competition intensifies, what will be the defining differentiators for ShardaCare - Healthcity, and how do you plan to build a distinctive and sustainable position in the market?

A Our differentiation will come from the integration of four key elements: clinical excellence, meaningful technology adoption, patient experience and a culture of continuous innovation. We do not see technology as an end in itself. Its real value lies in helping clinicians make better decisions, improving accuracy and patient safety, enabling more personalised care and creating a more seamless healthcare journey. Building a sustainable position will therefore require us to continuously invest in people, technology, infrastructure and innovation while remaining firmly focused on patient outcomes.

Q How are digital health, AI and emerging healthcare technologies shaping ShardaCare - Healthcity's approach to clinical care, operational efficiency and patient experience?

A Technology is increasingly becoming the foundation of modern healthcare delivery. At ShardaCare - Healthcity, our focus is on using AI, data analytics, digital health platforms and intelligent systems to support faster and more informed clinical decision-making, improve operational efficiency and strengthen patient engagement. We also see significant potential in predictive healthcare, where data can help identify risks earlier and enable intervention before a condition becomes more serious. At the same time, our philosophy is clear: "Technology should empower doctors, not replace them." The combination of clinical judgement and technological intelligence can ultimately deliver safer, more personalised and connected care.

Q What is ShardaCare - Healthcity's strategy for expanding its international patient services, and what will make a patient from Africa, the Middle East, Central Asia or other international markets choose ShardaCare - Healthcity over other established national hospital chains?

A For international patients, our focus is to offer not just advanced clinical care but also a seamless and comfortable healthcare journey from the first consultation to treatment and follow-up. At ShardaCare - Healthcity, we provide dedicated support for international patients, technology-enabled consultations and virtual follow-ups, assistance for patients and their families, and services that take cultural preferences into account, including cuisine options suited to different countries and regions. Our approach is to combine clinical expertise, personalised care, transparency and cultural sensitivity so that patients from Africa, the Middle East, Central Asia and other markets feel confident, comfortable and well supported throughout their treatment journey. We believe this integrated, patient-centric experience is what will differentiate ShardaCare - Healthcity from other established hospital chains.

Q Finally, as you lead ShardaCare - Healthcity through its next phase, what is the one question about the future of healthcare that keeps you awake at night, and why do you believe the industry needs to start addressing it now?

A The question I keep coming back to is: How do we make advanced healthcare more accessible without compromising on quality? Healthcare is becoming increasingly sophisticated, but the real measure of progress will be how effectively these advancements reach people and improve outcomes. We need to move beyond a predominantly reactive model of healthcare towards one that is more predictive and preventive. Technology, data and connected healthcare platforms give us an opportunity to identify risks earlier, improve continuity of care and make healthcare more accessible. The industry needs to start addressing this now because the future of healthcare should not only be more advanced but also more accessible, personalised and human.

RAPID FIRE

Q ShardaCare - Healthcity in three words?

A Intelligent. Connected. Compassionate.

A Your proudest ShardaCare - Healthcity milestone so far?

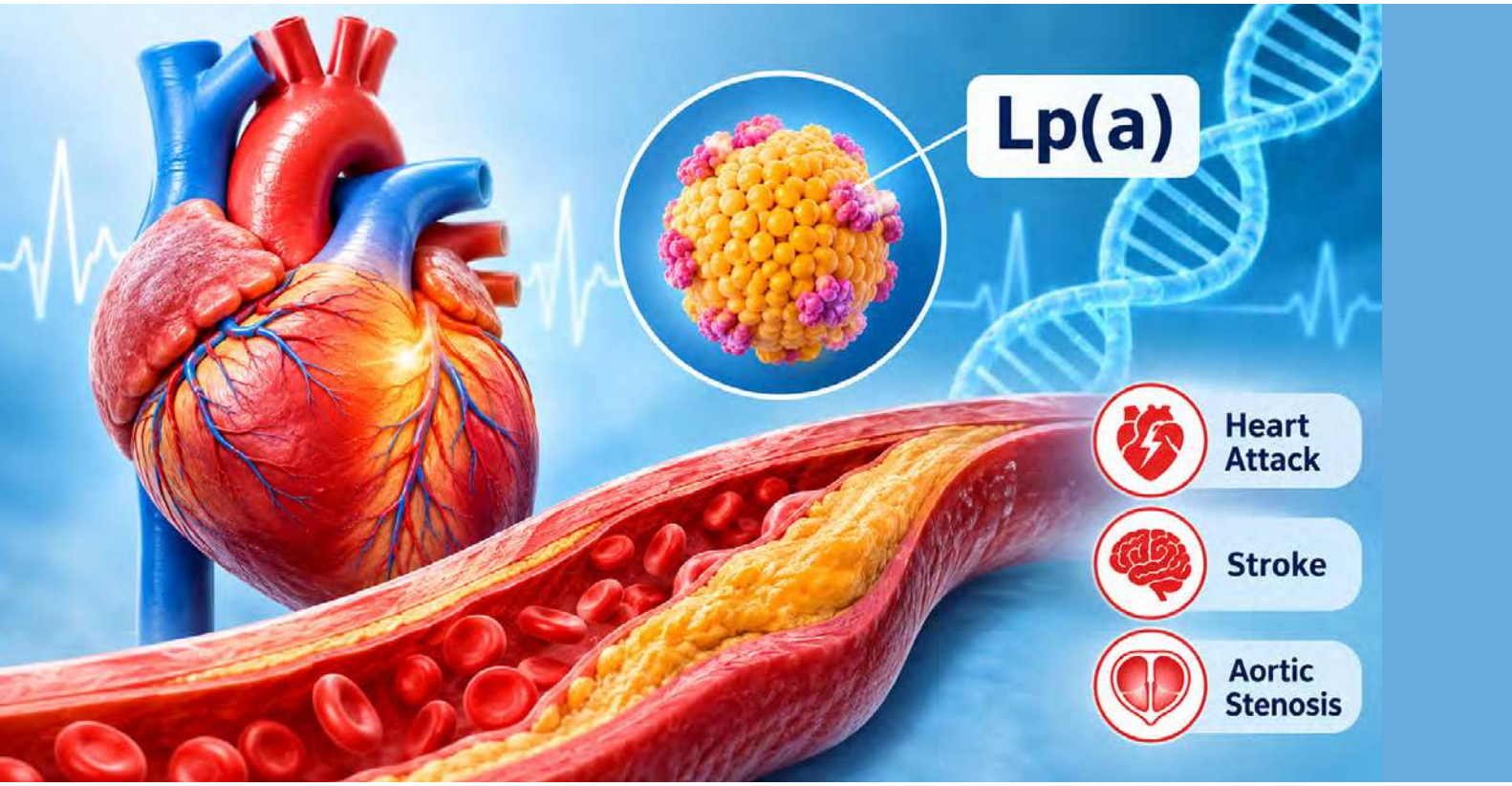
A Building a future-ready ecosystem.

Q Your biggest leadership lesson?

A Keep patients at the centre.

Q One bold change you want to see in healthcare?

A From treatment to prevention.



THE HIDDEN HEART RISK IN YOUR GENES:

MEET LIPOPROTEIN (A)

One simple blood test can uncover an inherited cardiovascular risk that may remain hidden for decades



Dr. Nithin V. Adithiyaa
Consultant Interventional Cardiologist,
Dr. Mehta Hospitals, Chennai

When we think about heart disease, we usually think of cholesterol, diabetes, high blood pressure, smoking, obesity and lack of exercise.

But there is another important risk factor that many people have never heard of, Lipoprotein(a), or Lp(a), pronounced "lipoprotein little-a."

It is a cholesterol-carrying particle in the blood, but unlike ordinary cholesterol, its level is determined predominantly by our genes. This means that a person can eat well, exercise regularly, maintain a healthy weight and still carry an increased inherited risk of cardiovascular disease.

What makes Lp(a) different?

Lp(a) is an LDL-like cholesterol particle with an additional protein called apolipoprotein(a) attached to it.

This extra protein makes Lp(a) biologically different from ordinary LDL.

It can contribute to cholesterol deposition in the artery wall and inflammation, while its apo(a) component has properties that may also influence clot breakdown. Lp(a) is also a major carrier of oxidised phospholipids, molecules capable of triggering inflammation in blood vessels and heart valves.

So, Lp(a) is not simply "another form of bad cholesterol."

It is a particle with atherogenic, inflammatory and pro-calcific properties.

How does Lp(a) damage the heart and blood vessels?

Lp(a) can enter and become retained within the walls of arteries, where its cholesterol contributes to plaque formation. At the same time, the oxidised phospholipids carried by Lp(a) can trigger inflammation, attracting immune cells and promoting the development of cholesterol-rich plaques.

Over time, these plaques can enlarge and become unstable. If a vulnerable plaque ruptures, a blood clot can form and suddenly block the artery, potentially causing a heart attack or ischaemic stroke.

This is why high Lp(a) is strongly associated with coronary artery disease and premature heart attack, as well as ischaemic stroke, particularly stroke related to large-artery atherosclerosis, such as carotid disease.

But Lp(a) does not affect only the arteries.

It is also associated with calcific aortic-valve disease. Lp(a), particularly its oxidised phospholipid content, can promote inflammation within the aortic valve and stimulate valve cells to develop an abnormal bone-forming behaviour. Over many years, this can lead to calcium deposition, progressive valve narrowing and eventually aortic stenosis.

In simple terms:

Lp(a) contributes to cholesterol deposition and inflammation, which can lead to artery disease, heart attack or stroke.

and

Lp(a) can promote valve inflammation and calcification, which may lead to aortic stenosis.

The risk is written in your genes

Lp(a) is predominantly determined by the LPA gene.

Unlike blood sugar, triglycerides or body weight, its level does not change substantially simply because you change your diet or start exercising.

In fact, two people can have almost identical lifestyles but very different Lp(a) levels because their genes are different.

This is particularly important for Indians and other South Asians, who already have a high burden of premature cardiovascular disease.

Should you get tested?

Increasingly, the answer is yes, at least once during adulthood.

The 2025 ESC/EAS dyslipidaemia update recommends considering Lp(a) measurement at least once in every adult's lifetime. It considers Lp(a) above approximately 50 mg/dL or 105 nmol/L a cardiovascular risk-enhancing factor.

Testing is especially useful in people with:

- Heart attack or coronary disease at a young age
- A family history of premature heart disease
- Unexplained cardiovascular disease despite apparently normal cholesterol
- Suspected familial hypercholesterolaemia
- Recurrent cardiovascular events

Because Lp(a) is inherited, a high result in one family member may also be a reason for close relatives to discuss testing with their doctor.

Can diet and exercise reduce Lp(a)?

Unfortunately, not substantially.

But this does not make lifestyle unimportant.

Quite the opposite.

If someone has high Lp(a), controlling the other risk factors becomes

IF YOU HAVE A HIGH LP(A) LEVEL, PREMATURE HEART DISEASE, A STRONG FAMILY HISTORY OF EARLY HEART ATTACKS OR STROKES, OR QUESTIONS ABOUT WHETHER YOU SHOULD BE TESTED, CONSULT A CARDIOLOGIST TO DISCUSS YOUR LP(A) LEVEL AND YOUR OVERALL CARDIOVASCULAR RISK



even more important. Regular exercise, a healthy diet, maintaining a healthy weight, controlling diabetes and blood pressure, and completely avoiding tobacco remain essential.

You may not be able to change your Lp(a) significantly but you can dramatically change your overall cardiovascular risk.

What about statins?

This is an important point.

Statins are the foundation of cholesterol-lowering treatment for appropriate patients.

They substantially reduce LDL cholesterol and have strong evidence for preventing heart attacks and strokes. However, statins generally have little effect on Lp(a), and Lp(a) may rise slightly in some patients.

Therefore, a person with high Lp(a) should not stop a statin.

Instead, the focus should be on achieving appropriate LDL-C control and managing all other cardiovascular risk factors.



Where do PCSK9 inhibitors fit in?

When LDL cholesterol remains above the desired level despite maximally tolerated statin therapy, doctors may add another powerful class of medicines called PCSK9 inhibitors in appropriate high-risk patients.

Two commonly used PCSK9 inhibitors are evolocumab and alirocumab.

They work mainly by increasing the availability of LDL receptors on liver cells. This allows the liver to remove more LDL particles from the bloodstream, producing a substantial additional reduction in LDL cholesterol.

But PCSK9 inhibitors have another interesting effect:

They also lower Lp(a).

Studies generally show that PCSK9 inhibitors reduce Lp(a) by approximately 20–30%, although the response varies between individuals.

This is an additional benefit, but an important distinction must be made:

PCSK9 inhibitors are primarily prescribed to achieve further LDL-C reduction and cardiovascular risk reduction, not simply because someone has a high Lp(a).

Their ability to lower Lp(a) is an added benefit.

Interestingly, patients with higher baseline Lp(a) have been shown to carry greater cardiovascular risk in major PCSK9 inhibitor trials, and treatment lowers both LDL cholesterol and Lp(a). However, it is still difficult to determine how much of the cardiovascular benefit comes specifically from lowering Lp(a), rather than from the much larger reduction in LDL cholesterol.

That is precisely why dedicated Lp(a)-lowering trials are so important.

The exciting new chapter: can we directly lower Lp(a)?

For years, doctors could identify high Lp(a) but had very limited ways to specifically reduce it.

That is now changing.

Scientists have developed a new generation of medicines that target the production or assembly of Lp(a) itself.

One approach uses antisense oligonucleotides, such as pelacarsen.

Another uses small interfering RNA, or siRNA, with drugs such as olpasiran and lepodisiran.

These therapies act much closer to the source of the problem—reducing the liver's production of apo(a), the protein that gives Lp(a) its unique identity.

The results from early trials have been remarkable. Depending on the drug and dose, some of these therapies have reduced Lp(a) by more than 80–90%.2

But here comes the billion-dollar question

We already know:

High Lp(a) is associated with cardiovascular disease.

We know:

Genetic studies strongly support a causal relationship.

We know:

PCSK9 inhibitors can modestly lower Lp(a).

And we now know:

New RNA-based medicines can lower Lp(a) dramatically.

But there is one question that still needs a definitive answer:

If we lower Lp(a), will we actually prevent heart attacks and strokes?

That is what the large Phase 3 outcome trials are designed to determine.

The HORIZON trial is testing pelacarsen in people with established cardiovascular disease and elevated Lp(a).

The OCEAN(a)-Outcomes trial is testing whether olpasiran can reduce major coronary events.

The ACCLAIM-Lp(a) trial is testing whether lepodisiran can reduce major cardiovascular events in people with elevated Lp(a).

Another promising approach is muvalaplin, an oral small-molecule drug that interferes with the formation of the Lp(a) particle. Its development represents an exciting possibility: a future Lp(a)-lowering treatment that could potentially be taken as a tablet.

The significance of these trials goes

A SIMPLE BLOOD TEST CAN UNCOVER THIS INHERITED RISK. ONCE IDENTIFIED, WE CAN TAKE A MORE INFORMED APPROACH TO PREVENTION: CONTROL THE RISKS THAT CAN BE CHANGED, IDENTIFY FAMILY MEMBERS WHO MAY ALSO BE AT RISK, AND USE THE BEST AVAILABLE TREATMENTS.

beyond simply achieving a better blood-test result.

Lowering a biomarker is not the same as proving that patients have fewer heart attacks, strokes or cardiovascular deaths.

That is why these outcome trials are so important.

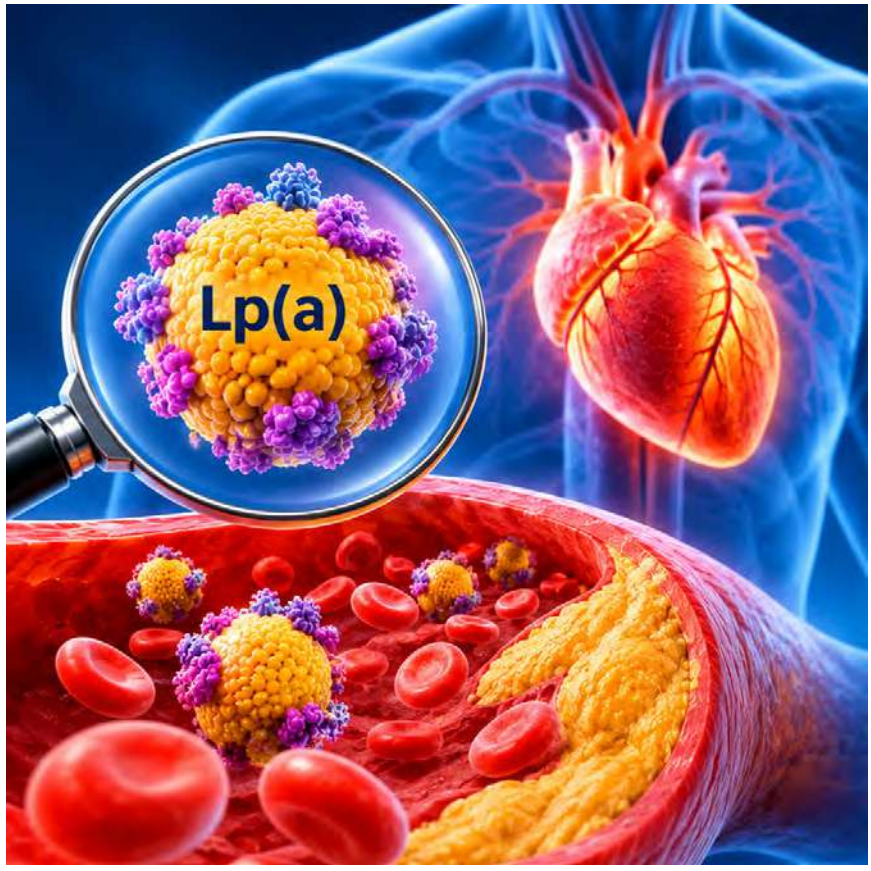
Why this could change preventive cardiology

If these trials demonstrate that lowering Lp(a) reduces cardiovascular events, it could represent a major breakthrough.

For the first time, we may have a treatment specifically targeting a cardiovascular risk factor that is largely inherited and cannot be substantially modified through lifestyle.

It could change the way we screen families, assess cardiovascular risk and prevent disease.

Until those outcome trials establish clinical benefit, however, dedicated Lp(a)-lowering medicines should be considered promising investigational therapies, rather than routine treatment simply for an elevated Lp(a) level. The current ESC/EAS guidance specifically notes that it has not yet been demonstrated that pharmacological Lp(a) reduction reduces ASCVD risk.



If your Lp(a) is high, don't panic

A high Lp(a) level does not mean that you have heart disease.

It does not mean that you will definitely have a heart attack.

It means that you carry an additional cardiovascular risk factor.

And knowing about that risk is valuable. If Lp(a) is high, the message should be:

Keep LDL cholesterol appropriately low. Control blood pressure. Control diabetes. Don't smoke. Exercise regularly. Maintain a healthy weight. Eat a heart-healthy diet. And discuss your overall cardiovascular risk with your doctor.

If you have a high Lp(a) level, premature heart disease, a strong family history of early heart attacks or strokes, or questions about whether you should be tested, consult a cardiologist to discuss your Lp(a) level and your overall cardiovascular risk. The significance of an elevated Lp(a) depends on the complete clinical picture, not on the number alone.

The message to remember

For decades, cardiovascular prevention has focused heavily on LDL cholesterol. Today, we know that the story is broader.

Lipoprotein(a) may be a hidden cardiovascular risk factor sitting quietly in your bloodstream for decades without symptoms and largely beyond your control.

A simple blood test can uncover this inherited risk. Once identified, we can take a more informed approach to prevention: control the risks that can be changed, identify family members who may also be at risk, and use the best available treatments.

And science is now moving one step further.

For the first time, medicines are being developed that can dramatically lower Lp(a) itself. The crucial question is whether this will translate into fewer heart attacks, strokes and cardiovascular deaths.

Know your Lp(a). Understand your risk. Protect your heart.

DR. PRADEEP POKHARNA ON ADVANCED HEART SURGERY, CABG, VALVE REPLACEMENT AND BETTER PATIENT OUTCOMES

INTERVIEW

*Advances in cardiac and thoracic surgery are expanding treatment options for patients with complex heart and lung conditions. However, achieving good surgical outcomes extends beyond the procedure itself, with long-term recovery and quality of life remaining equally important. In this conversation with Medical Tourism Today, **Dr. Pradeep Pokharna**, Senior Consultant – Cardiovascular and Thoracic Surgery at Kokilaben Dhirubhai Ambani Hospital, shares his insights on surgical decision-making, advanced treatment options, complication management and the factors that contribute to better patient outcomes.*

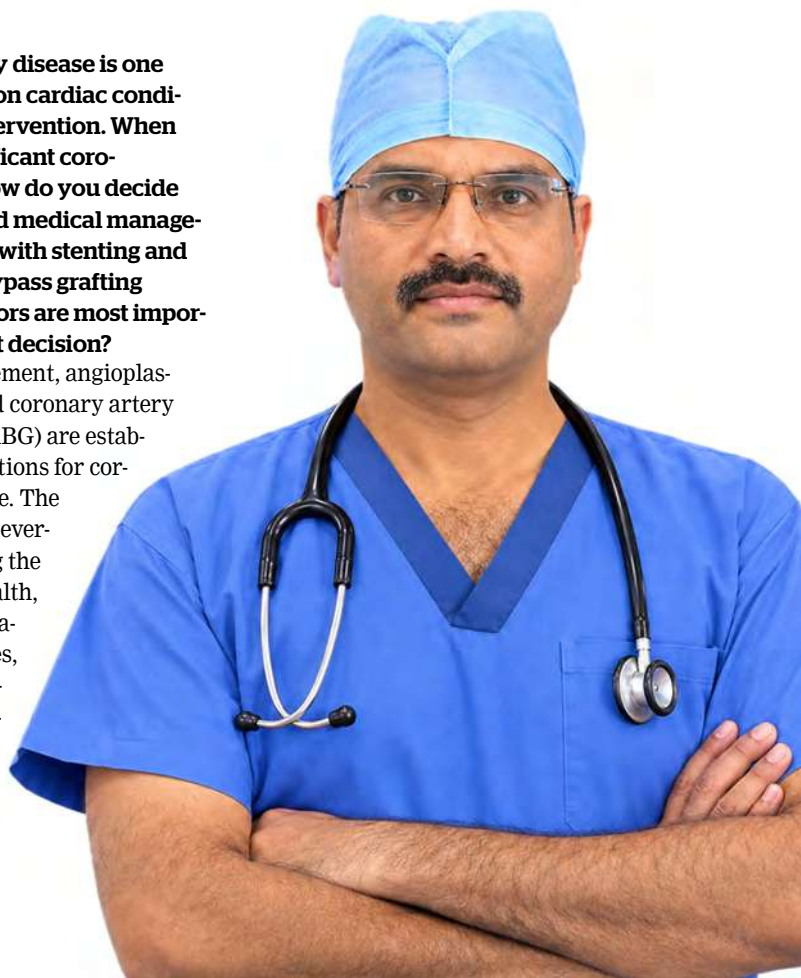
Q Dr. Pradeep, to begin on a personal note, what drew you to cardiothoracic and vascular surgery, and what continues to give you the greatest sense of fulfilment in your work after so many years in the specialty?

A During the early years of my training, I realised that cardiovascular diseases were increasing rapidly in India, largely due to changing lifestyles. Limited awareness and inadequate access to appropriate healthcare resources were also contributing to high mortality rates. I wanted to contribute to addressing these challenges and help improve patient outcomes.

Even after many years in this specialty, the greatest satisfaction I derive from my work is the opportunity to save lives. Being able to help patients overcome serious illnesses and return to their families and daily activities continues to be the most rewarding aspect of my profession.

Q Coronary artery disease is one of the most common cardiac conditions requiring intervention. When a patient has significant coronary blockages, how do you decide between continued medical management, angioplasty with stenting and coronary artery bypass grafting (CABG)? What factors are most important in making that decision?

A Medical management, angioplasty with stenting and coronary artery bypass grafting (CABG) are established treatment options for coronary artery disease. The choice depends on several factors, including the patient's overall health, the severity and location of the blockages, the number of coronary arteries affected, associated medical conditions and other individual



clinical considerations. The objective is to select the treatment that offers the best possible recovery and long-term outcome. We aim not only to treat the underlying cardiac condition but also to help patients return to their daily activities and maintain a good quality of life. Every treatment plan must therefore be tailored to the patient's specific condition and needs.

Q Valve disease can progress silently before patients develop significant symptoms. What should patients know about conditions such as aortic or mitral valve disease, and when does a diseased valve generally move from being monitored to requiring intervention?

A Many cardiac conditions, including aortic and mitral valve diseases, can progress gradually without noticeable symptoms in the early stages. Patients may initially experience mild or vague symptoms that they fail to recognise or tend to ignore. As the disease advances, symptoms such as breathlessness on exertion, chest pain, palpitations and fainting may develop.

Depending on the severity of the condition, patients in the early stages may be managed with medication and regular monitoring. However, when valve disease becomes severe, an intervention may be necessary. The decision depends on the severity of the valve abnormality, the patient's symptoms, heart function and other clinical findings. Timely evaluation and regular follow-up are essential to determine the appropriate course of treatment.

Q When valve replacement becomes necessary, how do you approach the choice between different types of replacement valves? How do factors such as the patient's age, lifestyle, expected valve durability and the need for long-term medication influence that decision?

A Artificial heart valves are broadly classified into two categories: mechanical valves and bioprosthetic or tissue valves. Both have advantages and limitations, and the choice depends on the patient's age, life expectancy, lifestyle, medical history and suitability for long-term anticoagulation therapy.

Mechanical valves are generally more durable and may be suitable for patients with a longer life expectancy who can safely take long-term anticoagulation medication. Tissue valves may be considered for patients in whom avoiding long-term anticoagulation specifically for the valve is an important consideration, depending on their overall clinical circumstances.

There is no single choice that is appropriate for every patient. The decision must be individualised after carefully weighing the benefits and limitations of each valve type. The patient's ability to follow medication instructions and attend regular follow-up appointments is also an important consideration.

Q Heart failure can eventually progress despite optimal medical treatment. How do you assess patients with advanced heart failure, and when do options such as LVAD support or heart transplantation become part of the treatment discussion?

A The number of patients living with chronic heart failure is increasing. Many can be managed effectively with lifestyle modifications and medication, while newer and more effective medicines have expanded the available treatment options. Regular follow-up, including cardiac imaging and blood tests, is important for assessing heart function and monitoring disease progression.

However, some patients continue to experience severe symptoms despite receiving the best available medical treatment. Difficulty performing everyday activities and recurrent hospitalisations due to heart failure may indicate that the condition is progressing and that advanced treatment options need to be considered.

In such cases, left ventricular assist device (LVAD) support or heart transplantation may become part of the treatment discussion. The decision depends on a comprehensive assessment of the patient's heart function, overall health, disease severity and suitability for these advanced therapies.

Q Atrial fibrillation is frequently encountered in patients with heart disease. How do you determine whether a patient can be managed with medication alone or may benefit from a procedural or surgical approach, particularly when the patient is undergoing another cardiac operation?

A Many patients with atrial fibrillation can be managed with medication, although the appropriate approach varies according to the individual case. When the heart rate is difficult to control, symptoms persist or complications arise, a procedural or surgical approach may need to be considered.

The decision depends on the patient's symptoms, the severity and pattern of the arrhythmia, associated cardiac conditions and response to medical treatment. When a patient is already undergoing cardiac surgery for another condition, we also assess whether an additional procedure to address atrial fibrillation would offer meaningful benefits.

Q Your expertise also encompasses thoracic and lung surgery. For conditions requiring procedures such as lobectomy, segmentectomy or pneumonectomy, how do you determine the appropriate extent of surgery while preserving as much healthy lung function as possible?

A In lung surgery, the objective is not simply to remove the diseased portion of the lung but also to preserve as much healthy lung tissue as possible. Maintaining lung function is important for helping patients recover well and enjoy a good quality of life after surgery.

To determine the appropriate extent of resection, we carefully evaluate the patient's clinical condition and review the imaging findings. Based on the location, nature and extent of the disease, we decide whether a segmentectomy, lobectomy or pneumonectomy is appropriate. Whenever clinically feasible, we

aim to preserve healthy lung tissue without compromising the effectiveness of treatment.

Q Patients and families are often particularly concerned about complications after major surgery. Which postoperative problems—such as abnormal heart rhythms, respiratory complications, infection or kidney dysfunction—require especially close monitoring, and how are they typically managed?

A Complications are a recognised possibility with any major surgical procedure. As surgeons, our responsibility is to plan each operation carefully, minimise avoidable risks and anticipate potential complications so that they can be managed promptly and effectively.

Before surgery, we assess the patient's clinical condition and identify factors that may increase the risk of postoperative complications. Following the procedure, our team closely monitors the patient's condition and vital signs to detect any problems at an early stage. Depending on the nature and severity of a complication, medical treatment, supportive care or further intervention may be required.

A coordinated team approach, vigilant monitoring and timely management are essential to supporting recovery and reducing the impact of postoperative complications.

Q Many cardiac patients take blood thinners, antiplatelet medicines or medications for diabetes and blood pressure. How should these medications be managed around the time of surgery, and what should patients understand about restarting them after an operation?

A Many cardiac patients have associated medical conditions, including diabetes, hypertension and thyroid disorders, that require ongoing treatment. Wherever appropriate, these medications may be continued during the perioperative period, with adjustments based on the patient's clinical condition and the requirements of the planned surgery. Blood thinners and antiplatelet medications require particular care because their management involves balancing the risk of bleeding against the risk of blood clot formation. Decisions about whether to continue, temporarily stop or modify these medicines depend on the specific medication, the underlying condition and the type of surgery. In selected patients, a temporary alternative anticoagulation strategy may be considered under medical supervision.

After surgery, medications are restarted at an appropriate time based on the patient's recovery and the balance between bleeding and clotting risks. Patients should follow their treating team's instructions carefully and should never stop or restart these medicines on their own.

Q Finally, beyond whether an operation was technically successful, how should the success of cardiac or thoracic surgery be measured? How important are long-term outcomes such as quality of life, heart or lung function, freedom from repeat procedures and the patient's ability to return to normal activities?

A The true success of a cardiothoracic surgeon's work is reflected in the patient's long-term outcomes. When patients remain in good health for many years after surgery, maintain satisfactory heart or lung function and enjoy a good quality of life, we consider the treatment successful.

Technical success during the operation is important, but it is only one part of the overall outcome. Our ultimate goal is to help patients return to their normal personal and professional activities, maintain their independence and enjoy a healthy life. Long-term follow-up helps us assess their recovery and identify any issues that may require further attention.

When patients are able to resume their everyday lives and remain well over the years, we feel that our work has made a meaningful contribution to society.



DR. PRADEEP POKHARNA

Dr. Pradeep Pokharna is a Senior Consultant in Cardio Vascular & Thoracic Surgery at Kokilaben Dhirubhai Ambani Hospital, Indore. With 16 years of experience in cardiothoracic and vascular surgery, he has worked at several national and international centres and has performed approximately 3,000 minimally invasive and conventional cardiac surgeries.

His areas of expertise include minimally invasive cardiac surgery, coronary artery bypass grafting, valve replacement, congenital heart defect surgery, heart transplantation, left ventricular assist devices, extracorporeal membrane oxygenation, thoracic and lung surgery, and vascular surgery.

Dr. Pokharna completed his MBBS from Netaji Subhash Chandra Bose Medical College, Jabalpur, in 2005, followed by an MS in General Surgery from MGM Medical College, Indore, in 2008, and an MCh in Cardiothoracic and Vascular Surgery from SMS Medical College, Jaipur, in 2012. He has undertaken specialised training in heart transplantation at Fortis Malar Hospital, Chennai, and minimally invasive cardiac surgery at Leipzig Heart Center, Germany. His professional experience includes roles at CHL Group of Hospitals in Indore and Ujjain, Mittal Hospital in Ajmer, and Bombay Hospital.

Dr. Pokharna is a member of the Indian Association of Cardiothoracic and Vascular Surgeons, the Society of Minimally Invasive Cardiothoracic Surgery, and the Cardiological Society of India.

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WOMEN AND HEART DISEASE: Understanding the Risks and Prevention



Dr. Laxman Gaikwad
Consultant Interventional Cardiologist,
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Often hidden behind everyday fatigue, stress, and the demands of caring for others, heart disease can affect women at every stage of life. Understanding the different types of heart conditions, recognising warning signs, and addressing risk factors early can help women protect their heart health.

Women often tend to put their health last. Between managing careers, caring for children, supporting ageing parents and meeting family responsibilities, many ignore their discomfort and continue going even after feeling tired. However, symptoms such as unexplained fatigue, breathlessness, chest discomfort or dizziness should never be dismissed as a routine part of a busy life.

Heart disease is not just a concern for men or older adults. It can affect women at different ages, and certain risk factors are closely linked to hormonal changes, pregnancy-related complications, and conditions such as diabetes.





Women may also experience symptoms that are not always immediately recognised as heart-related, which can delay medical attention.

While chest pain or pressure remains a common warning sign of a heart attack in both women and men, women may also experience nausea, unusual tiredness, shortness of breath, or pain in the back, jaw, neck, or upper abdomen. Recognising these signs and seeking timely medical care can make a critical difference. However, many heart-related risks can be reduced through healthy lifestyle choices, regular health checks and appropriate medical treatment.

Understanding the types of heart disease in women

Coronary Artery Disease (CAD): Occurs when fatty deposits, known as plaque, build up inside the arteries supplying blood to the heart. This can narrow the arteries and reduce the flow of oxygen-rich blood to the heart muscle. Women may experience chest pressure, discomfort, breathlessness, or unusual fatigue. In some cases, problems involving the smaller blood vessels supplying the heart can also cause symptoms, even without major blockages in the larger arteries.

Heart Attack: Occurs when blood flow to part of the heart muscle is severely reduced or blocked, causing damage to the tissue. Although chest pain or pressure is a common symptom, women may also experience pain in the jaw, back, neck or arms, nausea, cold sweats, dizziness, or sudden breathlessness. Symptoms can be mild or develop gradually, so waiting for severe chest pain can be dangerous.

Heart Failure: Occurs when the heart cannot pump blood effectively enough to meet the body's needs. It does not mean that the heart has stopped working. Women may notice breathlessness during routine activities, difficulty breathing while lying down, swelling in the legs or ankles, persistent fatigue, or reduced ability to exercise. Early diagnosis and treatment can help manage the condition and improve quality of life.

Heart Rhythm Disorders (Arrhythmias): Occur when the heart beats too quickly, too slowly, or irregularly. Some women may notice palpitations, a fluttering sensation in the chest, dizziness, weakness, or breathlessness. While some rhythm changes are harmless, others can be serious and require medical assessment.

Pregnancy-Related and Hormone-Associated Heart Conditions: Pregnancy places additional demands on the heart and circulatory system. Conditions such as high blood pressure during pregnancy and pre-eclampsia can increase a woman's future risk of cardiovascular disease. In rare cases, women may develop peripartum cardiomyopathy, a condition in which the heart muscle weakens towards the end of pregnancy or in the months following childbirth.

Hormonal changes during menopause can also impact cardiovascular risk. Falling oestrogen levels, changes in cholesterol and blood pressure, and an increase in abdominal fat may contribute to a higher risk of heart disease after menopause.

Key risk factors for heart disease in women

High blood pressure: Often called a silent condition because it may cause no obvious symptoms, uncontrolled blood pressure can damage blood vessels over time and increase the risk of heart attack, heart failure, and stroke.

Diabetes: High blood sugar can damage blood vessels and increase cardiovascular risk. Diabetes is particularly

important to address in women because it can substantially increase their risk of heart disease.

High cholesterol: Elevated levels of LDL cholesterol can contribute to plaque formation in the arteries, reducing blood flow to the heart.

Smoking and tobacco use: Tobacco damages blood vessels and increases the risk of clot formation. Smoking is an important and preventable cardiovascular risk factor.

Physical inactivity and excess weight: A sedentary lifestyle and excess body fat, particularly around the abdomen, can increase the likelihood of high blood pressure, diabetes, and abnormal cholesterol levels.

Unhealthy dietary habits: Frequent consumption of foods high in salt, added sugar, and unhealthy fats can contribute to cardiovascular risk, particularly when combined with other risk factors.

Chronic stress and poor sleep: Persistent stress and inadequate sleep can affect blood pressure, emotional well-being and everyday habits, making heart health more difficult to maintain.

Menopause and ageing: Cardiovascular risk tends to rise as women age, particularly after menopause. However, younger women are not immune to heart disease.

Pregnancy-related complications: A history of pre-eclampsia, gestational hypertension or gestational diabetes can indicate a higher risk of developing cardiovascular problems later in life.

Family history and underlying medical conditions: A family history of early heart disease, along with conditions such as polycystic ovary syndrome (PCOS) and certain autoimmune diseases, may increase cardiovascular risk.





How can women prevent heart disease?

Make regular health checks a priority: Monitor blood pressure, blood sugar, and cholesterol at intervals recommended by your doctor. Women with diabetes, a family history of early heart disease, previous pregnancy complications, or other risk factors may need closer monitoring. Do not wait for symptoms before seeking preventive advice.

Choose a heart-healthy diet: Include vegetables, fruits, whole grains, pulses, beans, nuts, and appropriate sources of protein in everyday meals. Choose healthier fats, limit excess salt, and reduce frequent consumption of highly processed foods, sugary drinks, and foods rich in saturated fats. A balanced Indian diet can support heart health.

Stay physically active: Aim for at least 150 minutes of moderate-intensity aerobic activity each week, such as brisk walking, cycling or swimming, if your health permits. Strength-building activities can also support overall health. Women who have been inactive for a long time or have an existing heart condition should discuss a suitable exercise plan with their doctor.

Avoid tobacco and seek professional support if quitting is difficult. Avoid exposure to second-hand smoke where possible. This is one of the most important steps towards reducing preventable cardiovascular risk.

Manage stress and prioritise sleep: Make time for activities that support emotional well-being, such as walking, breathing exercises, relaxation or speaking to someone you trust. Maintain a regular sleep schedule and seek medical advice if persistent sleep difficulties affect your daily life. Stress management complements, but does not replace, treatment for medical risk factors.

Pay attention to pregnancy and menopause: Women who experience high blood pressure or diabetes during pregnancy should inform their doctors and continue appropriate follow-up after delivery. Similarly, women approaching or going through menopause should discuss changes in their blood pressure, cholesterol, weight, and overall cardiovascular risk with a healthcare professional.

Follow prescribed treatment: If you have high blood pressure, diabetes, or high cholesterol, take prescribed medicines as advised.

Every woman deserves the opportunity to care for herself, not only for the people who depend on her, but also for her own health, happiness, and future.

Diabetes May Silence the Heart's Warning Signals, Warns Health Expert



Dr. Ashwin Karuppan
Founder & Chairman, C.O.D.E Clinic, Chennai

Why Diabetes and Heart Disease Are Linked

When blood sugar stays high for a long time, it slowly damages the inner walls of blood vessels. This damage makes it easier for fatty deposits (plaque) to build up inside arteries, including the ones that supply blood to the heart. Over time, this narrows the arteries and can lead to a heart attack.

People with diabetes are two to four times more likely to develop heart disease than those without it. What makes this especially dangerous is that many people with diabetes don't feel the usual warning signs of a heart problem — a condition called "silent ischemia." Nerve damage from long-term high blood sugar can cause dull chest pain, so a heart attack may arrive without the classic warning signs.

Who Is at Higher Risk

The risk climbs further if you also have:

- High blood pressure
- High cholesterol, especially high triglycerides and low "good" (HDL) cholesterol
- Excess weight, particularly around the abdomen
- A family history of heart disease
- A habit of smoking
- Poorly controlled blood sugar over many years

If several of these apply to you, it's worth having a frank conversation with your doctor about your heart risk — not just your sugar levels.

Warning Signs Not to Ignore

Because symptoms can be milder or different in people with diabetes, don't wait for classic "movie style" chest-clutching pain. Pay attention to:

- Unusual tiredness or breathlessness during normal activity
- Discomfort in the chest, jaw, neck, back, or arms
- Sudden sweating, nausea, or dizziness without clear cause
- Swelling in the legs or ankles

If any of these appear suddenly, seek medical help immediately rather than waiting it out.

Practical Steps the Public Can Adopt

The encouraging news is that this risk is largely manageable with everyday habits:

1. Know your numbers. Get your blood sugar (HbA1c), blood pressure, and cholesterol checked regularly — not just once a year, but as often as your doctor recommends. Awareness is the first line of defense.
2. Move daily, not occasionally. Aim for at least 30 minutes of brisk walking most days. Regular movement helps control blood sugar, weight, and blood pressure all at once.
3. Rethink your plate. Reduce refined carbohydrates (white rice, maida, sugary drinks) and favor whole grains, vegetables, and lean protein. Portion control matters as much as food choice.
4. Don't skip your medications. Whether it's for sugar, blood pressure, or cholesterol, consistent use — not occasional use — is what protects your heart over years.
5. Quit smoking and limit alcohol. Both directly damage blood vessels and multiply heart risk in people with diabetes.
6. Manage stress and sleep. Poor sleep and chronic stress raise blood sugar and blood pressure, quietly working against your heart health.
7. Don't normalize being "a little unwell." Persistent fatigue or breathlessness is not just "getting older" get it checked.



The Takeaway

Diabetes and heart disease are closely connected, but this connection is not a life sentence. With regular check-ups, consistent medication, and a few sustainable lifestyle changes, people with diabetes can significantly lower their heart attack risk and lead long, active lives. The key is not to wait for symptoms — prevention starts with the choices made today.

HEART ATTACK: RECOGNISING THE WARNING SIGNS AND ACTING IN TIME



Dr. Bipeenchandra Bhamre
A Mumbai-based Cardiac Surgeon

A heart attack can happen suddenly, and recognising its warning signs can save lives. From chest discomfort and breathlessness to less obvious symptoms such as nausea, unusual fatigue and back or jaw pain, knowing when to seek emergency medical care is essential to preventing serious complications.

A heart attack is a medical emergency that occurs when blood flow to a part of the heart muscle is severely reduced or blocked. Without a sufficient supply of oxygen-rich blood, the affected heart muscle begins to suffer damage. Quick medical attention is essential to restore blood flow, limit damage, and improve the chances of survival.

Although heart attacks are often associated with severe chest pain, the symptoms can vary from person to person. Some people experience intense discomfort, while others may have milder symptoms that develop gradually or come and go. This can make it difficult to recognise a heart attack, especially when the symptoms are mistaken for acidity, indigestion, tiredness or muscle pain.

Understanding the warning signs, knowing the risk factors and responding promptly can make a life-saving difference. A heart attack should never be ignored or treated at home in the hope that the symptoms will disappear.

What happens during a heart attack?

The heart needs a continuous supply of oxygen-rich blood to function properly. This blood reaches the heart muscle through the coronary arteries. Over time, fatty deposits containing cholesterol can build up inside these arteries, causing them to narrow. This process is known as atherosclerosis. In many cases, a heart attack occurs when a deposit breaks open and a blood clot forms at that site, blocking blood flow through the artery. As a result, the heart muscle receives less oxygen or may stop receiving it altogether. The longer the blockage remains untreated, the greater the risk of permanent damage to the heart muscle. This is why doctors emphasise the importance of seeking emergency care as soon as symptoms begin.

Signs of a heart attack

Chest discomfort is a common warning sign of a heart attack. It may feel like pressure, tightness, squeezing, heaviness or fullness in the centre of the chest. Some people describe it as a sensation of something heavy pressing on their chest. The discomfort may last for several minutes or disappear and return. It should not automatically be dismissed as gas or acidity, particularly when it is new, unexplained or accompanied by other symptoms.

Heart attack pain does not always remain limited to the chest. It may spread



to one or both arms, the shoulders, neck, jaw or back. Some people experience discomfort mainly in these areas without prominent chest pain. Unexplained pain in these regions, especially when accompanied by breathlessness, sweating or chest discomfort, needs urgent medical assessment.

Sudden or unusual shortness of breath can occur during a heart attack, sometimes even without chest pain. A person may feel breathless while resting or experience difficulty performing activities that were previously comfortable. Breathlessness may occur because the heart is struggling to pump blood effectively. If it develops suddenly or is accompanied by chest discomfort, dizziness, or sweating, emergency medical help is necessary.

Breaking out in a cold sweat without an obvious reason can be another warning sign. A person may suddenly become clammy, pale or unusually sweaty, even without physical exertion or hot weather. When unexplained sweating occurs with chest discomfort, nausea, breathlessness or weakness, it should not be ignored.

Some people experience nausea, vomiting, upper abdominal discomfort or a feeling similar to indigestion during a heart attack. These symptoms may be mistaken for digestive problems, delaying medical attention. If such discomfort is sudden, unusual or associated with other warning signs, it is important to consider a possible heart-related cause rather than assuming it is acidity.

Unusual tiredness or weakness may occur during a heart attack. Some people, particularly women, may experience unusual tiredness in the hours or days before an event, although this is not specific to heart disease. Fatigue alone does not necessarily indicate a heart attack. However, sudden or severe weakness accompanied by other warning signs requires immediate medical attention.

A heart attack may cause dizziness, light-headedness or a feeling that one might faint. This can happen when the heart's ability to pump blood is affected or when abnormal heart rhythms develop. If dizziness occurs with chest pain, breathlessness, sweating or fainting, it should be treated as an emergency. If you or someone nearby develops symptoms that could indicate a heart attack, do not wait to see whether they improve.



WHILE NOT EVERY HEART ATTACK CAN BE PREVENTED, HEALTHY DAILY HABITS AND PROPER MANAGEMENT OF EXISTING MEDICAL CONDITIONS CAN REDUCE THE RISK

Call emergency services immediately, or contact local ambulance services. Do not drive yourself. An ambulance can provide emergency assistance during transport. Sit down, remain as comfortable as possible, and avoid exertion while waiting for help. Take aspirin only if advised by an emergency professional who has assessed the situation and confirmed it is appropriate. Never delay seeking medical help to try home remedies, antacids, or painkillers.

Timely diagnosis is important. An electrocardiogram (ECG) records the heart's electrical activity and can identify changes that suggest a heart attack. Blood tests, particularly those measuring cardiac troponin, help detect damage to the heart muscle. Depending on the situation, doctors may recommend an echocardiogram, coronary angiography, or other investigations to understand the extent of the problem and identify the blocked artery.

Treatment aims to restore blood flow to the heart muscle as quickly as possible and prevent further damage. Depending on the type of heart attack and the patient's condition, doctors may perform an emergency angioplasty to open the blocked artery and place a stent. Clot-dissolving medication may be used in selected cases when appropriate. Medicines and supportive care also help manage the condition and reduce the risk of complications. After the emergency, patients may need medicines to control cholesterol, blood pressure and other risk factors. Cardiac rehabilitation, which includes supervised exercise, education and lifestyle guidance, can support recovery.

Several factors can increase the risk of a heart attack, including high blood pressure, high cholesterol, diabetes, smoking, obesity, physical inactivity and a family history of early heart disease. Increasing age also raises risk, although heart attacks can occur in younger adults. Poor sleep, an unhealthy diet, and prolonged stress may contribute to cardiovascular risk, particularly when combined with other risk factors. Regular health check-ups can help identify problems before they lead to serious complications.

While not every heart attack can be prevented, healthy daily habits and proper management of existing medical conditions can reduce the risk. Eating a balanced diet, exercising regularly as advised by a healthcare professional, avoiding tobacco, maintaining a healthy weight, and getting adequate sleep are important steps. People with diabetes, high blood pressure or high cholesterol should follow their prescribed treatment plans and attend regular check-ups. Medication should not be stopped or changed without medical advice.

The most important rule is simple: do not wait for symptoms to become severe. Call for emergency medical help immediately. Early treatment can save heart muscle, reduce complications, and give patients a better chance of returning to their everyday lives.



Why Does the Risk of Heart Attacks Increase During Winter?

Warning Signs You Should Never Ignore

As temperatures drop during winter, the risk of heart attacks can increase, particularly among older adults and people with existing cardiovascular conditions. Cold weather, rising blood pressure, changes in blood circulation and seasonal lifestyle habits can put additional strain on the heart.

By **Dr. Anjan Siotia**
Director of Cardiology, BM Birla Heart Hospital

Winter often brings cooler temperatures, shorter days and changes to our daily routines. But cold weather can be hard on the heart, especially for older adults and people with high blood pressure, diabetes, high cholesterol or other heart problems. Winter is a time when heart attacks are reported more often and knowing why can help people take precautions in time.

One of the main reasons is the body's natural response to cold temperatures. When it's cold blood vessels contract to save heat in the body. These blood vessels become narrower and this increases the resistance to blood flow and can lead to increased blood pressure. This makes the heart work harder to pump blood around the body. Increased workload can precipitate cardiac event if underlying coronary artery disease is present.

The cold may also affect blood clotting. It may increase the activity of platelets and the viscosity of blood, which makes the blood more likely to form clots. Such changes can be especially troubling for people who already have narrowed arteries, since most heart attacks occur when a blood clot blocks blood flow through a coronary artery.

Another reason is the change in lifestyle during winter. People tend to be less active, spend more time indoors and may eat heavier, saltier and fattier meals. Change in diet, weight gain and less physical activity can adversely affect blood pressure, cholesterol and blood sugar levels. Respiratory infections, such as influenza, are also more common in the winter. Infections can cause inflammation, increase the body's metabolic needs and put additional stress on the cardiovascular system.

There are some warning signs of a heart attack that should never be ignored. A frequent symptom is a lingering pain, pressure, tightness or heaviness in the center of the chest. The pain may radiate down the arms, shoulders, back, neck or jaw. Other signs include shortness of breath, cold sweats, nausea, vomiting, dizziness, and sudden, unexpected weakness. Importantly, not every heart attack is accompanied by severe chest pain. Women, older adults and people with diabetes may experience atypical symptoms, such as unusual fatigue, shortness of breath or upper abdominal discomfort.



WINTER DOESN'T NECESSARILY MAKE YOU VULNERABLE TO A HEART ATTACK, BUT IT CAN EXPOSE UNDERLYING CARDIOVASCULAR RISKS AND PUT EXTRA STRAIN ON THE HEART

The risk may also be greater with sudden exertion in cold weather. And those who are otherwise sedentary may suddenly find themselves engaging in vigorous activity without proper conditioning. Brisk walking, climbing stairs or lifting heavy objects are also activities that can increase the amount of oxygen the heart needs. If the coronary arteries are narrowed already, the heart may not be able to get enough oxygen rich blood to meet this demand.

A lot of prevention is to maintain healthy habits and control known risk factors. Hypertensive, diabetic and hypercholesterolemic patients should check their levels regularly and take prescribed medication without interruption. It is important to remain physically active, preferably with moderate indoor exercises or walks during the warmer parts of the day. But those with known heart conditions should check with their cardiologist before starting or changing an exercise routine.

A well-rounded diet with low salt, low saturated fats and low processed foods, adequate hydration and sufficient sleep can also help to support cardiovascular health. Avoid smoking and limit alcohol, it's important. When it gets cold, people should dress in layers and avoid sudden, strenuous physical activity, especially in the early morning when temperatures are usually lower.

Above everything else, a suspected heart attack should always be treated as a medical emergency. Anyone experiencing chest discomfort, breathlessness for no reason, cold sweats or other symptoms that might indicate a heart attack should get emergency medical help straight away. They should not wait for symptoms to subside or try to drive themselves to the hospital.

Winter doesn't necessarily make you vulnerable to a heart attack, but it can expose underlying cardiovascular risks and put extra strain on the heart. Recognizing early warning signs, managing existing health conditions, and seeking timely medical attention can help make a world of difference in preventing serious complications.

Beyond the Cough:
Why Early Detection of Tuberculosis Remains Critical in India



Dr. Pranay Sai Chandragiri
Consultant Interventional Pulmonologist, Yashoda Hospitals, Hyderabad

A cough is one of the most common complaints in any doctor's clinic. Most of the time, it's nothing more than a cold, allergies, or a bout of seasonal flu that clears up in a week or two. But in India — home to the world's largest tuberculosis burden — a persistent cough can sometimes be the first clue to a far more serious infection.

Tuberculosis (TB) remains one of India's most significant public health challenges. Understanding how it differs from an ordinary cough, and why catching it early matters so much, can genuinely save lives.

Why TB Is Still a Major Concern in 2026

Despite decades of medical progress, TB has not gone away. India carries a disproportionately large share of the global burden, accounting for roughly a quarter of the world's TB cases each year. It's estimated that a significant portion of the population carries the TB bacterium in some form, though not everyone infected develops active disease.

The bigger problem isn't a lack of treatment — TB is both preventable and curable. The real challenge is delay. Many people mistake early TB symptoms for a minor cold or seasonal irritation and put off seeing a doctor, giving the infection time to progress and spread to others.

TB vs. a Common Cough: Spotting the Difference

Not every cough needs to raise alarm, but knowing what sets TB apart can help you



decide when to seek medical advice.

A common cough typically:

- Lasts less than one to two weeks
- Comes with mild throat irritation
- Improves with rest and basic medication

A TB-related cough typically:

- Persists beyond two to three weeks and gradually worsens
- May bring up mucus or blood
- Comes with chest pain while breathing or coughing
- Is accompanied by fever (often worse in the evening), night sweats, unexplained weight loss, fatigue, and loss of appetite

Interestingly, a majority of people diagnosed with TB did not have a persistent cough at all, and some had no symptoms whatsoever — a reminder that cough alone shouldn't be relied upon as the only warning sign.

How Tuberculosis Spreads

TB is caused by the bacterium Mycobacterium tuberculosis and spreads through the air — not through shared utensils, handshakes, or touching surfaces. When someone with active TB coughs, sneezes, speaks, or even laughs, tiny bacteria-laden droplets are released into the air.

Transmission is more likely in:

- Crowded households or workplaces
- Poorly ventilated spaces
- Prolonged close contact with an infected person

Not everyone exposed to TB becomes sick — a healthy immune system can often keep the bacteria in check. This is why TB exists in two forms: latent TB, where the bacteria remain inactive and the person has no symptoms and cannot spread infection, and active TB, where the bacteria multiply, symptoms appear, and the person becomes contagious.

Why Early Detection Makes All the Difference

Catching TB early changes the entire trajectory of the disease — for the patient and for the people around them.

Benefits of early diagnosis include:



TB IS CAUSED BY THE BACTERIUM MYCOBACTERIUM TUBERCULOSIS AND SPREADS THROUGH THE AIR — NOT THROUGH SHARED UTENSILS, HANDSHAKES, OR TOUCHING SURFACES. WHEN SOMEONE WITH ACTIVE TB COUGHS, SNEEZES, SPEAKS, OR EVEN LAUGHS, TINY BACTERIA-LADEN DROPLETS ARE RELEASED INTO THE AIR.

- Treatment can begin immediately, before the infection causes lasting damage
- Lower risk of complications, including spread to other organs like the kidneys, spine, or brain
- Reduced chances of infecting family members, coworkers, or the wider community
- Faster, more complete recovery
- Lower overall treatment and healthcare costs

Left unchecked, TB can cause serious lung damage, spread beyond the lungs, and — perhaps most worryingly — evolve into drug-resistant strains that are far harder and more expensive to treat.

Who Is at Higher Risk?

While anyone can contract TB, certain groups face a notably higher risk:

- People with weakened immunity (including those with HIV, malnutrition, or on long-term steroids)
- Individuals with diabetes or other chronic illnesses
- Smokers and those with heavy alcohol use
- People living in crowded or poorly ventilated housing
- Healthcare workers in regular contact with TB patients
- Close contacts of someone already diagnosed with active TB
- Elderly individuals and young children

Understanding these risk categories helps target screening efforts where they're needed most.

How Doctors Diagnose TB

Modern diagnostics have made TB testing faster and more accurate than ever. Common methods include:

1. Sputum examination — a lung mucus sample is examined under a microscope or cultured to detect bacteria



2. Chest X-ray — helps identify lung abnormalities such as cavities or infiltrates suggestive of infection
3. Molecular tests (such as CBNAAT/GeneXpert) — rapid tests that detect TB genetic material and can flag drug resistance within hours
4. Blood tests (IGRA) — useful for identifying latent TB infection, particularly in people without active symptoms

Doctors generally advise against self-diagnosing or treating a persistent cough with over-the-counter medication alone, since this can mask symptoms and delay a proper diagnosis.

A COUGH THAT LINGERS BEYOND TWO TO THREE WEEKS, PARTICULARLY ALONGSIDE FEVER, NIGHT SWEATS, UNEXPLAINED WEIGHT LOSS, OR FATIGUE, DESERVES MEDICAL ATTENTION, NOT ASSUMPTION

The Danger of Self-Medication

One of the biggest obstacles to early TB detection is the tendency to self-treat. Many people reach for cough syrups or antibiotics on their own, assuming a minor infection, without ever getting tested. This delay allows the disease to progress silently — and to spread to others in the household or workplace — before a proper diagnosis is made.

If a cough persists beyond two weeks, especially alongside fever, weight loss, or fatigue, medical evaluation — not self-medication — is the appropriate next step.

Treatment: TB Is Curable

With proper treatment, TB is entirely curable. Standard treatment involves a combination of antibiotics — typically including isoniazid, rifampicin, ethambutol, and pyrazinamide — taken consistently for six months or longer.

Key points for successful treatment:

- Medications must be taken exactly as prescribed, without skipping doses
- The full course must be completed, even after symptoms improve — stopping early is one of the leading causes of drug-resistant TB
- Regular follow-up tests help monitor progress
- Good nutrition and rest support recovery
- Avoiding smoking and alcohol improves treatment outcomes

Incomplete or irregular treatment allows surviving bacteria to develop resistance, leading to multidrug-resistant TB (MDR-TB) — a much tougher and lengthier condition to treat.

Prevention: Simple Steps That Matter

Preventing TB relies on a mix of public awareness and everyday precautions:

- Ensure good ventilation in homes and workplaces
- Cover your mouth and nose while coughing or sneezing
- Seek medical attention promptly for a cough lasting more than two weeks
- Get the BCG vaccine for infants, which offers protection against severe childhood TB
- Maintain a strong immune system through balanced nutrition, exercise, and adequate sleep
- Complete the full course of treatment if diagnosed, to prevent relapse and resistance

Breaking the Stigma

Fear of judgment often keeps people from seeking timely care. TB is a treatable bacterial infection — not a reflection of someone's hygiene or social standing — and open conversations about symptoms, causes, and treatment help more people come forward for testing rather than hiding symptoms out of embarrassment.

Conclusion

A cough that lingers beyond two to three weeks, particularly alongside fever, night sweats, unexplained weight loss, or fatigue, deserves medical attention, not assumption. TB remains preventable, treatable, and curable, but only when it's caught early.

In a country where TB continues to affect millions each year, the most powerful tool available isn't a new drug or technology — it's awareness. Recognising the warning signs, avoiding self-medication, and seeking timely testing can make the difference between a quick recovery and a prolonged, complicated illness — for yourself and everyone around you.

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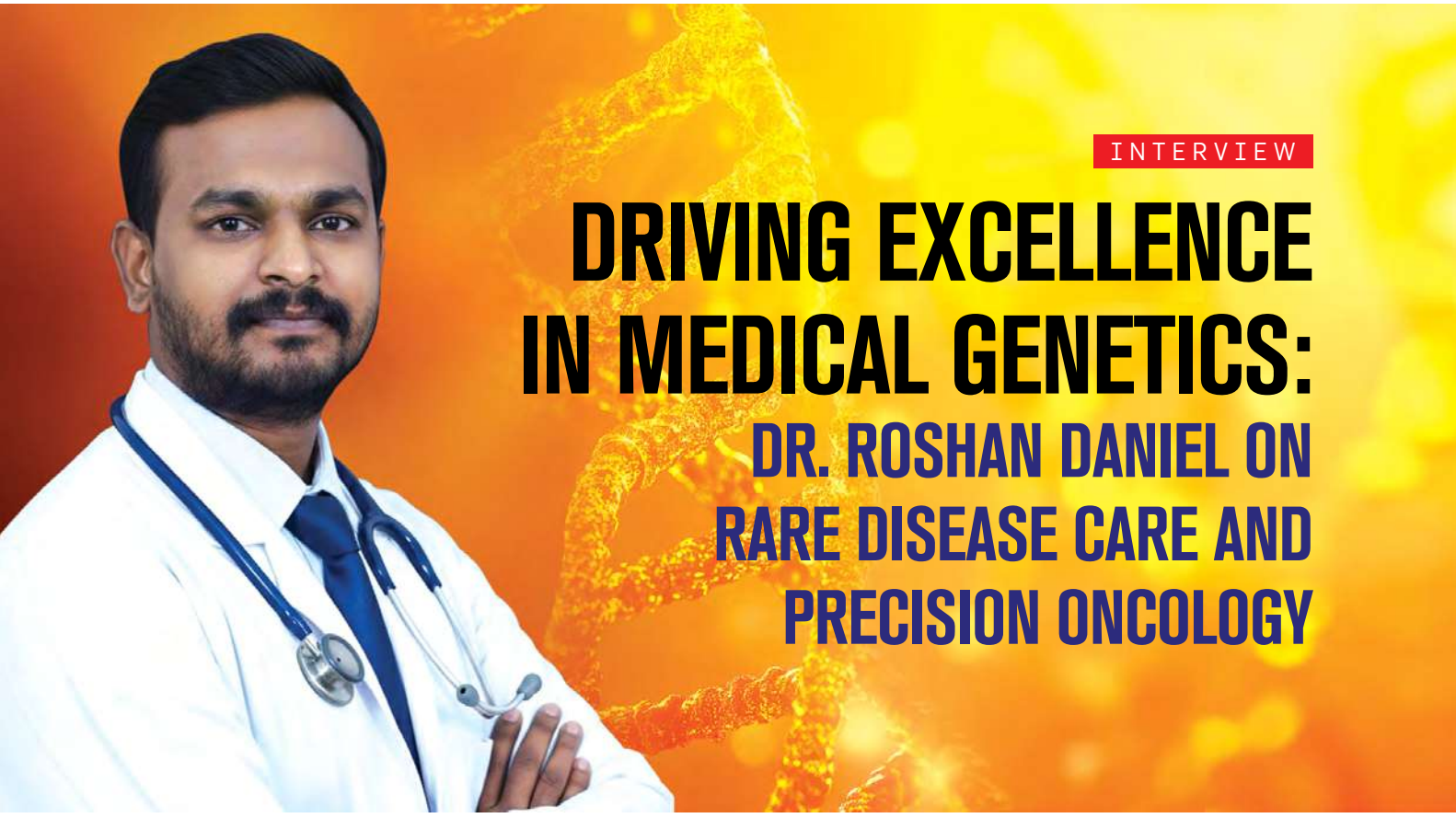
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INTERVIEW

DRIVING EXCELLENCE IN MEDICAL GENETICS:

DR. ROSHAN DANIEL ON RARE DISEASE CARE AND PRECISION ONCOLOGY

In this in-depth interview with Medical Tourism Today, ***Dr. Roshan Daniel*** *shares his journey into medical genetics and the vision behind Kerala's pioneering Comprehensive Rare Disease Clinic. He discusses breakthrough advances in genomics, real-world patient impact, and how India is rapidly emerging as a global leader in precision medicine.*

Q Dr. Roshan, could you tell us about your journey and what inspired you to specialize in medical genetics?

A Medical genetics fascinated me from the very beginning. It sits at the bleeding edge of medicine, at the intersection of science, technology, and clinical care. What drew me in was the fact that this field is driven by two massive breakthroughs happening simultaneously — first, in diagnostics with Next-Generation Sequencing, which allows us to understand the human genome with incredible precision; and second, in therapeutics, with gene therapy, enzyme replacement therapy, stem-cell transplants, and targeted cancer treatments fundamentally changing outcomes for diseases once considered untreatable.

There are still very few trained specialists in India, and I felt a strong purpose to contribute to this emerging discipline. My fascination with molecular biology and disease pathways naturally evolved into a desire to apply genetics in real-world clinical settings. Today, seeing science translate into life-changing treatments for patients is what keeps me deeply committed to this field.

Q The launch of Kerala's Comprehensive Rare Disease Clinic was a milestone. What motivated this initiative?

> WITH INCREASING PUBLIC AWARENESS, MORE TRAINED PROFESSIONALS, AND EXPANDING GENOMIC LAB NETWORKS, GENETIC MEDICINE IN INDIA WILL BECOME NOT ONLY MAINSTREAM BUT ESSENTIAL. THE SHIFT FROM REACTIVE TREATMENT TO PREDICTIVE AND PREVENTIVE MEDICINE WILL REDEFINE PATIENT CARE AT THE POPULATION LEVEL.

A Genetics is still under-recognized outside major metros in India, and Kerala did not have a structured clinical genetics program despite the burden of genetic and rare diseases. I wanted to bring the best of modern genetic medicine back home, where families could benefit without having to travel far or delay diagnosis.

From preventing hereditary cancers to targeted therapies that can completely change the course of certain cancers and rare disorders, the impact of genetics on patient outcomes is extraordinary. Establishing this clinic was about building access, awareness, and a system where families in Kerala could receive international-standard genetic care, timely diagnosis, advanced genetic testing, and guided treatment — without leaving the state.

Q As Head of the Department of Medical Genetics, what are the most common genetic disorders you encounter?

A We see a broad range of patients — from newborns to adults — reflecting the full spectrum of genetic medicine. In children, we commonly evaluate developmental delay, congenital anomalies, growth abnormalities, neurodevelopmental syndromes, skeletal dysplasias, metabolic and mitochondrial disorders, and primary immunodeficiency conditions.

In adults, we frequently encounter early-onset or familial diseases involving the heart, nerves, muscles, kidneys, and blood, as well as hereditary cancer syndromes.

Reproductive genetics forms a major part of our work, including recurrent pregnancy loss, infertility, abnormal ultrasound and serum screening results, and preconception counseling. We also run specialized programs for neuromuscular diseases, rare pediatric disorders, and hereditary cancers, allowing us to support patients across life stages.

One memorable case involved a 19-year-old young woman with ichthyosis. Her family had been fearful of having another child for almost two decades. They had an unplanned pregnancy and approached us believing termination was their only option. We first identified the exact variant in their older daughter, then conducted prenatal testing in the new pregnancy. The baby was found to be unaffected. The family's relief and joy were overwhelming. Many families still do not know that such precise genetic guidance is possible — and that it can completely change the future for them.

Another powerful story is of a patient with stage 4 lung cancer with brain metastasis, where the prognosis was only three to six months. We performed tumor NGS, identified an EGFR mutation, and the patient was started on osimertinib. Today, three years later, the patient is alive and doing well. This is the true power of precision medicine — turning what once looked like the end into a new beginning.

Q What recent advancements in diagnostic genetics are transforming patient care?

A The past few years have redefined genetic diagnostics. Rapid exome and genome sequencing in critically ill newborns, high-precision NGS panels, liquid biopsy, and AI-assisted variant interpretation have moved from research labs into routine clinical practice. These technologies are enabling faster and more accurate diagnosis, reducing diagnostic odysseys, and allowing earlier intervention — often altering outcomes dramatically in children and cancer patients.

Q How do you see genomics reshaping the future of healthcare in India?

A We are moving towards precision public health, where genetics becomes integrated into routine pediatric, oncology, neurology, and reproductive care.



INDIA HAS THE EXPERTISE, INFRASTRUCTURE, TURNAROUND SPEED, AND COST ADVANTAGE TO BECOME A KEY GLOBAL HUB. WITH INCREASING NABL-ACCREDITED GENOMIC LABS AND ADVANCED CLINICAL PROGRAMS, THE COUNTRY IS POISED TO ATTRACT PATIENTS SEEKING AFFORDABLE AND HIGH-QUALITY PRECISION MEDICINE.

With increasing public awareness, more trained professionals, and expanding genomic lab networks, genetic medicine in India will become not only mainstream but essential. The shift from reactive treatment to predictive and preventive medicine will redefine patient care at the population level.

Q What are the biggest challenges India faces in implementing precision medicine widely?

A Awareness among clinicians, limited trained genetic specialists, cost and insurance gaps, and the need for standardized, accredited testing platforms remain challenges. However, these barriers are rapidly narrowing. Training programs, national rare disease initiatives, affordable testing solutions, and improved clinical–laboratory integration are moving the country forward quickly.

Q With growing interest in precision oncology, how can genetic testing personalize cancer care?

A Cancer genomics allows us to identify hereditary predispositions, choose precise therapies, predict treatment response, and implement targeted surveillance for at-risk family members. Our oncology genetics program emphasizes timely tumor and germline testing, multidisciplinary tumor boards, and long-term family surveillance — ensuring that care is not just treatment-centric but prevention-focused.

Q Tell us about Genetidoc and how it improves access to genetic care.

A Genetidoc Genetic Clinic and DNA Testing Lab integrates online access with physical clinic support, making genetic consultation and testing possible for patients across India, including remote regions. We offer home sample collection, personalized test planning, specialist consultations, and structured post-test counseling, including second-opinion report interpretation. The goal is to democratize genetics and ensure that expert guidance reaches every family that needs it — not just those with access to major city hospitals.

Q Do you see India emerging as a global genomics destination?

A Yes, absolutely. India has the expertise, infrastructure, turnaround speed, and cost advantage to become a key global hub. With increasing NABL-accredited genomic labs and advanced clinical programs, the country is poised to attract patients seeking affordable and high-quality precision medicine.

Q Your message to young doctors entering this field?

A Genetics is the future of medicine. It combines science, clinical logic, and human connection. Stay curious, stay updated, and don't hesitate to step into emerging fields — the impact you can create is extraordinary. Most importantly, remember that behind every genome is a family seeking answers and hope. Compassion and communication remain the core of this profession.

DR. ROSHAN DANIEL

- MBBS, MD Pediatrics, DM Medical Genetics, ECMGG (European Board Certified)
- Post Graduate Diploma in Precision Oncology
- Clinical Geneticist and Head, Medical Genetics Department, KIMSHealth, Trivandrum
- Medical Genetics Faculty, Doctutorials Medical Coaching Centre
- Founder, Genetidoc Genetic Clinic and DNA Testing Lab



Dr. Roshan Daniel is the Founder and Director of Genetidoc Genetic Clinic and DNA Testing Lab, and is recognized as one of the leading specialists in medical genetics in India. Based in Trivandrum, Kerala, he is among the very few formally trained clinical geneticists in the state.

He completed his MBBS from Government Medical College, Trivandrum, followed by an MD in Pediatrics and a DM in Medical Genetics from the Postgraduate Institute of Medical Education and Research (PGIMER), Chandigarh. He is also one of the few European Board–Certified Geneticists in the country and the only one to hold a Postgraduate Diploma in Precision Oncology.

Dr. Daniel has authored multiple publications in leading international medical journals. He contributed a chapter on the genetics of developmental delay in children, an area in which he holds significant expertise. His thesis focused on the genetic basis of congenital anomalies in unborn babies, highlighting his strong foundation in reproductive genetics.

In addition, he is an expert in hereditary cancers and precision oncology, and leads the Molecular Tumor Boards at the KIMS Health Cancer Centre, guiding targeted, genomics-driven cancer care.

Robotic-Assisted Surgery:
Enhancing Precision Without Replacing Surgical Judgment



Dr. Mansimrat P. Singh
Consultant - General & Minimal Access Surgery, CK Birla Hospitals, Jaipur

Surgical technology has evolved considerably, reshaping the performance of many procedures. Robotic-assisted surgery allows complex operations to be conducted with specialized instruments and a high-definition, magnified view of the surgical field. While this technology may improve precision and control, successful outcomes remain contingent on factors beyond the equipment itself, including surgeon expertise and clinical judgment.

Potential of Robotic-Assisted Surgery to Enhance Surgical Precision

In robotic-assisted surgery, the surgeon operates from a dedicated console, manipulating controls that direct patient-side robotic arms and specialized instruments. The system translates the surgeon's hand, wrist, and finger movements into scaled, precise instrument motions, while many platforms provide a magnified, high-definition three-dimensional view of the operative field. Robotic instruments may also afford greater degrees of freedom than conventional rigid laparoscopic instruments, potentially facilitating dissection and suturing in confined anatomical spaces or in proximity to delicate structures.

It is equally important to recognise that robotic-assisted surgery is not a fully autonomous intervention. The surgeon retains direct and continuous control throughout the procedure, guiding instrument movement and making intraoperative decisions based on the patient's anatomy, operative findings, and physiological response. Current robotic platforms function as surgeon-controlled tools rather than independent decision-making systems.

In appropriately selected patients, robotic-assisted surgery may be associated with smaller incisions, reduced intraoperative blood loss, less postoperative pain, and a potentially faster recovery. However, the magnitude of these benefits varies according to the specific procedure, patient-related factors, and the surgeon's experience with the platform. Robotic assistance may be of particular value in selected general surgical procedures, including certain hernia repairs and colorectal resections.

The technology can enhance visualisation and instrument control, but it cannot independently determine the safest surgical approach or manage every unexpected situation. These responsibilities remain with the operating surgeon.

The Continuing Importance of Surgical Expertise and Clinical Judgment

Each patient presents a distinct clinical context. Age, comorbidities, prior surgical history, disease complexity, and overall physiological reserve may all influence the selection of the most appropriate treatment strategy. Consequently, an intervention that is suitable for one patient may not represent the optimal choice for another.

This is where clinical judgement becomes essential. Before recommending robotic-assisted surgery, the surgeon must evaluate whether it offers meaningful advantages over conventional laparoscopic or open surgery. In some cases, a traditional approach may be equally effective or more appropriate.

Experience is particularly important when unexpected findings are encountered intraoperatively. The capacity to recognise complications, reassess the operative strategy, and make timely, appropriate decisions derives from clinical training, accumulated operative experience, and sound judgment rather than from access to advanced technology alone

Training, Competency, and Safe Adoption of Robotic Surgery:

Robotic-assisted surgery requires specific training, platform familiarity, and operative experience. When evaluating surgical care, patients should consider the surgeon's understanding of the procedure, proficiency with the robotic system, and ability to recognise and manage complications.

Ultimately, technology should support clinical decision-making rather than serve as the sole indication for a particular operation. Patients should be encouraged to discuss the available options, anticipated benefits, potential risks, and expected recovery with their surgeon.

Robotic-assisted surgery is an important advance in contemporary surgical practice. However, its use should not be universal; rather, the appropriate approach should be matched to the individual patient. Optimal surgical care integrates suitable technology with clinical judgment, technical expertise, and a sustained focus on patient safety.

How robotic knee replacement is helping patients recover faster with less blood loss?

Robotic knee replacement is transforming joint surgery by combining surgical expertise with advanced precision technology. By enabling more accurate implant placement, minimising surrounding tissue damage and reducing blood loss, the approach is helping patients experience less post-operative discomfort and a faster return to mobility.



Dr. Rakesh Rajput
HOD - Orthopaedics, CK Birla Hospitals, CMRI



Robotic knee replacement has changed how we plan and perform joint replacement, and patients feel that difference most in their recovery. Before the procedure begins, we work from imaging that maps the patient's specific bone structure and alignment, which gives us a surgical plan tailored to that individual rather than a standardised approach. During the operation, the robotic system helps execute that plan to sub-millimetre accuracy, guiding the bone cuts and the positioning of the implant with a precision that is difficult to achieve through manual instrumentation alone.

This precision matters because of what it does to the tissue around the joint. Accurate implant positioning and bone preparation that stays close to the plan mean the ligaments and muscle surrounding the knee are disturbed less during surgery. Less disruption to that soft tissue results in reduced post-operative pain and inflammation, which shortens the time a patient needs before they can start moving again. Many of our patients begin assisted walking within 24 to 48 hours of surgery, depending on their clinical condition.

ROBOTIC ASSISTANCE DOES NOT REPLACE SURGICAL JUDGMENT. THE SURGEON REMAINS IN CONTROL OF EVERY DECISION THROUGHOUT THE PROCEDURE.

Blood loss is another area where the difference is measurable. Robotic-assisted procedures involve more controlled bone resection and reduced manual instrumentation within the joint, which limits intraoperative bleeding. Lower blood loss during surgery reduces the likelihood of requiring a transfusion and contributes to a smoother early recovery, particularly in older patients or those with other health conditions where minimising surgical stress matters considerably.

What we emphasise to patients, considering this option, is that robotic assistance does not replace surgical judgment. The surgeon remains in control of every decision throughout the procedure. The technology improves the precision with which those decisions are executed, and it is that precision that drives the better recovery outcomes. For patients who have been living with significant knee pain and limited mobility, the combination of accurate implant placement, reduced tissue trauma, and lower blood loss means a return to daily function that is both faster and more predictable than what was typically possible a decade ago.

Robotic Prostate Cancer Surgery:

Enhancing Precision, Recovery, and Quality of Life



Prof. Dr. Raj Nagarkar
Chief of Surgical Oncology & Robotic Services, Managing Director,
HCG Manavata Cancer Centre, Nashik

Prostate cancer is considered one of the most commonly found cancers in men globally. Surgical procedures still play a major role in rectifying this ailment for several patients. Advancements made in healthcare technology have also significantly improved surgical outcomes for this issue. Robotic-Assisted Radical Prostatectomy (RARP) is one such approach. It is a minimally invasive surgical procedure which is used to remove the entire prostate gland and nearby tissues. This is a modern approach that combines surgical expertise with advanced robotic technology to deliver greater precision and better preservation of vital functions.

What Makes Robotic Prostate Surgery Different?

Robotic prostate cancer surgery is a minimally invasive procedure performed through small incisions using robotic instruments controlled entirely by a surgeon. The robotic equipment provides excellent high-definition 3D views of the surgical field, which gives the surgeon more control and precision in performing the operation than if they were performing the surgery themselves. Unlike conventional surgery, robotic surgery provides improved visibility of the critical organs around the prostate, which enables the surgeon to locate and save important nerves and tissues more effectively.

Enhanced Precision Through 3D Imaging and Magnification

An advantage, robotic surgery has is its use of magnification and 3D imaging technology, which gives a high-definition view of the prostate and surrounding organs in detail. The robotic platform also helps to eliminate the natural hand tremors that might happen during surgeries. As a result, the surgeon is able to make precise movements in limited or confined spaces. The level of accuracy attained due to this helps the surgeons in safely removing the cancerous tissue while minimizing damage to nearby structures.

Better Preservation of Bladder Control

The nerves and muscles involved in urinary continence are located very close to the prostate. During a prostate cancer surgery, preserving these structures are important for maintaining bladder function and urinary control after the procedure. The high-quality imaging and accuracy provided by robotic surgery enable the doctors to take exceptional care of the delicate tissues. In this way, many individuals get improved incontinence outcomes and faster recovery than compared with traditional surgical approaches.

Improved Preservation of Sexual Function

Sexual function is another important aspect which gets affected following a prostate cancer treatment. The nerves responsible for erectile function are located right next to the prostate and are mostly hard to preserve during the operation. The robotic-assisted surgery has enabled the use of more precise or accurate nerve-sparing techniques.



This method helps in reducing the injuries that might happen to the critical nerve bundles and can help in improving preservation and recovery of sexual function after surgery.

A Safer and Less Invasive Surgical Option

Robotic prostate surgery is a comparatively safer and less invasive method for appropriately selected patients. The technique involves benefits like:

- Smaller incisions
- Reduced blood loss
- Less postoperative pain
- Lower risk of complications
- Shorter hospital stay
- Faster return to daily activities

These advantages can dramatically improve the overall treatment experience and recovery.

Postoperative benefits and Improved quality of life

Prostate cancer therapy involves more than just having control over the cancer itself. It is important for a patient to maintain urinary function, preserve sexual activity, and have a smooth recovery for long term well being.

Robotic-assisted prostatectomy functions by combining the modern technologies like imaging, magnification, and surgical precision to ensure the surgical quality and improved functional outcomes. And as a result, this translates into better quality of life after treatment for the patients.



Struggling with Knee Pain?

Know the Symptoms, Treatment Options, and When to Consider Knee Replacement



Dr. Avinashdev Upadhyay
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UMC Hospital, Navi Mumbai

Knee pain can occur in many people due to knee osteoarthritis. However, recognizing the early signs of knee osteoarthritis and seeking timely help can protect the joints and improve mobility. Here, the expert helps to know about the available treatment options, when non-surgical treatments may help, and when knee replacement may be required for the patient.

For many people, knee pain tends to begin with something as simple as a twinge while climbing stairs or even stiffness after sitting for extended hours. People with knee pain may need extra effort even while getting up from a chair, walking to the market, or standing in the kitchen. Hence, what begins as an occasional discomfort can then affect an individual's mobility, independence, and even quality of life.

Knee pain is dismissed as a normal part of ageing by many people, and they fail to seek help. However, constant, persistent stiffness and difficulty walking can be linked to knee osteoarthritis. Timely diagnosis and treatment can help the patient to manage pain, enhance mobility, and quality of life. But understand that not every patient with knee pain will need surgery. So,

the treatment will be based on the underlying cause, severity of the condition, and the extent to which symptoms affect daily activities of the patient.

Watch out for these early warning signs of knee pain

- Knee pain while walking, standing, climbing stairs, or getting up from a chair
- Morning stiffness
- Stiffness after sitting for a long time
- Swelling, tenderness, or a feeling of warmth around the knee
- Difficulty when it comes to squatting, sitting cross-legged, or performing daily activities with ease
- Sleep disturbance because of pain, and dependency on painkillers
- Don't ignore bowing of the legs, deformity, or even a sensation of instability

Understanding the cause and importance of early diagnosis

Knee osteoarthritis can induce unbearable knee pain in many people. It happens when the cartilage that cushions the ends of the bones gradually wears down, and the patient tends to experience symptoms such as excruciating knee pain, stiffness, and even difficulty moving the knee. However, knee pain can also be seen due to previous injuries, meniscal problems, inflammatory arthritis, and other joint conditions. Identifying the underlying cause will help the expert to design an appropriate treatment plan.

Diagnosis will involve clinical examination, assessment of the patient's walking pattern and knee movement, and X-rays when indicated. Timely evaluation will help to determine the cause of knee pain and to come up with an individualised treatment plan based on factors such as the patient's symptoms, severity of the problem, and functional limitations.

Treatment options: From conservative care to advanced surgery

When it comes to managing knee pain, the treatment will be based on the underlying cause, severity, and impact



"KNEE REPLACEMENT IS NOT DECIDED BY AGE OR AN X-RAY ALONE. THE AIM IS TO UNDERSTAND HOW KNEE PAIN AFFECTS A PERSON'S EVERYDAY LIFE AND RECOMMEND THE RIGHT TREATMENT, FROM REHABILITATION AND MEDICAL MANAGEMENT TO SURGERY WHEN NECESSARY"

- DR. AVINASHDEV UPADHYAY

on daily activities. Non-surgical treatments can help some patients to deal with pain, improve movement, and joint function.

Non-surgical management involves physiotherapy for strengthening the quadriceps and surrounding muscles, and weight management can help to reduce the pressure on the knee joint. The patient will also be recommended low-impact activities such as walking, cycling, or swimming as tolerated by him/her. The doctor can also prescribe pain-relieving medication, walking aids, or braces in some cases. Likewise, some patients can also benefit from injections, such as platelet-rich plasma (PRP) or hyaluronic acid gel, if advised by the doctor.

Even though these treatments can be beneficial when it comes to managing symptoms, they may not be able to restore severely damaged cartilage. When knee damage is advanced and non-surgical treatments no longer provide that much-needed relief, surgical options will be considered by the doctor.

Knee replacement may be recommended to the patient when severe osteoarthritis causes constant pain, stiffness, and inability to perform daily activities with ease even after opting for non-surgical treatment. When knee pain takes a toll on sleep, impacts walking, independence, or overall quality of life, then surgical options should be taken into consideration by the patient.

The decision to undergo knee replacement will be based on various factors such as the patient's symptoms, clinical examination, imaging findings, overall health, and expectations from treatment. Age or X-ray findings will not decide if surgery is necessary. The goal will be to manage pain, improve mobility, and help patients do daily activities with comfort and independence.

Knee replacement is not necessarily the last resort after years of suffering. Once symptoms affect quality of life and conservative treatment is no longer effective, a surgical consultation is appropriate for the patient.

Modern knee replacement: Personalised surgical approaches

Total knee replacement surgery replaces the damaged surfaces of the knee joint with artificial components to get rid of pain and improve joint function. Advances in surgical techniques have also made robotic-assisted knee replacement an option for suitable patients, depending on availability and the surgeon's approach.

Robotic-assisted technology can help surgeons plan the procedure, guide bone cuts, and enhance the accuracy of implant positioning. However, know that the choice of surgical technique will be based on the patient's condition and needs. After the surgery, early mobilisation and physiotherapy will help the patient to recover and regain movement, strength, and even confidence when it comes to performing everyday activities.

PLASTIC SURGERY

A KEY DRIVER IN THE GLOBAL RISE OF MEDICAL TOURISM



By **MTT Research Desk**

In an increasingly interconnected world, plastic surgery has emerged as one of the most influential segments of the global medical tourism industry. Advances in surgical techniques, growing international mobility, and the pursuit of affordable, high-quality healthcare have encouraged millions of patients to travel abroad for both cosmetic enhancement and reconstructive procedures. As demand continues to rise, plastic surgery is reshaping not only individual lives but also the medical tourism landscape, making it a major contributor to the growth of cross-border healthcare worldwide.

Plastic surgery has evolved from a niche medical field into a multi-billion-dollar global industry, significantly influencing the landscape of medical tourism. Once sought predominantly for reconstructive purposes, plastic surgery now encompasses a broad spectrum of aesthetic and functional procedures that draw millions of international patients each year. From facelifts to post-trauma reconstructions, the demand for expert plastic surgery abroad is growing rapidly—fueled by cost-effectiveness, high-quality care, and increasing societal acceptance.

Plastic surgery is broadly divided into two categories: reconstructive surgery and cosmetic (aesthetic) surgery.

- Reconstructive plastic surgery focuses on correcting abnormalities due to

birth defects, trauma, burns, or disease. This includes procedures like cleft lip repair, skin grafts, and breast reconstruction post-mastectomy.
- Cosmetic plastic surgery, on the other hand, is performed to enhance appearance, including procedures such as rhinoplasty, liposuction, breast augmentation, and botulinum toxin injections.

Both types require specialized training and surgical precision, often blending art with science to achieve natural, functional results.

The Role of Plastic Surgery in Medical Tourism

Plastic surgery has become one of the most sought-after services in the global medical tourism market. Patients from developed countries frequently travel to destinations like India, Thailand, South Korea, Brazil, Mexico, and Turkey for high-quality procedures at a fraction of the cost they would pay at home.

Key Drivers

1. ***Cost Savings:*** Patients can save up to 60–80% on procedures without compromising on quality.
2. ***Access to Expertise:*** Certain countries are globally recognized for specific procedures. For instance, South Korea is known for facial contouring and eyelid surgery, while Brazil leads in body contouring techniques.
3. ***Minimal Wait Times:*** Unlike public healthcare systems with long waiting lists, medical tourists often receive near-immediate treatment.
4. ***Privacy and Discretion:*** Traveling abroad provides patients with the opportunity to recover in private, away from the public eye.

Safety, Accreditation, and Patient Outcomes

While cost is a major incentive, safety and quality remain top concerns. Internationally accredited hospitals and board-certified surgeons are crucial in ensuring positive patient outcomes. Many destinations now follow global standards set by organizations like the Joint Commission International (JCI) and the International Society of Aesthetic Plastic Surgery (ISAPS).



Pre-travel consultations, detailed informed consent processes, and coordinated post-operative care have become standard parts of the medical tourism experience, helping to minimize complications and ensure patient satisfaction.

Popular Procedures Among Medical Tourists

According to ISAPS, the most commonly performed plastic surgeries among medical tourists include:
- Rhinoplasty (nose reshaping)
- Breast augmentation and reduction
- Liposuction
- Facelift (rhytidectomy)
- Tummy tuck (abdominoplasty)
- Blepharoplasty (eyelid surgery)

In recent years, non-surgical procedures like dermal fillers, Botox, and thread lifts have also surged in popularity due to lower cost, minimal downtime, and quick results.

Emerging Trends: Technology and Personalization

Innovations in technology are reshaping plastic surgery. 3D imaging and simulation, robotic-assisted surgery, and regenerative medicine (such as fat grafting and stem cell therapies) are enhancing outcomes and patient experiences. Personalization, driven by AI and machine learning, is allowing for highly tailored treatment plans that align with each patient's goals, anatomy, and expectations.

Ethical and Cultural Considerations

The globalization of plastic surgery raises ethical questions regarding cultural beauty standards, informed consent, and equitable access. Healthcare providers must navigate diverse cultural perceptions of beauty while ensuring ethical integrity and patient autonomy. Transparent communication, cultural sensitivity, and a patient-first approach are essential in building trust across borders.

Plastic surgery has become a cornerstone of modern medical tourism, driven by advancements in technique, global access to skilled surgeons, and increasing demand for aesthetic improvement. As more patients seek quality care beyond their national borders, the integration of plastic surgery into the medical tourism ecosystem will continue to evolve—emphasizing safety, affordability, and excellence.

For patients, providers, and destinations alike, plastic surgery is not just about appearances—it's a transformative journey of healing, confidence, and global connection.

Stay tuned to discover the most sought-after plastic surgery centers in India for medical value travelers.

INDIA'S HEALTHCARE TECHNOLOGY REVOLUTION

BUILDING THE FUTURE OF MEDICINE

From AI and biotechnology to advanced diagnostics, robotics and digital health, India is building a healthcare technology ecosystem that could transform patient care and strengthen its position as a global healthcare destination.

By Shinto Kallattu

Artificial intelligence is moving into diagnostics and clinical decision support. Digital platforms are connecting patients and doctors across geographical boundaries. Biotechnology and genomics are opening new possibilities in personalised medicine, while advanced medical devices, robotics and remote monitoring are changing how healthcare is delivered.

India enters this transformation with considerable strengths: a large and diverse patient population, globally recognised pharmaceutical capabilities, a strong technology sector, highly skilled doctors and scientists, an expanding startup ecosystem and a growing network of advanced hospitals.

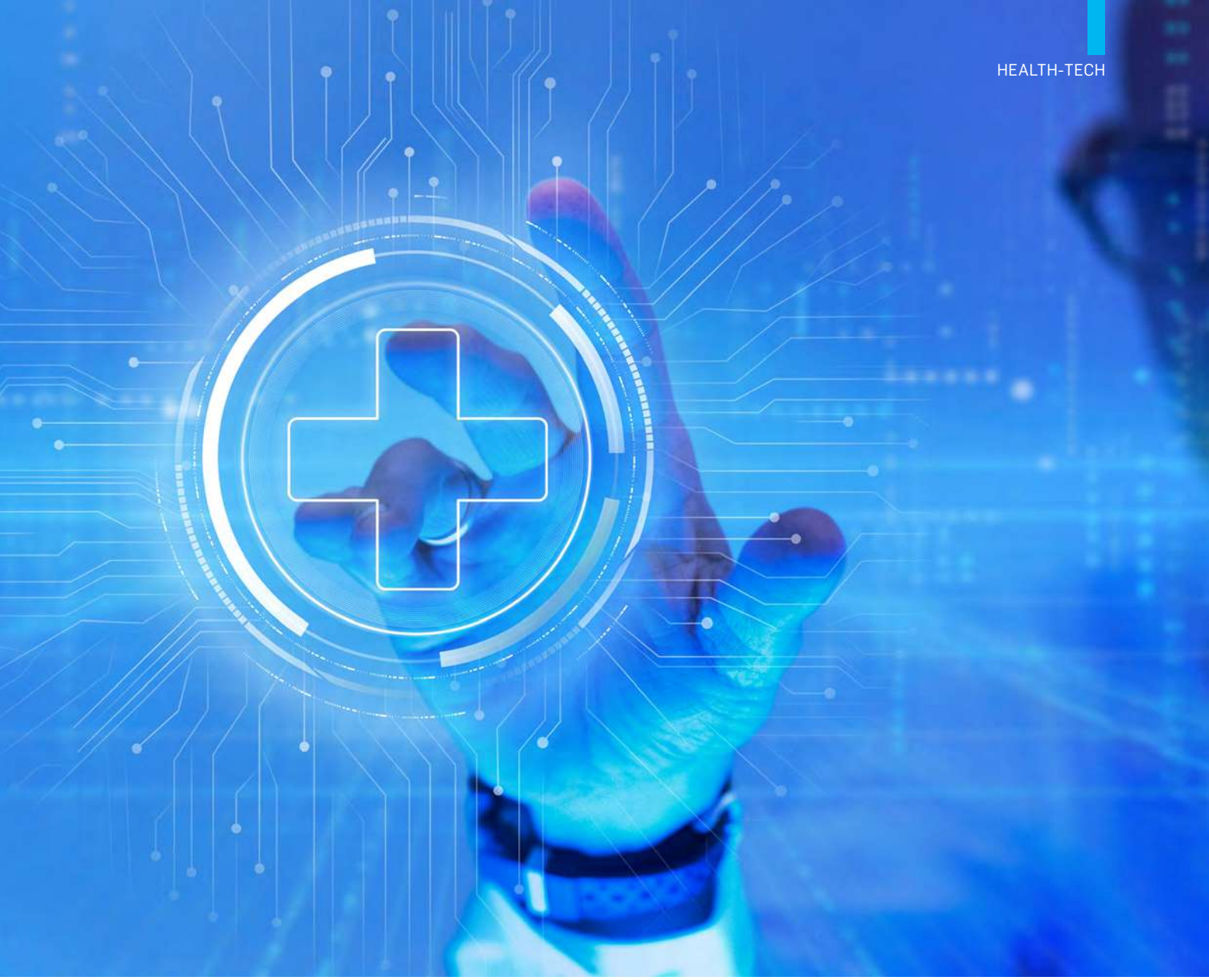
The opportunity is to bring these strengths together.

AI Moving Closer to Healthcare

Artificial intelligence is emerging as one of the most important technologies shaping the future of medicine.

Its applications are expanding across medical imaging, disease screening, clinical decision support, hospital operations, drug discovery, genomics and remote healthcare.

For India, the scale of the healthcare system makes AI particularly significant. Properly validated AI tools could help doctors analyse large volumes of information, support screening and extend specialist capabilities to areas where access to experts is more limited.



THE COUNTRY HAS ALREADY DEVELOPED SUBSTANTIAL DIGITAL HEALTH CAPABILITIES THROUGH TELEMEDICINE, ONLINE CONSULTATIONS AND THE AYUSHMAN BHARAT DIGITAL MISSION, WHICH IS CREATING INFRASTRUCTURE TO CONNECT DIFFERENT PARTICIPANTS ACROSS THE HEALTHCARE ECOSYSTEM

The Government of India has already established important foundations. In February 2026, it launched the Strategy for Artificial Intelligence in Healthcare for India (SAHI) and the Benchmarking Open Data Platform for Health AI (BODH) to encourage safe, evidence-based and inclusive applications of AI in healthcare.

IndiaAI and the Indian Council of Medical Research have also partnered to develop a nationally coherent and interoperable AI ecosystem for healthcare.

International developments demonstrate the possibilities. In China, widely used platforms such as WeChat and Alipay have become gateways to healthcare services, including appointments and telemedicine, while AI-enabled doctor avatars are also being explored.

India's opportunity is to build a digital healthcare experience suited to its own population and healthcare infrastructure.

The Digital Health Advantage

India's health-tech journey did not begin with generative AI.

The country has already developed substantial digital health capabilities through telemedicine, online consultations and the Ayushman Bharat Digital Mission, which is creating infrastructure to connect different participants across the healthcare ecosystem.





For a country as geographically diverse as India, digital connectivity can make a significant difference.

Specialists in metropolitan hospitals can potentially support patients in smaller cities. Remote monitoring can extend care beyond hospital walls. Digital records and virtual follow-ups can improve continuity of care.

This has particular relevance for medical tourism. An international patient's healthcare journey can increasingly begin with a digital consultation, continue through treatment in India and conclude with remote follow-up after returning home.

Technology can therefore strengthen India's medical tourism proposition beyond the hospital itself.

Biotechnology: The Next Growth Frontier

India's pharmaceutical industry has already established a powerful global presence in generic medicines, vaccines and pharmaceutical manufacturing.

The next opportunity is to expand further into innovative drug discovery, biologics, biosimilars, precision medicine and advanced therapeutics.

Developments in China demonstrate the potential of this transition. Chinese biotechnology companies have developed drug candidates that have attracted licensing interest from major global pharmaceutical companies, reflecting the growing importance of Asian research in international drug development. India is strengthening its own capabilities in this area.

The ₹5,000-crore Promotion of Research and Innovation in Pharma MedTech Sector (PRIP) scheme supports research in areas including new chemical entities, new biological entities, complex generics and biosimilars, precision medicine, medical devices and orphan drugs.







ITS ENGINEERING TALENT, SOFTWARE EXPERTISE, CLINICAL CAPABILITIES AND EXPANDING MEDICAL-DEVICE MANUFACTURING BASE PROVIDE A STRONG FOUNDATION FOR DEVELOPING INDIGENOUS MEDTECH

The Department of Biotechnology is also promoting the convergence of AI and life sciences, including initiatives around genome sequencing, genomics diagnostics, biomolecular design and synthetic biology.

The convergence of AI, biotechnology and clinical research could become one of India's most important healthcare opportunities.

Smarter Medical Devices

Healthcare innovation is not limited to software.

Imaging systems, wearables, remote monitoring devices, surgical technologies and robotic platforms are becoming increasingly intelligent and connected.

China's advances in specialised ultrasound, surgical robotics and brain-computer interfaces illustrate how quickly medical technology is moving towards the convergence of software, electronics, engineering and clinical medicine. A Rest of World report noted that China's NEO system from Neuracle received approval in March 2026, describing it as the world's first commercial approval of an invasive brain-computer-interface medical device.

India has significant potential in this field.

Its engineering talent, software expertise, clinical capabilities and expanding medical-device manufacturing base provide a strong foundation for developing indigenous MedTech. The Department of Pharmaceuticals has identified AI-enabled MedTech, including diagnostics and clinical decision-support technologies, as an important opportunity for India.

Hospitals as Innovation Hubs

India's hospitals can play a crucial role in the next stage of health-tech development.

Hospitals understand real-world clinical challenges. Doctors know where existing technologies fall short, while engineers and startups bring technological and product-development capabilities. Closer collaboration among hospitals, universities, startups, researchers and industry can help transform clinical problems into practical innovations.

This could allow hospitals to become not only users of healthcare technology, but also centres for co-development, testing and clinical validation.

India's large network of hospitals and medical institutions gives it a significant platform for this approach.

A New Dimension for Medical Tourism

The healthcare technology revolution could also reshape India's position in global medical tourism.

India is already known for experienced doctors, advanced hospitals, com-



THE GLOBAL HEALTHCARE LANDSCAPE IS CHANGING RAPIDLY AS TECHNOLOGY, MEDICINE AND SCIENCE CONVERGE. INDIA IS WELL POSITIONED TO PARTICIPATE IN THIS TRANSFORMATION—NOT SIMPLY AS A CONSUMER OF HEALTHCARE TECHNOLOGY, BUT INCREASINGLY AS A CREATOR AND EXPORTER OF HEALTHCARE SOLUTIONS.

plex treatment capabilities and comparatively affordable care. Technology can add another dimension.

An international patient could receive a preliminary digital consultation before travelling, share medical records electronically, undergo advanced diagnostics on arrival, access robotic or minimally invasive treatment where appropriate, and continue follow-up remotely after returning home. The medical tourism journey could increasingly become a digital-to-clinical-to-digital continuum.

This would allow India's healthcare technology capabilities to complement its existing strengths in clinical care and affordability.

Creating Technology for the World

India's opportunity extends beyond adopting technologies developed elsewhere.

Technologies designed to work effectively in India's diverse healthcare environment—affordable diagnostics, portable medical devices, AI-supported screening, remote-care platforms and digital health solutions—could also find applications across Asia, Africa, the Middle East and other emerging markets.

This creates an opportunity for India to expand its healthcare exports beyond medicines and treatment.

The country could increasingly offer the world:

Medicines + Medical Devices + Digital Health + Clinical Expertise + Healthcare Technology.

Building India's Own Innovation Ecosystem

India does not need to replicate another country's healthcare model. It can build on its own strengths.

Its emerging healthcare innovation ecosystem brings together:

- Pharmaceutical and biotechnology capabilities
- AI and software expertise
- Digital public infrastructure
- World-class hospitals
- Medical and scientific talent
- Growing MedTech manufacturing
- A vibrant startup ecosystem
- Increasing investment in research and innovation

The Research, Development and Innovation scheme, launched in 2025 with a ₹1 lakh crore outlay over six years, includes strategic areas such as AI, biotechnology, biomanufacturing, pharmaceuticals and medical devices.

These initiatives are creating an increasingly supportive environment for healthcare innovation.

The Next Chapter

The global healthcare landscape is changing rapidly as technology, medicine and science converge. India is well positioned to participate in this transformation—not simply as a consumer of healthcare technology, but increasingly as a creator and exporter of healthcare solutions.

AI can support earlier diagnosis. Biotechnology can enable new therapies. Genomics can advance personalised medicine. Robotics can expand minimally invasive treatment. Digital health can connect patients and specialists. Smart medical devices can extend monitoring beyond hospitals.

The real opportunity lies in connecting these developments into one ecosystem.

For medical tourism, the implications are significant. India's future proposition to international patients could combine clinical excellence, advanced technology, affordability and a digitally connected patient journey.

India's healthcare story has long been about treating patients and producing medicines for the world.

The next chapter could be about something even broader: developing the technologies, therapies and healthcare solutions that help shape the future of medicine globally.

Always on Your Screen?

How Long Hours on Devices May Affect Your Eyes, Ears and Sleep

It's hard to find anyone these days whose day doesn't involve a phone, a laptop, or a tablet at some point, often for several hours. We work off them, study off them, unwind by scrolling or watching something on them. All that convenience comes at a cost, though, and it isn't limited to the eyes. Sleep, hearing, posture, general well-being- screens end up touching all of it.

Eye strain is usually the first thing people notice. Stare at a screen close-up for long stretches, and the eyes start to dry out, burn, blur, and headaches creep in along with trouble focusing. Part of the problem is that we simply blink less when we're absorbed in something on a screen, which makes the dryness worse. A few small adjustments help, keeping the screen at a reasonable distance, not having the brightness too high, and something I often recommend to patients: the 20-20-20 rule. Every 20 minutes, look at something roughly 20 feet away for 20 seconds. It sounds minor, but it eases the strain.

Screens affect more than eyesight. Long hours spent wearing earphones, particularly at high volumes, can gradually affect hearing. The risk depends on both the volume and the duration of exposure. Keeping the volume at a comfortable level and taking regular breaks from earphones is a simple enough habit to build. Persistent ringing in the ears, muffled hearing or difficulty following conversations should not be dismissed as fatigue and should be evaluated by a doctor.

Sleep is one of the most overlooked casualties of excessive screen use. Phones and laptops used late at night keep the brain stimulated when the body should be winding down for rest. Bright light from screens, along with constant notifications, social media and work-related activity, makes it harder to unwind and fall asleep. Poor sleep, in turn, contributes to daytime fatigue, reduced concentration and irritability.

None of this means giving up technology altogether. It comes down to building healthier digital habits, avoiding screens close to bedtime, keeping phones away from the bed, taking regular movement breaks during work, and spending some time outdoors. For people working at computers for extended periods, maintaining good posture and changing position regularly matters just as much.





Dr. Arup Haldar
Consultant Pulmonologist,
CMRI, CK Birla Hospital, Kolkata

Clinical care today increasingly looks beyond treating disease to identifying everyday lifestyle factors that contribute to long-term health problems, and screen exposure is a good example of this. There isn't a single number of hours that is automatically harmful for every adult; the impact depends on what the screen is being used for, the intensity and duration of exposure, and whether it is interfering with sleep, physical activity or daily functioning.

Being screen-smart, rather than screen-free, is really the aim. Regular breaks, sensible volume levels, better sleep routines and more movement can go a long way in protecting the eyes, hearing and overall health, while still letting technology remain a useful part of modern life.

If symptoms such as persistent eye discomfort, hearing changes, recurrent headaches or ongoing sleep difficulties continue despite cutting down on screen time, it's worth seeking professional medical advice rather than relying on lifestyle adjustments alone.

Hair Transplants and Treatment in India

A Comprehensive Overview



Hair loss is a common concern affecting millions of people worldwide, and India has emerged as a leading destination for advanced and affordable hair restoration solutions. From surgical transplants to non-invasive treatments, the country offers a wide range of options to address different stages and causes of hair loss.

By **MTT Research Desk**

Hair transplants are surgical methods that permanently restore hair by relocating healthy hair follicles to balding or thinning areas. The two most widely used techniques in India are:

- **FUE (Follicular Unit Extraction):** Individual hair follicles are extracted and implanted into bald areas. It is minimally invasive and leaves tiny, almost invisible scars.
- **FUT (Follicular Unit Transplantation):** A strip of scalp is removed and dissected into follicular units for transplantation. It may leave a linear scar but is sometimes preferred for larger areas.

Both procedures are performed under local anesthesia and typically require minimal downtime.

Non-Surgical Hair Treatments

For those not ready for surgery or experiencing early-stage hair loss, India also offers various non-surgical treatments, including:

- **PRP Therapy (Platelet-Rich Plasma):** Involves injecting the patient's own blood plasma, enriched with platelets, to stimulate hair growth.
- **Laser Therapy:** Low-level laser devices are used to improve blood flow and stimulate follicles.
- **Medications:** FDA-approved treatments like Minoxidil and Finasteride are widely available under medical supervision.

Why Choose India?

India is a favored destination for both domestic and international patients due to:

- **Cost-Effective Treatments:** Hair transplants in India cost significantly less than in countries like the U.S. or U.K.
- **Expert Surgeons:** Indian doctors are globally recognized for their skills and often have international training and certifications.
- **Advanced Clinics:** Major cities such as Mumbai, Delhi, Chennai, and Bangalore house state-of-the-art facilities offering the latest in hair restoration technology.
- **Medical Tourism Services:** Many clinics offer comprehensive packages that include consultation, surgery, stay, and follow-up care for international clients.

Final Thoughts

India provides a full spectrum of hair transplant and treatment options tailored to different needs and budgets. Whether you're looking for permanent surgical solutions or non-invasive therapies, the country's experienced professionals and modern clinics make it a reliable destination for restoring hair and confidence.

Before undergoing any procedure, it's crucial to consult a qualified dermatologist or hair transplant surgeon to determine the most suitable treatment for your condition.

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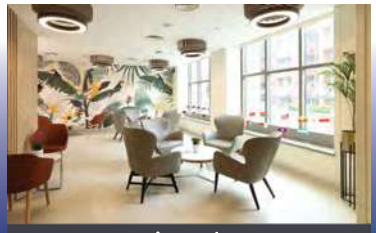
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