

Medical Equipment & Automation

India's premium magazine on the diagnostic, medical equipment industry and technology

A walk through Prosthetic Device Industry

INSIDE

- ◆ ROBOTICS
- ◆ PREVENTIVE HEALTHCARE
- ◆ MEDICAL DEVICES
- ◆ ORTHOPAEDIC





Technological development in orthopaedic equipment

India has emerged as a prominent destination for orthopaedic surgeries in recent years. Especially in the field of joint replacement, success rate of Indian orthopaedic surgeons at complicated surgeries is at par or even better than any other developed countries.

The technological development in surgical equipment, prosthesis and implants in experienced hands has shortened the recovery period. After 16000 joint replacement surgeries, 20 per cent of which were revision surgeries, across my career span, majority of my patients are able to walk shortly after the surgery due to sheer skill and technological support.

Technological Advancements

Unlike laparoscopic or other medical specialities, robotics in orthopaedic surgeries is a ubiquitous and young technology with vast research and development

projects undergoing in different parts of the world. Advancements in Robotic and navigational technology is enhancing accuracy and alignment of soft tissue balance in orthopaedic surgeries.

However, lack of long term studies in robotic orthopaedic surgeries are failing to prove their upper-hand over the traditional surgeries by skilled orthopaedic surgeons. Hence, until now, the accuracy and navigational support provided by the robotics in orthopaedic surgeries are only a complementary support to the surgeons and not an absolute must. A number of other developments in implants and surgical equipment have proved to be a boon to the speciality.

Rising number of orthopaedic surgeons and surgeries have witnessed a rapid rise in number of revision orthopaedic surgeries in recent years. Bone defects caused by the previous surgeries has emerged as the major hurdle in these revision joint replacement surgeries.

Keeping the demand in mind, a number of metal augments (support) known as 'Trabecular Metal Designs,' are now available in the market to provide both mechanical and biological support in the revision joint replacement surgeries. As opposed to the earlier implants which only provided mechanical support and tend to loosen up after 10-15 years, causing a number of health complications, the advanced metal augments stimulate bone

formation around them, for long term natural stability.

Technological developments in the metal joint designs also provide immediate weight bearing functions to allow the patients to walk almost immediately after the surgery. The early weight bearing not only improves the bone quality of existing bone structure but allows stability and mobility to the patients.

The new surgical equipments have proved to be a major support for surgeons in recent years. Unlike the electric saw blade which was used for orthopaedic surgeries, now we have battery operated advanced saw with surgical blades which offer precise and uniform output. Many such advanced equipment are shortening surgical duration, recovery period and enhancing accuracy.

Excellent infection prevention is another by-product of technological advancements in orthopaedic area. State-of-the art, specialised surgical units with laminar airflow to contain airborne contamination and special surgical suits which even prevent wound contamination through surgeon's breathing allows minimal complications rate.

Having said that, chances of infection during orthopaedic surgeries remains high with smaller, ill equipped surgical facilities. Thus patients are advised to opt for dedicated orthopaedic surgical units to ensure successful surgeries.

Future demands:

The future scope for improvement in

orthopaedic surgeries, specifically in joint replacement surgeries is reduction in admission duration. While we at Nanavati Super Speciality Hospital are able to provide mobility to patients immediately after the surgery, we intend to transform the joint replacement unit into a day care centre where the patients can comfortably walk out the same day.

Robotics and Artificial Intelligence (AI) support can offer a crucial support in realising this goal. Orthopaedic robotic market is on the brink of evolution and 2019 has witnessed their spread across the world for numerous orthopaedic procedures. Followed by North America and Europe, many countries across Asia-Pacific are investing into research and development of the orthopaedic surgical robots to bring down the cost and increase accuracy of the procedures.

The major drawback, remains the cost factor attached with the robotic orthopaedic surgeries and lack of the robotic instruments to increase the accuracy as compared to a skilled surgeon. However, the technology is exciting and it will not take more than two years for the AI based robotic systems to claim a lion's share in orthopaedic surgeries. +



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