

Orthopaedics and innovation: Technology is constantly shaping the world of Orthopaedics

Ramji Lal Sahu*

Department of orthopaedic surgery at school of Medical science and research, Sharda University, India

***Corresponding Author:** Ramji Lal Sahu, Department of orthopaedic surgery at school of Medical science and research, Sharda University, India.

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I feel privileged to announce the inaugural issue of the Orthopaedic surgery and Traumatology journal. It is a multidisciplinary open access journal. In keeping with its vision and mission of innovating, evaluating, and disseminating new knowledge, the Scientia Ricerca has launched the Journal of Orthopaedic surgery and Traumatology. The purpose of launching journal J OSAT (Journal of Orthopaedic Surgery and Traumatology) is to spread scientific and research information across the globe. However, primary aim of the orthopaedic profession is patient health care. The quality health care of the patient will require orthopaedic surgeons to generate research material, innovations, and protocols to develop new medical technology, and surgical techniques which will improve patient care. We believe that quality researches and scientific information should spread horizontally across the world, by the clinicians, Universities, or Institutions. However, primary role of journal shall be bridging the scientific gap between the researchers and the readers.

The JOSAT not only acknowledges the scientific achievers but also recognizes the unit, the university, the department, the patients, and all of those whoever contributed to the research directly or indirectly. However, the integrity of the journal depends on the benefit of the scientist, the institution, the society, and so to the world health. The journal wishes to raise the level of care in the field of Orthopaedics surgery and thus improving the quality of life and socioeconomic benefit to the patients. James Murphy, a third generation Orthopaedic surgeon, has seen first and how improvements in technology impact patient care. Murphy, an Orthopaedic surgeon out of East Chicago's St. Catherine Hospital, part of the Community Healthcare System, says his father and grandfather both practiced on the southeast side of Chicago. Between his father's era and his, there has been a lot of innovation, he says. In the 1950s and '60s, Orthopaedic surgery meant plastering fractures and putting patients in traction with long hospital stays.

The technologies available today have changed all that for the better, he says, so that even patients with complex injuries can be treated as outpatients or have minimal hospital stays. When his grandfather completed his residency, the program was one of the first Orthopaedic residencies in the world. He was part of the American Academy of Orthopaedic Surgeons started in 1933 at Northwestern University in Chicago. Prior to that, doctors were either general surgeons who did every type of surgery or family physicians. We need to appreciate where we came from so as we go forward, we know that we're part of something bigger than just our clinic or our hospitals. It's a fellowship of Orthopaedic surgeons that goes back over a century, Murphy says. The physicians who came before us really kind of blazed the trail for what we are able to do. A lot of times we forget about that. The most major advancement is the treatment of arthritis, he says. Growing up in the 1970s, he remembers parties where one room was filled with the older family members who would sit and have food and drinks brought to them. There was also a bucket near every home's front door where seniors would leave their canes.

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That doesn't exist now, Murphy says. Nowadays, senior family members are walking around, talking about their golf games and late travels. Joint replacement has been the greatest advancement as people age. When their knees and hips become arthritic, they can have them replaced to stay active. Murphy also does ankle replacements, a surgery not many doctors are trained to do. It is an area that is a little underserved, he says. The pain causes sufferers to limit activity in the workplace and recreationally and eventually affects their ability to walk at all. Arthroscopic surgery has also done a lot to change the way doctors treat patients. They are able to make smaller incisions and use a camera the size of a pencil to see the joint in question. Through a second incision they use instruments to correct whatever problems exist. Recovery is such night and day difference, he says, leaving doctors to abandon many of the older protocols. He compares the shifts in technology to personal computers.

The one you bought five years would never get to market now, the same has happened in arthroscopic surgery. Some parts of practicing medicine are constant, Murphy says, no matter the generation. Gregory McComis, Orthopaedic surgeon at North Pointe Orthopaedics in Munster, says the anterior total hip replacement is a huge advancement in Orthopaedic medicine. A traditional total hip, which was done for the past 50 years, was done through incision in your buttocks or backside of your hip, he says. It was more painful and required more rehab. Patients were also at risk for dislocating their hips after surgery. The anterior hip procedure uses a smaller incision in the groin to remove the ball of the hip joint and replace it with one made of metal and plastic. Doctors do not cut through as many muscles, making it minimally invasive. Patients can get up and walk on day of surgery and go to normal activities in four to six weeks. The muscle sparing means patients will never have an issue with muscle weakness or chance for hip dislocation. This can't be duplicated in any other way," he says.

The procedure was popularized in the United States by a California surgeon around 2005. McComis started doing the procedure in January 2010 and has done almost 700 of them. Patients come from throughout the Midwest to see him. About 30 percent of patients are in their mid to late 50s. A lot of surgeons are not doing this procedure because it is technically more challenging but I think the benefits far outweigh the risks for the patients. William Biehl, Orthopaedic surgeon out of St. Anthony Health in Michigan City, uses technology while doing knee replacements. His technique involves having patients get an MRI scan of their knee. A model is then constructed of the knee for which Biehl can "make special jigs that are specific to the patient's knee." When he puts those jigs on the knee during surgery, it helps him make better cuts. Other surgeons utilize computer navigated surgery when making cuts. Biehl also says availability of vitamins is an important change for Orthopaedics. Over the last five years, over-the-counter vitamin D3 tablets have become available and they are fairly inexpensive. Although Midwesterners may think they get enough vitamin D, they must have direct sunlight over 80 percent of their body to activate it, something unlikely to happen during the winter months.

Once it becomes warmer in spring and summer, more people get active and then I see a lot of kids with stress fractures or growth plate injuries. I think a lot of this is due to our vitamin d metabolism around here. Biehl recommends taking the suggested amounts of calcium with vitamin d3, which for most adults will be 1200 mg calcium with 800 iu of vitamin d3. Glinda Tufts, of Crown Point, had both knees replaced six weeks apart in 2009 at Rush University Medical Centre in Chicago. She had tried steroid injections for the osteoarthritis in her knees but it continued to get worse. She was most worried about pain and discomfort following surgery but says it went much better than she thought. Anyone considering the surgery should go the minimally invasive route, she says, and avoid methods that open the whole knee. She was home within 48 hours after the first knee replacement and within 24 hours after the second.

The first week post-surgery, she had in-home care but by the second week, she was driving to physical therapy. Before you can leave the hospital, you have to be complete certain tasks, she says. Within 24 hours of having a knee replaced you can climb a flight of stairs. It's pretty amazing what they can do now. Dwight Tyndall, a spine surgeon based in Munster, says that outpatient spine surgery offers many advantages for patients. "When I first came in practice, the way I was trained, if a patient was having any type of spine procedure, they would be in the hospital three to five days," he says. "Now we've gotten to the point, at least in my practice, where they are going home the same or next day." With smaller incisions, new techniques and tools, patients can recover faster and can get back to their life sooner, he says.

Blood transfusions and large amounts of pain medications are also no longer needed. As one of the leaders to move us in that direction, it has been very exciting to see those developments, he says. Patients don't want to be in the hospital for multiple days and these advancements mean they no longer have to. Work related injuries and age related changes are among the top reasons for spine surgery, he says, with patients ranging from their 20s to 70s. Even his young patients often have preconceived or fairly negative ideas about spine surgery and Tyndall educate them about how much has changed. We're still getting the same thing done, with the same objective. The techniques have changed so they have to throw all their preconceptions out the window as far as how long the surgery is going to take, how quickly they get home, how quickly they will recover, he says. The beautiful thing about that is I've been able to move my surgeries from hospital based procedures to a surgery centre based procedure.

Moving the procedures to outpatient buildings is more cost effective and efficient. Outpatient surgery centres have been used in plastic surgery and sports medicine for some time but the use of them for spine surgery is a fairly recent development. "It's the wave of the future since we're so preoccupied with costs and outcomes. I definitely think it's the way we're going to go," Tyndall says. "I think it will be beneficial for the entire health care system and especially for our patients. We know that today's advanced Orthopaedic devices and techniques—especially MIS, computer-navigated, and robot-assisted procedures—require equally advanced positioning technologies to fully realize their potential. We aim to streamline procedures, support repeatability, and to literally free the hands of the surgical team. Scientia Ricerca aims to have tradition of providing services like high quality articles, posters/slides and videos will be published in Scientia Ricerca includes case studies, experimental research, latest innovations, comprehensive reviews and other forms of general surgeries.