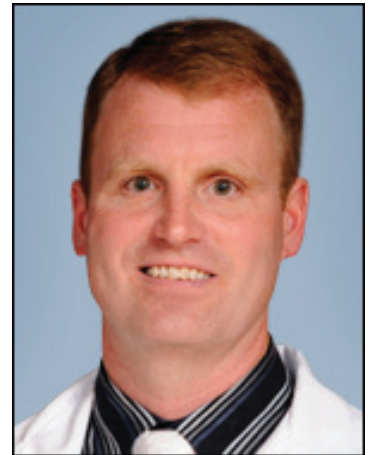


# WHAT'S NEW IN HIP AND KNEE REPLACEMENT?

By Douglas J. Chonko, DO

Many exciting innovations have occurred in orthopaedic surgery over the past decade. Some of the most remarkable changes and innovations have included total knee and hip arthroplasty. One of the innovations that has received an inordinate amount of attention and fanfare is minimally invasive surgery (MIS) for hip and knee replacements.

Great debates have taken place among orthopaedic surgeons on the definition of minimally invasive hip and knee replacement. Although a uniform definition of "minimally invasive" remains elusive, it is generally agreed upon that minimally invasive skin incisions are one-half to one-third the length of traditional incisions. More importantly is the decrease in muscle and soft tissue dissection below the skin. Initially, much of the hype was based on marketing. However, more recently, scientific data is being published showing benefits.



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MIS knee incisions vary in length from 3.5 to 5.5 inches. Variables affecting the length include size of the distal femur and patella, thickness of adipose tissue, stiffness of the knee prior to surgery and knee deformity. The most critical factor, however, is not the length of the incision. The patient will benefit by not making an incision into the quadriceps and by avoiding disruption of the suprapatellar pouch.

MIS hip incisions vary in length from 3 to 5 inches for a single incision approach and 1.5 to 2 inches for each incision in the two-incision approach. Single incision MIS approaches can be one of three basic approaches: anterior, anterolateral and posterior. The two-incision technique holds promise for limited soft tissue dissection. The technique uses intermuscular planes and muscle splitting rather than the use of muscle and tendon releases from the femur. The two-incision technique requires the use of fluoroscopy and visualization is limited. There appears to be a steep learning curve, and it may be difficult to teach residents and the surgeon who does fewer than 20 hip replacements a year. The single incision allows for better visualization and may be more easily mastered by allowing the surgeon to use an approach that he or she is familiar with.

Recent reports are showing that minimally invasive knee replacements are showing a more rapid progression of motion, a decrease in blood loss, a decrease in length of hospital stay, more rapid return of walking, and the use of less pain medication. Data presented at this year's Hip and Knee Society meeting showed similar results with MIS hip replacements. Not all of the data presented, however showed a benefit to MIS although the majority is in the affirmative. As learning curves are overcome and techniques refined, the results may show the nonrefutable evidence some are waiting for.

One other area of orthopaedic surgery and hip arthroplasty receiving a tremendous amount of attention and media hype are hip replacements utilizing alternative bearing surfaces. The two alternative bearing surfaces that hold the most

promise are ceramic-on-ceramic and metal-on-metal. Both of these bearing surfaces show a minimum of a hundred-fold reduction in wear as compared to the traditional metal-on-polyethylene. The wear particles that are generated also appear to be much less reactive. The polyethylene wear particles that are generated induce a highly inflammatory reaction around the hip replacement with the induction of macrophages. Macrophages have been implicated in causing osteolysis and early loosening of the prosthesis. Both ceramic-on-ceramic and metal-on-metal bearing surfaces have been available for many years; however, recent manufacturing improvements may allow them to last 30 – 40 years. The earlier ceramics had breakage and impingement issues which have been largely corrected. The original metal-on-metal bearing (McKee-Ferrari) was developed over 40 years ago. Early loosening demonstrated the necessity of exact tolerances between the cup and the prosthetic ball. Many issues and variables affect the longevity of prosthetic replacement, but the elimination of polyethylene helps solve one of the largest issues.

The new millennium holds great promise for orthopaedic surgery and many improvements are on the horizon. The need for better replacements that last longer will become more and more important as the baby boomers become arthroplasty candidates.

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