# Not All Knee Surgery Advances Improve Outcomes

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SNOWMASS, COLO. — Patients considering joint replacement are coming in to the office with some pretty specific questions these days. They want to know more about gender-specific knees, minimally invasive knee replacement, computer-assisted surgery, new indestructible materials, high-flexion designs, and rotating platforms, said Dr. Thomas S. Thornhill, chairman of the department of orthopedic surgery at Brigham and Women's Hospital in Boston.

Dr. Thornhill offered his advice on these issues at a symposium sponsored by the American College of Rheumatology.

## Gender-Specific Knees

Approved in 2006, the Gender Solutions implant (made by Zimmer Inc.) was the first knee prosthesis to target the female knee. The company promotes the implant in part by stating that the implant better fits the size and shape of a woman's knee.

"There are really no significant clinical differences between male and female problems with the knee," said Dr. Thornhill. However, some studies suggest that survivorship in total knee replacement may be better in women.

Men typically have knees that are broader in the medial-lateral dimension than in the anterior-posterior dimension. Women tend to have knees that are narrower in the medial-lateral dimension and a little longer in the anterior-posterior dimension.

While there clearly are differences between the aspect ratios—the ratio of medial-lateral length to anterior-posterior length—of men and women, some research suggests that the differences among women and among men are greater than those between the sexes.

## Minimally Invasive Knee Replacement

Patients will come in asking for minimally invasive knee replacements but it's not clear what this means. "Is it a shorter incision? Is it the fact that you don't violate the quadriceps mechanism? Is it that you don't evert the patella when you thrust the knee?" asked Dr. Thornhill.

What patients think of as minimally invasive surgery actually is combined with many other variables: patient education and selection, preemptive analgesia, better post-operative pain control, and more rapid mobilization.

"There are no data demonstrating any long-term benefit to minimally invasive surgery. There are data showing a little bit better length of stay, a little less blood loss, a little bit shorter time getting to rehabilitation goals," said Dr. Thornhill.

## Computer-Assisted Surgery

Computer-assisted surgery—available in some centers—does have the advantage of eliminating some of the outliers of alignment. "This may be a benefit to people, who may not be high-volume surgeons," said Dr. Thornhill.

Computer-assisted surgery has much potential as a teaching tool, partly because it can give feedback to surgeons. "The trouble is it costs a lot of money and it increases the surgical time," said Dr. Thornhill. In addition, at the present time, computer-assisted surgery increases the dissection.

## New Materials, High-Flexion Designs

Patients are interested in new, longer-lasting materials, such as ceramic-on-ceramic joints. What patients don't generally know is that there is a 6% incidence of squeaking in patients with ceramic-on-ceramic replacement hip joints, said Dr. Thornhill. Other options, such as cartilage repair/regeneration techniques, primarily are performed on an experimental basis for osteochondral defects.

In terms of postoperative flexion, the most important factor actually is preoperative flexion, said Dr. Thornhill. High-flexion designs "add little functional value." These designs do increase the cost though.

## Rotating Platforms

Rotating platforms allow rotation around a central axis, supposedly improving kinematics. However, the human knee does not rotate, Dr. Thornhill noted. These implants have unidirectional wear, which is a theoretical advantage, but studies have not shown that the range of motion is any better with rotating platforms.

Dr. Thornhill disclosed that he receives royalties from DePuy Inc. He also has received research grants from DePuy Inc., Biomet Inc., and Smith & Nephew. ■