Savannah HEALTH PERSPECTIVE©

Innovations in Knee Replacement Surgery

Customized Alignment Guides Based on Pre-operative CT Scans

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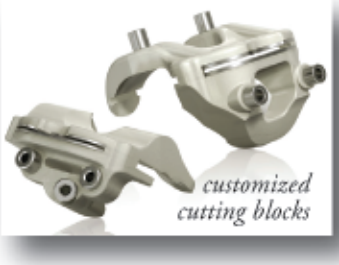
There are many factors involved in achieving a successful knee replacement outcome. The correct alignment of the femoral and tibial components may be the most important factor in terms of how long a knee replacement will last. Correct alignment is a direct result of accurate bone cuts. Component misalignment can lead to the need for early revision surgery. New technology is now available which allows the cutting blocks to be made pre-operatively and in a customized fashion. Traditional knee replacement surgery has relied on intramedullary referencing systems (rods placed inside the femoral and tibial bones) to make the bone cuts that reproduce the desired alignment. More recently, computer assisted navigation systems were developed to improve the accuracy of these cuts without using rods placed inside the femur and tibia. The use of these computerized systems has waned due to increased operative time and expense. In addition a recent study published in a major orthopedic journal found no improvement in alignment between traditional and computer assisted navigation methods. The latest development in terms of improving knee replacement alignment involves the use of pre-operative CT (computerized tomography) scan images to develop customized cutting blocks. These cutting blocks are made to match the characteristics of each patient's knee to insure correct alignment of the knee replacement. The Trumatch system (Johnson & Johnson/Depuy) is the newest technology available for correct knee alignment. The Trumatch system uses pre-operative CT scans of the hip, knee and ankle to produce the customized cutting blocks which restore the proper alignment of the knee joint.



customized cutting blocks

cutting block in position

The process begins when the CT

Photos Courtesy of DePuy Orthopaedics, Inc.

scan images are emailed to the manufacturer. Trumatch model cutting blocks are then sent via email to the orthopedic surgeon for revision or approval. Once pre-operative plans are approved, the actual cutting blocks are made and sent to the hospital. This process takes four to six weeks. The beauty of this system is that most of the alignment steps occur pre-operatively rather than in the operating room while the patient is under anesthesia. As a result, the patient's time under anesthesia is reduced. Nine steps of the traditional knee replacement are done before you enter the the hospital.

The Trumatch system uses advanced technology to achieve the alignment goals of traditional knee replacement surgery. This should help reproduce and possibly enhance the excellent outcomes which have been achieved with traditional knee replacement procedures.

For more information about knee replacement surgery or other orthopædic issues, Dr. Holtzclaw can be contacted at Chatham Orthopædics, P.A., 4425 Paulsen Street, Savannah, Georgia 31405 or call him at (912) 355-6615 or visit chathamorthopedics.com

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2. Kim Y.H., et al. Alignment orientation of the components in total knee replacement with and without navigational support. J Bone Joint Surg Br 2007; Vol 89-B: 471-476