

NAVIGATION IN KNEE PROSTHETIC SURGERY: 10 YEARS OF EXPERIENCE

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From May 2002 until April 2011 we have performed more than 1000 TKA primary implants assisted by navigation control using, at the beginning, regular instruments; from March 2006, until today, about 700 minimally invasive TKA with dedicated instruments. The purpose of this topic is to assess the efficiency and the current role of navigation in TKR.

The minimally invasive technique, assisted by iMNS™ (Medacta Navigation System), is a quite simple, fast, safe and reliable procedure. It is an open system, CT and RX free, based on geometric data acquired during the operation. It provides useful information for the ligament balancing. Navigation procedure doesn't need intramedullary rods.

The minimally invasive TKA means a smaller skin incision, around 8-10 cm long, and limited midvastus or medial parapatellar approach that minimally invade extensor mechanism without eversion of the patella.

Acquiring all the landmarks needs about 7 minutes.

We use two femoral cutting guides: a "four in one" guide and a distal one; for the tibia a small dedicated cutting block.

We performed and improved a "hands on technique" which allows us to realize the tibial osteotomy without fixing the cutting block. If needed micrometric guides are available.

The method is efficient for every patient with a submillimetric accuracy providing very helpful data to correctly plan and balance the surgical procedure.

By the analysis of 185 TKR surgeries, 97,8% of the population showed a post-operative HKA neutral alignment ($\pm 3^\circ$); the HKA standard deviation decreases from $4,7^\circ$ pre-op to $1,3^\circ$ post-op. Axial alignment of the limb with restoration of the HKA neutral axis is a determinant of the outcome in TKA surgery. In particular a mechanical axis within a range of $\pm 3^\circ$ varus/valgus is thought to be associated with a better clinical outcome.

From our experience the results suggest that iMNS™ computer-assisted surgical navigation for total knee replacement is very satisfactory in terms of accuracy, blood loss, post-op pain, ligament balance, low rate of complications, short recovery and time surgery. Besides all these advantages, maybe one of the most important is the ability of these procedure to be reproduced.

For all these reasons listed, we strongly believe that navigation is a safe and effective way, like others that have the same aim, that allows for an improvement.