

A Case Of An Extra-Articular Deformity Total Knee Arthroplasty Using Computer Assisted Stereotaxic Navigation System

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INTRODUCTION:

Knee Osteoarthritis represents a major health issue. Osteoarthritis knee pain is a major public health issue globally. The prevalence of knee osteoarthritis in Malaysia was estimated to be 10% to 20% of the elderly population³. The Community Oriented Program for the Control of Rheumatic Diseases (COPCORD) study conducted in Malaysia reported that 64.8% of joint complaints were regarding knee, out of which more than half with knee pain showed clinical symptoms of OA.

CASE REPORT:

A 67-year-old lady was referred to our centre (PPUKM) arthroplasty team for severe varus deformity over both knee joint with knee osteoarthritis (KL grade III). Patient complaint of both knee pain for past 10 years and her left knee pain worsen over the past 2 years. We noted that patient had varus deformities over her her both knees. A long leg view scanogram showed bowing of both femur and tibia. The bowing of the femur does not allow us to use conventional TKR intramedullary femoral jig as this can lead to fracture of the anterolateral cortex of femur. Furthermore a valgus cut of 16° is required in order to achieve the mechanical axis (fig 1). We proceeded using iAssist, a portable computerised navigation system (fig 3). Post-operatively we manage to restore the mechanical axis (fig 2).



Fig 1: Pre-op



Fig 2: Post-op

DISCUSSION:

The longevity of total knee prostheses depends

mostly on the correct alignment (frontal, sagittal and axial) of the prosthetic components, soft tissue balancing and restoring the mechanical axis of the lower limb. It has been shown that without proper planning (the so-called "conventional navigation"), patient specific cutting blocks or computer navigation, the frontal alignment will be deviated more than $\pm 3^\circ$ from the neutral mechanical axis in 20% to 30% of the cases. In only 75% of conventional total knee replacements (even if they were performed by experienced surgeons) the restoration of mechanical axis is ideal. Navigation systems provide information on accurate bone cutting, proper orientation of prosthesis component, and soft tissue balancing under the situation that operators cannot recognize normal anatomical land marks or insert intramedullary guide due to the extra-articular deformity of the femur or tibia⁹. According to Bae et al. the average post-operative mechanical axis was 1.4° varus in computer assisted navigation system compare to 3.3° varus in conventional TKA¹¹.

CONCLUSION:

Navigation assisted system TKA could help us in correcting the mechanical axis in the lower extremities without separate corrective osteotomies in the selected patients with osteoarthritic knees and extra-articular deformities. However, we also have to put into consideration regarding the extra cost which will burden the patient, not forgetting the increase in surgical operating time if the surgeon is not familiar with the navigation system.



Fig 3:
iASSIST
electronic Pod