Bilateral Osteoarthritis with Extreme Varus Deformity Operated with Right Long-Stem Total Knee Arthroplasty

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INTRODUCTION:

- Osteoarthritis of knees is a degenerative condition of the knee joint, with incidence in females more than males.
- Radiological hallmarks of osteoarthritis include-
  Bony deformity,
  Narrowing of the joint space,
  Degeneration of cartilage
- Indians are known to have higher pain tolerance, due to which patients presenting with severe bony defects is not uncommon.
- As a result, advanced osteoarthritis cases present at much later stages with Varus deformities, tibial bone loss and abnormal gait.

CASE HISTORY:

- 82 Year old female came with complaints of difficulty in walking and severe pain in bilateral knees, affecting her right knee more than left knee.
- Patient was also unable to do her

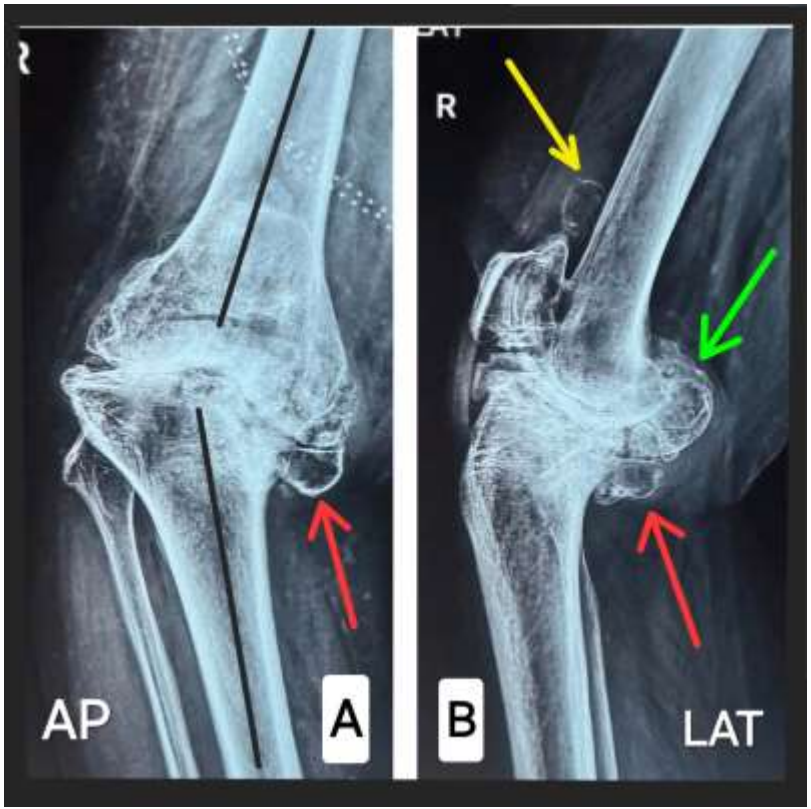
  activities of daily living and

  ground level activities.

ON PHYSICAL EXAMINATION:

- Medial and lateral joint line tenderness with swelling of bilateral knees.
- Obvious gross varus deformity in bilateral knees (Right > Left).
- Fixed flexion defromity was mesasured to 25 degrees in right knee.

PREOPERATIVE X-RAYS:



- Xray of right knee in AP and Lat views was suggestive of Kellgren and Lawrence type IV osteoarthritis with 40 degrees of varus deformity.
- Red arrow indicates proximal tibia posteromedial bone loss.
- Yellow arrow indicates loose body.
- Green arrow indicates femoral osteophytes on posterior aspect.

CHALLENGES IN THIS CASE:

- Age of the patient
- Varus deformity of 40 Degrees in the right knee
- Lateral ligament laxity
- Proximal posteromedial tibial bone loss
- Fixed flexion deformity of knee of 25 Degrees

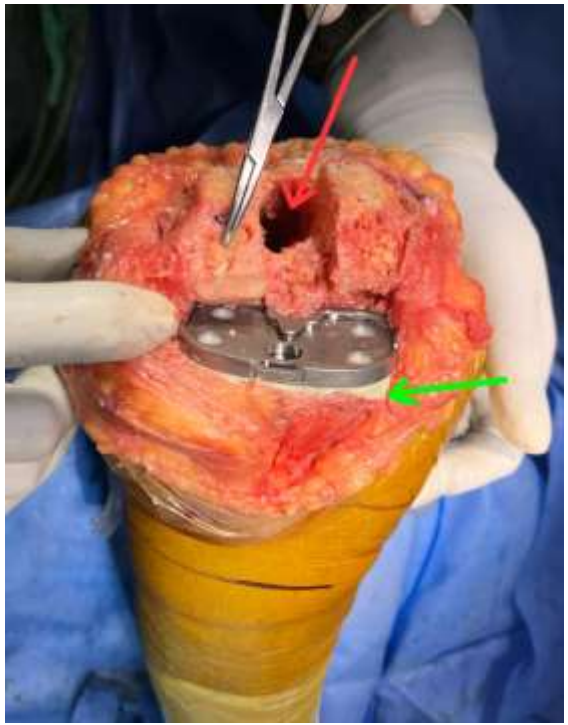
SURGICAL APPROACH:

- The patient was taken in a supine position under spinal with epidural anesthesia with a tourniquet pressure of 280 mmHg.
- A mid-line rectus splitting approach was taken to expose the right knee.
- Medial and posteromedial release was done up to pes anserinus and attachment of hamstrings.

- Medial osteophytes were excised, loose bodies were removed, Posterior Cruciate Ligament was released, and the notch was cleared. Osteophytes on the femoral side below Medial Collateral Ligament were removed.
- Femoral distal cuts were taken with a 5° intramedullary jig, and tibial cut was taken with a intramedullary jig 10mm on the lateral side. The extension gap was achieved laterally, and slight tightness on the medial side was present.
- The green arrow depicts the posteromedial tibial bone loss.

- Femur sizing was done, and cuts were taken at 5° of external rotation.
- The posterior osteophytes of the femur were removed, and the posterior capsule was released on the medial side.
- The flexion gap was achieved equally on the medial and lateral sides and checked in extension as well.

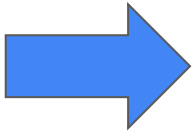
- The implants- tibial base plate and extension rod-were prepared. Trial was done, and the knee was found to be stable in flexion and extension, and patella tracking was good. Final femoral and tibial implants were fixed.
- Patella denervation was done with cautery.



- Posteromedial bone loss was approximately 1 cm, so 2 titanium screws of 40 mm were fixed, and the tibial bed was prepared for cementing.
- Green arrow shows the cement filling over the posteromedial aspect of tibia.
- Red arrow shows the femoral tunnel.

POST-OPERATIVE X-RAY


R
AP
R
LAT



POST OPERATIVE REHABILITATION:

- On post operative day(POD)-1, patient was encouraged to do static quadriceps and hamstring excersises and bed side sitting.
- From POD-2 patient was made to walk full weight bearing with walker.

POST 3 MONTH FOLLOW UP:

DISCUSSION:

- De Muylder et al. have classified osteoarthritis into-
  Well-aligned knees (0°-3° deviation),
  Common deformities (4°-10° deviation),
  Substantial deformities (11°-20° deviation),
  Important deformities (21°-30° deviation), and
  Extreme deformities (greater than 30° deviation)
- Constrained implants have become more common in difficult primary Total Knee Arthroplasty cases in recent years because they more effectively and conveniently handle the substantial instability that is evident in osteoarthritis of knees with severe varus deformity. But in this case report we had kept constraint implants standby but successfully demonstrated that even in cases of significant instability and bone loss, intraoperative conversion to a restricted device is rarely necessary.

- Traditionally, for a successful Total Knee Arthroplasty, rectangular soft tissue balance was very important. Hence, medial soft tissues are often released to achieve proper soft tissue balance in cases of varus deformity. In this case, there was medial tightness, due to which we did medial and posteromedial releases.
- The long-stem components provided additional support and facilitated the correction of the significant deformity in the right knee. This highlights the potential benefits of this technique in achieving optimal alignment and stability with a good postoperative range of motion.

- It is to be concluded that in severe varus deformity of the knee, if proper step-wise release is done, we can balance the knee without using constraint implants. Bone defects can be reconstructed using cement or augment and good results can be achieved.

THANK YOU