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COMPARISON OF FEMOROTIBIAL ANGLE BEFORE AND AFTER PROXIMAL FIBULAR OSTEOTOMY IN OSTEOARTHRITIS KNEE IN INDIAN POPULATION

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ABSTRACT

The aim of this was to study the effect of PFO on the predominant medial compartment osteoarthritis knee. In a period of one year, 40 patients with predominant medial compartment osteoarthritis were operated in our department of orthopaedics. 2cm long fibula was resected 7 cm to 9 cm distally from the head of fibula. In our study, the average age of presentation was 64.1 year. The outcome was evaluated radiologically by using FTA. Follow up was done according to set proforma. Post operatevily mean FTA improved to 181.8 +1.159 degree from 184.05 + 1.694 degreespreoperatively (bothvalues were significant P<0.001). It was concluded that PFO is a new and cost effective surgery for predominant medial compartment osteoarthritis of knee with obvious correction of FTA and varus malalignment of lower limb axis.

KEYWORDS: PFO - Proximal Fibular Osteotomy FTA – Femorotibial Angle.

INTRODUCTION

Osteoarthritis is the second most common degenerative problem and it is the most frequent joint disease with a prevalence of 22% to 39% in India.[1][2] OA is more common in women than men, but the prevalence increases dramatically with age.[3]

Early clinical symptoms of Knee osteoarthritis include pain, stiffness and limitation of range of movement. Eventually with the progression of the disease there is knee varus deformity and joint failure leading to chronic pain and disability. OA of the knee is a major cause of mobility impairment, particularly among females.[3] Knee Osteoarthritis is a common joint disease with an incidence of 30% in population older than 60 years.[4]

The initiation and progression of knee OA involves mechanical, structural, genetic and environmental factors.[5] Joint-level factors that are unique to a particular joint such as injury, activity, type of occupation, and muscle strength.[6] Apart from the lifestyle and pharmacological approaches there are various surgical alternatives also available for the treatment. The surgical options include arthroscopic debridement, cartilage repair surgery, osteotomy with axis correction, and uni-compartmental or total knee arthroplasty (TKA). In this study we the effects of proximal fibular osteotomy on the alignment of the lower limb.

AIMS AND OBJECTIVE

- To study the femorotibial angle, before and after proximal femoral osteotomy.
- To study the outcome of pre-operative and post operativeFemorotibial angle using scanogram.

METHODOLOGY

The aim was to study the changes in femorotibial angle before and after proximal fibular osteotomy in osteoarthritis knee which was carried out in the Department of Orthopaedics, Traumatology and Rehabilitation N.S.C.B. Medical College Jabalpur (M.P.), INDIA. The age group of 60-69 years including both males and females were taken for study. Ethical clearance was obtained before beginning of the study from ethical clearance committee.

Total 40 knees with medial compartment osteoarthritis were operated during this period. These all patients were included in our study and were followed up prospectively and femorotibial angle was evaluated. These patients were assessed as per set proforma.

INCLUSION CRITERIA

1. Patients with moderate to severe symptomatic degenerative osteoarthritis of the knee.
2. Patients with severe symptomatic degenerative osteoarthritis of the knee
3. Patients on whom conservative management has failed.

4. Patients who have given informed consent.

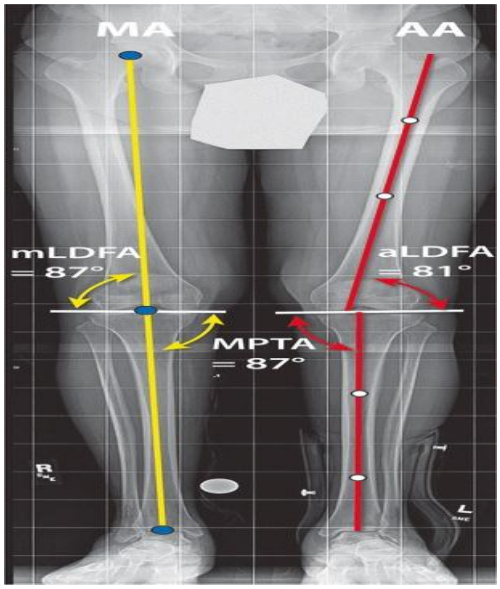
EXCLUSION CRITERIA

1. Patients who have inflammatory or post traumatic osteoarthritis of knee.
2. Patients who have any history of previous operations or fractures around the knee.
3. Patients who have not given informed consent.

SURGICAL TECHNIQUE

we used the Henry's posterolateral approach for exposure of proximal fibula.

- The head of fibula was palpated and surface marking of the head with length of incision and osteotomy site was done.
- Approximately a 5 cm long incision was made over the posterolateral border of the fibula centred over the point 7 cm below the head of fibula.
- Fascia between peroneus longus and soleus muscle was identified and cut.
- Fibula was exposed from the posterolateral aspect.
- Again the level of osteotomy was confirmed and 2 cm of segment of fibula was marked.
- A 2 cm section of fibula was excised 7cm below the fibular head.
- The osteotomy can be done by either multiple drill holes and osteotome or Gigli saw or oscillating saw (in this only lateral cortex is cut with oscillating saw; the medial cortex is cut by osteotome).
- The muscles fascia, skin were closed separately in layers after ample irrigation with normal saline.



Femorotibial Angle
Figure-1.

Long-leg standing radiograph demonstrating the mechanical axis of the lower extremity (MA), mechanical axis of the femur (MA), and anatomic axis of the femur and tibia (AA). The angle between the MAF and AAF is typically between 5° and 7°. The joint line forms an angle (α) that is 93° with the MAT, or 3°of varus.

The mechanical axis of the lower extremity is determined by drawing a line from the center of the femoral head to the center of the ankle joint, which corresponds to an approximately 3° slope compared with that of the vertical axis.[7] This can be subdivided into the femoral mechanical axis, which runs from the head of the femur to the intercondylar notch of the distal femur, and the tibial mechanical axis, which extends from the center of the proximal tibia to the center of the ankle.[7]

Surface marking of head of fibula with length of incision and osteotomy site
Figure-2

Fibula exposed through posterolateral aspect
Figure-3

2 cm section of fibula
Figure-4

Pre-Operative
Scanogram

Rt. FTA - 182^0 Lt. FTA - 182^0

Post-Operative
Scanogram

Rt. FTA - 180^0 Lt. FTA - 180^0

The patients were made to weight bear as early as possible after the anaesthesia wore off. Also static quadriceps exercise was started and the patients were made to walk as per comfort level.

RESULT

We compared the pre-operative mean femorotibial angle with the postoperative mean femorotibial angle. There was significant improvement in femorotibial angle from 184.05+1.694 degrees to 181.8+1.159 degrees. (chi square test was applied and $P < 0.0001$ which is < 0.05 so, it is statistically significant) Yang ZY et al[7] stated In their study mean femorotibial angle before surgery was 182.7 + 2.0 degree which improved to 179.4 + 1.8 degree after surgery.

DISCUSSION

In our study maximum patient resided in the age group of 60-69 years [23(57.50%)] and 10(25%) were of more than 70 years. There was no sex preponderance as 52% patients were male and 48% patients were female. Maximum number [33(82.5%)] of cases were of Kalligren Lawrence Grade III. In our study there were no postoperative complications like DVT, infections etc. Patients were mobilised as early as the anaesthesia effect is weaned off, showed there was significant improvement in medial joint line pain complaint. Three cases in our study developed suprficial peroneal nerve paresis all of which recovered by 6 months. One case developed swelling over ankle after walking initially at 3 months, which resolved completely by final follow up.

CONCLUSION

In a developing country like India it can be a promising surgery as it is affordable, minimally associated with complications, doesn't require a high expertise and major surgical procedures like HTO, TKA can be done after this surgery if needed. Although this surgery carries a lot more advantages, we still require further follow up to conclude how it fares in the long term.

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