



## FUNCTIONAL OUTCOME IN OSTEOARTHRITIS KNEE IN INDIAN POPULATION AFTER PROXIMAL FIBULAR OSTEOTOMY

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### ABSTRACT

**Introduction:** OA of the knee is a major cause of mobility impairment, particularly among females. Recent studies have confirmed the safety and efficacy of Proximal Fibular Osteotomy (PFO) in the treatment of knee OA.

**Objective:** The aim of this research is to study the effect of Proximal Fibular Osteotomy on the predominant medial compartment osteoarthritis knee.

**Methods:** 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. The outcome was evaluated by using VAS score. Follow up was done according to standard proforma.

**Results:** In our study, the average age of presentation was 64.1 year. At final follow up, Mean AKSS improved to 89.95 + 12.989 at final follow up from 33.55 + 1.085 preoperatively (changes in values were significant as P<0.001).

**Conclusion:** PFO is a new and cost-effective surgery for predominant medial compartment osteoarthritis of knee with better functional outcome of patients and significant decrease in pain as compared to the conventional treatment modalities.

**KEYWORDS :** Proximal Fibular Osteotomy, Knee, Osteoarthritis, Medial Compartment.

### INTRODUCTION

Osteoarthritis (OA) is a chronic degenerative disorder of multifactorial etiology characterised by the loss of articular cartilage, hypertrophy of bone at the margins, subchondral sclerosis, and range of biochemical and morphological alterations of the synovial membrane and joint capsule<sup>1</sup>. Knee osteoarthritis is a common joint disease with an incidence of 30% of the population older than 60 years<sup>2</sup>. 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 deformities and joint failure leading to chronic pain and disability. OA of the knee is a major cause of mobility impairment, particularly among females<sup>3</sup>. 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).

Recent studies have confirmed the safety and efficacy of Proximal Fibular Osteotomy (PFO) in the treatment of knee OA. Proximal osteotomy of fibula weakens the lateral fibular support and leads to a correction of varus deformity, which can subsequently shift the loading force from medial compartment to more laterally, leading to decreased pain and a satisfactory functional recovery. We performed this research with the aim to study the functional outcome in Indian population after proximal fibular osteotomy in osteoarthritis of knee using American Knee Society Score.

### MATERIALS AND METHODS

The research was carried out in the Department of Orthopaedics, N.S.C.B. Medical College, Jabalpur (M.P.) in patients of medial compartment osteoarthritis of knee joint, between the ages of 60-69 years. Ethical clearance was obtained before beginning of the study. Patients with moderate to severe symptomatic degenerative osteoarthritis of the knee, on whom conservative management has failed and have given informed consent, were included in the study. Patients who have inflammatory or post traumatic osteoarthritis of knee or have any history of previous operations or fractures around the knee were excluded from the study.

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 starting from immediate postoperative period, at 3 weeks, 6 weeks, 3 months, 6 months and 1 year, and were assessed as per standard proforma.

### 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 (Fig. 1). 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 (Fig. 2).

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 (Fig. 3). 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.



**Fig.1. Surface Marking Of Head Of Fibula With Length Of Incision And Osteotomy Site**

**Fig.2. Fibula Exposed Through Posterolateral Aspect**



**Fig.3. 2 cm Section Of Fibula Resected**

The patients were ambulated 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. The patients were discharged on day 3 post op. Student t test (paired t test) was applied and values less than 0.05 was considered statistically significant.

## RESULTS

We compared the pre-operative AKSS score with the scores at consecutive follow up. There was significant improvement in AKSS score at each step. At final follow up (1 year), there was significant improvement in AKSS from  $33.55 \pm 1.085$  to  $89.95 \pm 12.989$  (Table 1).

Time Point	Mean AKSS (SD)
Pre op	$33.55 \pm 1.085$
Immediate post op	$57.5 \pm 4.518$
3 weeks	$66.98 \pm 4.521$
6 weeks	$71.63 \pm 7.935$
3 months	$82.3 \pm 7.683$
6 months	$85.6 \pm 11.446$
1 year	$89.95 \pm 12.989$

## DISCUSSION

In our study, we selected patients with predominantly medial compartment osteoarthritis of knee joint who visited our OPD in the department of Orthopaedics. The patients went through detailed clinical and radiological examination as per standard proforma. All selected patients after taking explained/written consent underwent a surgical procedure “**Proximal Fibular Osteotomy**” and the outcome was evaluated and compared with other previous similar studies.

**Yang ZY et al<sup>4</sup>** reported that mean AKSS score before surgery was 45 which improved to 92.3 on the final follow up. **Wang et al<sup>5</sup>** reported that there was significant improvement in AKSS score after surgery. **Tong G et al<sup>6</sup>** reported that mean AKSS score before surgery was  $56.1 \pm 11.1$  which improved to  $83.7 \pm 3.9$  on the final follow up. **Gouping Zou et al<sup>7</sup>** reported that mean AKSS score before surgery was  $66.5 \pm 10.2$  which improved to  $89.2 \pm 13.6$  on the final follow up. In our study mean AKSS score before surgery was  $33.55 \pm 1.085$  which improved to  $89.95 \pm 12.989$  which was statistically significant.

## CONCLUSION

We conclude that Proximal Fibular Osteotomy is a novel surgery for medial compartment osteoarthritis of knee with better functional outcome of patients and significant decrease in pain as compared to the conventional ones. This surgery reduces the dependence on NSAIDs and delays other costly surgical procedures like high tibial osteotomy and total knee arthroplasty which require high expertise and carries a large number of complications.

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 High Tibial Osteotomy, Total Knee Arthroplasty 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.

## REFERENCES

1. Silman AJ, Hochberg MC. 2<sup>nd</sup> ed. Oxford: Oxford University Press; 2001. Epidemiology of the Rheumatic Diseases.
2. Felson DT, Naimark A, Anderson J, Kazis L, Castelli W, Meenan RF. The prevalence of knee osteoarthritis in the elderly: The Framingham Osteoarthritis Study. *Arthritis Rheum.* 1987; 30(8): 914-918.
3. Akinpelu AO, Alonge TO, Adekanla BA, Odole AC. Prevalence and pattern of

symptomatic knee osteoarthritis in Nigeria: A community-based study. *Internet J Allied Health Sci Pract* 2009;7:3

4. Yang ZY, Wei Chen, Li CZ et al. Medial compartment decompression by fibular osteotomy to treat medial compartment knee osteoarthritis: a pilot study.
5. Wang X, Wei L, Zhi Lv, Bin Zhao et al. Proximal fibular osteotomy: a new surgery for pain relief and improvement of joint function in patients with knee osteoarthritis. *Journal of International Medical Research* 2017, vol 45(1) 282-289.
6. Tong G, et al. *Zhonghua Yi Xue Za Zhi.* 2016. Clinical observations of medial compartment knee osteoarthritis by proximal fibular Osteotomy with arthroscopy.
7. Guoping Zou, Weibin Lan, Yuanyuan Zeng, Jianhong Xie, Shuanglong Chen, Yongrong Qiu. Early clinical effect of proximal fibular osteotomy on knee osteoarthritis. *Biomedical Research* 2017; 28(21): 9291-9294.