

## Functional and Radiological Outcome of Medial Compartment Osteoarthritis of the Knee Treated Byproximal Fibular Osteotomy

Dr. Ankit Narang, Dr. Mahipal Singh Shekhawat, Dr Ankit Singh

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**Corresponding author:** Dr. Mahipal Singh Shekhawat

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### Abstract

**Introduction:** To study the functional and radiological outcome of medial compartment osteoarthritis of the knee treated byproximal fibular osteotomy.

**Methods:** Prospective study was conducted on 25 patients with age group of 40 to 70 years both male and female presenting with medial compartment OA of the knee with normal patella- femoral joint.

**Results:** Most of the patients 88% (22 patients) were in Excellent category, 8% (2 patients) were in Good category and 4% (1 patient) was in Fair category.

**Conclusion:** Proximal fibular osteotomy may reduce knee pain significantly in early medial compartment osteoarthritic knee and improve the functional recovery of the knee joint.

**Keywords:** OA, PFO, TKA

### Introduction

Osteoarthritis (OA) is a chronic degenerative joint disease of dynamic pathology with multifactorial etiology. It involves progressive softening and loss of articular cartilage, subchondral bone sclerosis, cyst formation and the development of osteophytes. OA of the knee accounts for more dependence in walking, stair climbing and other lower-extremity tasks than any other disease.<sup>1</sup>

OA knee usually starts after 40 years of age and progresses to affect about 30% population beyond 60 years of age because of certain precipitating factors like mechanical, structural, genetic, and environmental, involving medial compartment more frequently than the lateral one.<sup>2-4</sup> The progression of degenerative process causes altered mechanics of weight bearing resulting into genu varum deformity in about 74% of patients of primary OA.<sup>5</sup> Genu varum deformity is more common in OA because of the fact that the mechanical axis, even in normal

knees, passes a little medial to the centre of the joint that drives 60%-80% of body weight through the medial compartment of the knee joint.<sup>6</sup> In addition to various biomechanical alterations, the increased internal tibiofemoral rotations and peak knee adduction moment during weight bearing because of altered gait mechanics, are supposed to be the main culprits in the initiation and progression of medial compartment OA.<sup>7,8</sup> Any option of treatment for OA is aimed at restoration of tibio-femoral rotation and peak adduction moment to normal to relieve pain and to delay progression of OA. Various treatment options available are conservative that encompasses the life style modifications, NSAIDS, physical therapies like hot wet packs/ice packs/ultra violet rays/paraffin wax bath, exercise program, intraarticular steroid injections, viscosupplementation, biological agents like platelet rich plasma, modified footwear and assistive devices like lateral insole

wedges with or without subtalar strapping, variable stiffness shoes with softer medial side, abduction knee braces using three-point bending.<sup>9-14</sup> But once all these modalities of treatment are exhausted due to progression of disease or are non-responsive, then surgical intervention becomes inevitable, such as high tibial osteotomy, unicondylar/total knee replacement (UKR/TKR). Under the shadow of the complications associated with osteotomy and UKR/TKR there had been a continuous desire to develop a technique to relieve the pain of moderate to severe OA of medial compartment and which should be possibly least invasive and should not commensurate with problems of aforesaid procedures. In the present study, to meet these challenges recently a new procedure in the form of proximal fibular osteotomy (PFO) has been carried out with gratifying results.

### Materials & Methods

This study was carried out on twenty five (25) patients. The total follow up time was 6 months.

### Inclusion criteria

- Age group of 40 to 70 years both male and female presenting with medial compartment OA of the knee with normal patella- femoral joint
- Medial compartment OA of the knee with a Kellgren-Lawrence score of grade 2 and grade 3
- Varus knee deformity <15°

### Exclusion criteria

- Lateral compartment osteoarthritis Knee Joint
- Fixed flexion deformity more than 15° at Knee Joint
- Pregnant Females
- Comorbidity (Rheumatoid Arthritis, Gout, Infective Osteoarthritis Knee Joint).

### Observations

During whole study we noticed few complications i.e. EHL weakness and Dorsal foot numbness 1 case each till 3 months after which they recovered. At final follow-up at 6 months no patient had any complication.

**Table 1: Final assessment**

Final assessment	No of cases	Percentage
Excellent	20	80.00
Good	3	12.00
Fair	2	8.00
Poor	0	0.00

Final assessment was done according to final WOMAC score at 6 months of follow-up and the patients were categorized into Excellent, Good and Fair categories. Most of the patients 80.00% (20 patients) were in excellent category, 12.00% (3 patients) were in Good category and 8.00% (2 patients) were in Fair category.

### Discussion

We have selected 25 cases of medial compartment osteoarthritis of knee joint in which total 32 knees were operated for proximal fibular

osteotomy and followed up to six months postoperatively. At six month we assessed the cases radiologically and clinically and used VAS & WOMAC score for final outcome.

The complex biomechanics of knee can never be simulated by any prosthetic design and replaced knee will always be second best to normal natural knee. Hence knee conservation and repairing the damage provides us an extra chance of achieving our goal of healthy knee and better long term results than artificial replaced knee. Moreover there are always chances of failure of prosthesis.

Thus these procedures might be the ones for the future.

In certain specific indications, proximal fibular osteotomy is the surgical method of choice for knees with medial compartmental osteoarthritis. The major advantage of the operation is that it allows unlimited activity to the patient. Thus, for patients who have an occupation requiring vigorous activity or who wish to continue playing sports, an osteotomy is a reasonable procedure that in no way precludes a later total knee arthroplasty.

Final assessment was done according to final WOMAC score at 6 months of follow-up and the patients were categorized into Excellent, Good and Fair categories. Most of the patients 80.00% (20 patients) were in excellent category, 12.00% (3 patients) were in Good category and 8.00% (2 patients) were in Fair category.

None of the studies of PFO have compared the results of WOMAC score, joint space, uses of analgesics preoperatively and postoperatively.

PramodSunda *et al*<sup>15</sup> (2020) found that joint space, range of motion was significantly changed after operation.

### Conclusion

Proximal fibular osteotomy may reduce knee pain significantly in early medial compartment osteoarthritic knee and improve the functional recovery of the knee joint. It is a safe, simple, affordable and effective procedure that is an alternative to HTO and may delay or even negate the need for total knee arthroplasty for medial compartment OA of the knee joint. Care must be taken to avoid potential nerve injuries.

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