

Functional and radiological outcome of medial compartment osteoarthritis of the knee treated by proximal fibular osteotomy

¹Dr Sumeet Verma, Medical Officer, Department of Orthopaedics, Regional Hospital, Bilaspur, Himachal Pradesh.

²Dr Rakesh Thakur, Medical Officer, Department of Paediatrics, Civil Hospital Barsar, Hamirpur, Himachal Pradesh.

Corresponding Author: Dr Rakesh Thakur, Medical Officer, Department of Paediatrics, Civil Hospital Barsar, Hamirpur, Himachal Pradesh.

Citation this Article: Dr Sumeet Verma, Dr Rakesh Thakur, “Functional and radiological outcome of medial compartment osteoarthritis of the knee treated by proximal fibular osteotomy”, IJMSIR- December - 2021, Vol – 6, Issue - 6, P. No. 91 – 94.

Type of Publication: Original Research Article

Conflicts of Interest: Nil

Abstract

Introduction: This study the short-term efficacy of PFO in terms of pain relief and improvement of joint function in patients of medial compartment osteoarthritis

Methods: Prospective study was conducted on 50 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: 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 86.00% (43 patients) were in Excellent category, 8% (4.00 patients) were in Good category and 6.00% (3 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.¹

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.²⁻⁴ The progression of degenerative process causes altered mechanics of weight bearing resulting into genu varum deformity in about 74% of patients of primary OA.⁵ 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.⁶ 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.^{7,8} 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.³⁻⁵ 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 50 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 grade3
- 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

Table 1: Complication wise distribution of study subjects

Complication	No of cases	Percentage
EHL weakness	1	2.00
Dorsal foot numbness	1	2.00

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 2: Final assessment

Final assessment	No of cases	Percentage
Excellent	43	86.00
Good	4	8.00
Fair	3	6.00
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 86.00% (43 patients) were in Excellent category, 8% (4.00 patients) were in Good category and 6.00% (3 patient) was in Fair category.

Discussion

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 86.00% (43 patients) were in Excellent category, 8% (4.00 patients) were in Good category and 6.00% (3 patient) was 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 al⁷ (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.

References

1. Focht BC. Move to improve: how knee osteoarthritis patients can use exercise to enhance quality of life. ACSM's Health Fit J. 2012;16:24-8.
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):914-8.
3. Vincent KR, Conrad BP, Fregly BJ, Vincent HK. The pathophysiology of osteoarthritis: a mechanical perspective on the knee joint. PMR. 2012;4(5):3-9.
4. Wise BL, Niu J, Yang M. Patterns of compartment involvement in tibiofemoral osteoarthritis in men and women and in Caucasians and African Americans. Arthritis Care Res (Hoboken). 2012;64(6):847-52.
5. Shiozaki H, Koga Y, Omori G, Yamamoto G, Takahashi HE. Epidemiology of osteoarthritis of the knee in rural Japanese population. Knee. 1999;6(3):183-8.
6. Ahlback S. Osteoarthrosis of the knee: a radiographic investigation. Acta Radiol. 1968;277(1):7-72.

7. PramodSunda, AK Mathur, SP Gupta.Evaluation of efficacy of proximal fibular osteotomy in predominantly medial compartment osteoarthritis of knee for pain relief and improvement in medial joint space of the knee.International Journal of Orthopaedics Sciences 2020; 6(1): 1210-1213