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Original Research

Assessment of functional outcomes of Proximal Fibular Osteotomy in Osteoarthritis Knee

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ABSTRACT

Background: Osteoarthritis (OA) is a common chronic condition resulting in pain, fatigue, functional limitations, increased healthcare utilization and high economic costs to society. The present study was undertaken for assessing the functional outcomes of Proximal Fibular Osteotomy in Osteoarthritis Knee. **Materials & methods:** A total of 20 patients with OA of knee were enrolled in the present study. The patients were placed in the supine position after administration of spinal anaesthesia. PFO was performed by removing a 2 to 3 cm length of fibula at a site 6 to 10 cm distal to the caput fibulae. Full weight bearing and free mobilization was allowed postoperatively. Knee ambulation activities was recorded using the knee function score. All the results were recorded in Microsoft excel sheet and were analysed by SPSS software. Chi- square test was used for assessment of level of significance. **Results:** Mean time for full weight bearing was found to be 0.75 days. Mean duration of procedure was found to be 39.80 minutes. Postoperative wound infection was found to be present in 1 patient. Mean KSS functional score at preoperative, postoperative, postoperative 6 weeks, postoperative 12 weeks, postoperative 6 months and postoperative 9 months was found to be 45.85, 50.36, 55.86, 59.33, 65.37 and 68.19 respectively. Significant improvement in the mean KSS function score was seen at different postoperative time intervals. **Conclusion:** PFO is an innovative alternative method in the management of medial compartment arthritis of the knee and is associated with insignificant complications.

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INTRODUCTION

Osteoarthritis (OA) is a common chronic condition resulting in pain, fatigue, functional limitations, increased healthcare utilization and high economic costs to society. The burden of OA is projected to increase, due in part to obesity and population aging. While the prevalence of OA increases with age, there is a growing recognition that OA affects people at younger ages.¹⁻³

The etiology of OA is related to repetitive mechanical loads and aging. Recent studies have separated the etiological factors into three main sub-groups: sex, anatomy, and body mass. The clinical manifestations are joint pain, stiffness, decreased range of joint

movement, muscle weakness of the quadriceps and alterations in proprioception.⁴

Knee OA is a multifactorial disease. The cause of OA remains unknown, though there is clear evidence for major risk factors, such as age, obesity, joint trauma, and heavy work load. The risk factors can be divided into systemic (for e.g. age, gender, genetics, and overweight) and local biomechanical factors, such as joint injury and mal-alignment, overweight, and muscle weakness.

Proximal fibular osteotomy (PFO) has emerged as a new surgery to relieve pain and improve joint function in patients with knee osteoarthritis. One possible explanation of why PFO relieves pain and improves the joint space is that it removes the fibula support

that may cause genu varus. The fibula supports one-sixth of the body weight, thus, PFO may rebalance or redistribute the load on the lateral and medial tibia plateau after surgery.⁵⁻⁷ Hence; the present study was undertaken for assessing the functional outcomes of Proximal Fibular Osteotomy in Osteoarthritis Knee.

MATERIALS & METHODS

The present study was conducted with the aim of assessing the functional outcome of Proximal Fibular Osteotomy in Osteoarthritis Knee. A total of 20 patients with OA of knee were enrolled in the present study.

Inclusion criteria

1. Age of patient 45 years or older.
2. Knee pain with functional limitations.
3. Body mass index (BMI) more than or equal to 25 (Overweight).

Exclusion Criteria

1. Age of patient less than 45 years.
2. Patients in which both medial and lateral compartments of knee are involved.
3. Patient having Genu valgus, acute trauma, inflammatory arthritis, crystal arthropathy and malignant tumors

The patients were placed in the supine position after administration of spinal anaesthesia. PFO was performed by removing a 2 to 3 cm length of fibula at a site 6 to 10 cm distal to the caput fibulae. Full weight bearing and free mobilization was allowed postoperatively. Knee ambulation activities were recorded using the knee society score (KSS). All the results were recorded in Microsoft excel sheet and were analysed by SPSS software. Chi- square test was used for assessment of level of significance.

RESULTS

In the present study, a total of 20 patients were analyzed. Mean age of the patients of the present study was 55.8 years. Majority of the patients belonged to the age group of more than 50 years. Mean time for full weight bearing was found to be 0.75 days. Mean duration of procedure was found to be 39.80 minutes. Postoperative wound infection was found to be present in 1 patient.

In the present study, mean KSS functional score at preoperative, postoperative, postoperative 6 weeks, postoperative 12 weeks, postoperative 6 months and postoperative 9 months was found to be 45.85, 50.36, 55.86, 59.33, 65.37 and 68.19 respectively. Significant improvement in the mean KSS function score was seen at different postoperative time intervals.

Table 1: Descriptive parameters

Parameter	Mean	SD
Age (years)	55.8	6.85
Full weight bearing (days)	0.75	0.86
Duration of procedure (minutes)	39.80	3.58

Table 2: Mean KSS functional score at different time intervals

Time interval	Mean KSS functional score	SD	p- value
Pre-operative	45.85	2.21	0.010 (Significant)
Postoperative	50.36	2.48	
Postoperative 6 weeks	55.86	2.42	
Postoperative 12 weeks	59.33	2.65	
Postoperative 6 months	65.37	2.85	
Postoperative 9 months	68.19	3.26	

Graph 1: Mean KSS function score

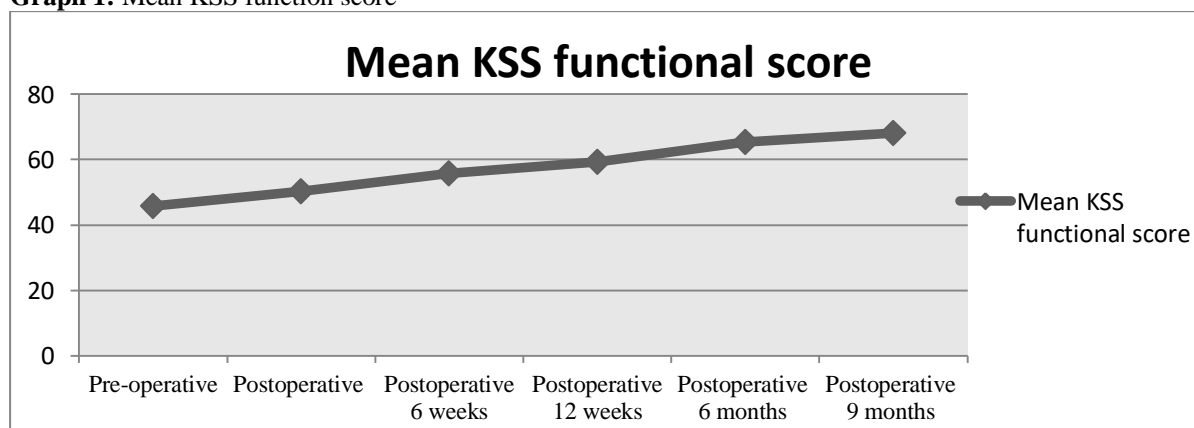


Table 3: Incidence of postoperative complications

Post-operative complication	Number of patients	Percentage of patients
Postoperative wound infection	1	5

DISCUSSION

The purpose of symptomatic treatment of OA of the knee is to control joint pain and to improve joint function. The well-known pharmacological approach for symptomatic treatment includes oral administration of NSAIDs, opioids, and intra-articular corticosteroid injections.⁸ Joint replacement surgery should be considered in patients who experience persistent pain and reduced function that are refractory to non-surgical therapies, and which had marked impact on their quality of life. Many patients who undergo total knee arthroplasty (TKA) experience improved function and decreased symptoms, many others continue to have some degree of ongoing pain. Also, TKA is expensive and complex, and some patients need a second revision.⁹ High tibial osteotomy (HTO) has been the surgical treatment of choice for young patients with osteoarthritis of the medial compartment of the knee, and it is aimed at correcting alignment and delaying the time until TKA is required. However, HTO also has some disadvantages, including a delayed time to full weight bearing and risks of non-union or delayed union, peroneal nerve paralysis and wound infection.¹⁰ Hence; the present study was undertaken for assessing the functional outcomes of Proximal Fibular Osteotomy in Osteoarthritis Knee. In the present study, a total of 20 patients were analyzed. Mean age of the patients of the present study was 55.8 years. Majority of the patients belonged to the age group of more than 50 years. Mean time for full weight bearing was found to be 0.75 days. Mean duration of procedure was found to be 39.80 minutes. Postoperative wound infection was found to be present in 1 patient. Yang ZY et al conducted a study on “Medial Compartment Decompression by Fibular Osteotomy to Treat Medial Compartment Knee Osteoarthritis” in which 156 patients with medial compartment OA were treated by proximal fibular osteotomy and found that proximal fibular osteotomy can significantly improve both the radiographic appearance and function of the affected knee joint and also achieve long-term pain relief.⁹ Tong G et al conducted a study on “Clinical observations of medial compartment knee osteoarthritis by proximal fibular osteotomy with arthroscopy” in which 36 patients with medial compartment knee osteoarthritis were treated by proximal fibular osteotomy with arthroscopy and evaluated with postoperative visual analogue scale (VAS) and the hospital for special surgery (HSS) knee score in follow-up, found satisfactory early results.¹⁰ In the present study, mean KSS functional score at preoperative, postoperative, postoperative 6 weeks, postoperative 12 weeks, postoperative 6 months and postoperative 9 months was found to be 45.85, 50.36, 55.86, 59.33, 65.37 and

68.19 respectively. Significant improvement in the mean KSS function score was seen at different postoperative time intervals. Wang X et al conducted a study on “Proximal fibular osteotomy: a new surgery for pain relief and improvement of joint function in patients with knee osteoarthritis” in which 47 patients who underwent proximal fibular osteotomy for medial compartment osteoarthritis were followed up retrospectively, demonstrated that proximal fibular osteotomy effectively relieves pain and improves joint function in patients with medial compartment osteoarthritis.¹¹

CONCLUSION

From the above results, the authors concluded that PFO is an innovative alternative method in the management of medial compartment arthritis of the knee and is associated with insignificant complications.

REFERENCES

- Hafez AR, Al-Johani AH, Zakaria AR, et al. Treatment of Knee Osteoarthritis in Relation to Hamstring and Quadriceps Strength. *Journal of Physical Therapy Science.* 2013;25(11):1401-1405.
- Alnahdi AH, Zeni JA, Snyder-Mackler L. Muscle impairments in patients with knee osteoarthritis. *Sports Health.* 2012; 4: 284-292.
- Highgenboten CL, Jackson AW, Meske NB. Concentric and eccentric torque comparisons for knee extension and flexion in young adult males and females using the Kinetic Communicator. *Am J Sports Med.* 1988; 16: 234-237
- Madsen OR, Bliddal H, Egsmose C, Sylvest J. Isometric and isokinetic quadriceps strength in gonarthrosis; inter-relation between quadriceps strength, walking ability, radiology, subchondral bone density and pain. *Clin Rheumatol.* 1995;14:308-314.
- Chiranthan N, Hanprasertpong N, Teekachunhatean S. Thai massage, and Thai herbal compress versus oral ibuprofen in symptomatic treatment of osteoarthritis of the knee: a randomized controlled trial. *Biomed Res Int.* 2014; 2014: 490512.
- Laprade RF, Spiridonov SI, Nystrom LM, et al. Prospective outcomes of young and middle-aged adults with medial compartment osteoarthritis treated with a proximal tibial opening wedge osteotomy. *Arthroscopy* 2012; 28: 354–364.
- Sprenger TR and Doerzbacher JF. Tibial osteotomy for the treatment of varus gonarthrosis. Survival and failure analysis to twenty-two years. *J Bone Joint Surg Am* 2003; 85-A: 469–474.
- W-Dahl A, Robertsson O and Lidgren V. Surgery for knee osteoarthritis in younger patients. *Acta Orthop* 2010; 81: 161–164.
- Yang ZY, Chen W, Li CX, Wang J, Shao DC, Hou ZY et al. Medial Compartment Decompression by Fibular Osteotomy to Treat Medial Compartment Knee Osteoarthritis: A Pilot Study. *Orthopedics.* 2015 Dec;38(12):e1110-4.
- Tong G, Xie Q. Clinical observations of medial compartment knee osteoarthritis by proximal fibular osteotomy with arthroscopy. *Zhonghua Yi Xue Za Zhi.* 2016 Nov 22;96(43):3508-3510.
- Wang X, Wei L, Lv Z, Zhao B, Duan Z, Wu W et al. Proximal fibular osteotomy: a new surgery for pain relief and improvement of joint function in patients with knee osteoarthritis. *J Int Med Res.* 2017 Feb;45(1):282-289.