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ADVANCEMENT OF CLINICAL AND FUNCTIONAL OUTCOME IN OSTEOARTHRITIS KNEE AFTER PROXIMAL FIBULAR OSTEOTOMY IN DIABETES MELLITUS IN INDIA.

Dr Raja Marimuthu[1]*, Dr Vijay Narasimhan[2]

[1]Associate Professor in Orthopedics, Sree Balaji Medical College and Hospital, Chrompet, Chennai – 600044.

[2]Professor in Orthopedics, Sree Balaji Medical College and Hospital, Chrompet, Chennai – 600 044.

***Corresponding author email id: drmraja@gmail.com**

ABSTRACT

Introduction: Knee osteoarthritis (OA), also known as degenerative joint disease, is typically the effect of wear and tear and progressive loss of articular cartilage leading to radiologically decreased joint space. Hence; under the light of above-mentioned data, the present study was undertaken for advancement of clinical and functional outcome in osteoarthritis knee after proximal fibular osteotomy in diabetes mellitus in India.

Material and methods: A total of 35 patients with OA of knee were included in our study. Usually, the patients were placed in the supine position after administration of spinal anaesthesia. An approximately 5-cm longitudinal incision was made over the lateral aspect of the proximal fibula, and the fibula exposed among the peroneus muscle and soleus muscle. PFO was performed under the hands of skilled and experienced orthopedic surgeon. Knee pain was assessed using a Visual analogue scale. Knee ambulation activities were recorded using the knee and function subscores of the American Knee Society score (KSS). All the results were recorded in Microsoft excel sheet and were analyzed by SPSS software. Chi- square test and Mann Whitney U test were used for assessment of level of significance.

Results: Mean KSS score at pre-operative, postoperative, postoperative 6 weeks and postoperative 9 months were found to be 43.04, 53.50, 67.11 and 68.14 respectively. Significant results were obtained while comparing the mean KSS at different postoperative time intervals. In current study, mean VAS score at pre-operative, postoperative, postoperative 6 weeks and postoperative 9 months were found to be 7.89, 4.74, 2.47and 1.52respectively. Significant results were obtained while comparing the mean VAS at different postoperative time intervals. **Conclusion:** PFO is an original alternative system in the administration of medial compartment arthritis of the knee.

Keywords: Proximal, Fibular, Osteoarthritis, high tibial osteotomy (HTO)

1. INTRODUCTION

Osteoarthritis (OA) is the majority of regular form of arthritis in the global. This can be divided into 2 groups: primary osteoarthritis and secondary osteoarthritis. The analysis of OA is associative with joint injury, obesity, aging and inheritance. Due to the molecular mechanisms concerned in the initiation and progression of Osteoarthritis are poorly understood, there are no recent interventions to restore damaged cartilage and also worsening disease progression. Knee osteoarthritis, also called as degenerative disease, consists of erosion and deformity and the progressive loss of cartularage heart that results in reduced joint area and also it is appeared in older women and men. Secondary knee arthritis is the effect of an abnormal return of forces when encountered as cases of trauma or abnormal cartilage, such as rheumatoid arthritis (RA).[1]

Proximal fibular osteotomy (PFO) is one of the alternative treatments to high tibial osteotomy (HTO). It is a surgical method for medial compartment knee osteoarthritis (KOA). Contrast to HTO, PFO has several advantages.Regularly, the surgical technique is simple and easily performed, less invasive with a very short incision, essential limited tissue dissection and there is no internal fixation is implanted. Recovery period is very shorter after surgery than with HTO. In accumulation the complications linked with HTO can be a major problem that

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contributes to a poor prognosis [2,3.] Therefore the current study on proximal fibular osteotomy (PFO) was handling to recognize the verification and its techniques and whether this could be an alternative solution to the problem of knee osteoarthritis in the developing world.

2. MATERIAL AND METODS:

Patients through primary medial compartment knee osteoarthritis who had a suggestion for PFO were admitted to Sree Balaji Medical College and Hospital, Chrompet, Chennai from October to December 2018 and were examination retrospectively in present study. Our study includes Kellgren and Lawrence grade 2 on radiographs[4]. Ethical approval was obtained from institutional ethical committee and written consent was obtained from all the patients after explaining in detail the entire research protocol. A total of 10 patients with OA of knee were enrolled in our study.

Inclusion criteria

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

Exclusion Criteria

- Age of patient less than 45 years.
- Patients in which both medial and lateral compartments of knee are involved.
- Body mass index less than 25.
- Patients with High Tibial Osteotomy or history of any intra-articular injection.

In present study involved both pre-operative and post-operative weight-bearing AP radiographs of the affected knee were taken. Along with Joint space width of both the compartments were compared in pre- and post-operative radiographs.

Statistical analysis was performed using Microsoft Excel. Our data variables were expressed as the mean ± SD.

Surgical Technique

Usually, the patients were placed in the supine position after administration of spinal anaesthesia. An approximately 5-cm longitudinal incision was made over the lateral aspect of the proximal fibula, and the fibula exposed between the peroneus muscle and soleus muscle. PFO was performed under the hands of skilled and experienced orthopaedic surgeon.

Negative pressure suction drain tube was placed and then removed within 24 hours. The pneumatic pump was used to avoid lower limb venous thrombosis, and lower limb physiotherapy was directed. Knee pain was assessed using a Visual analogue scale. Knee ambulation activities were recorded using the knee and function sub scores of the American Knee Society score.

Statistical analysis

All the outcomes were recorded in Microsoft excel sheet and were examine by SPSS software. Chi- square test and Mann Whitney U test were used for evaluation of level of impact. P- value of less than 0.05 was taken as significant.

3. RESULTS:

A total of 35 diabetic mellitus patients were included in our study out of which 7 knees (L=3, R=4) were of males and 28 knees (L=7, R=21) were of females. Here was a female prevalence seen in present study along with the right knee being more frequently affected. Mean age of the patients was initiate to be 58.9 years. 62.8% of the patients belonged to the age group of 50 to 65 years. Right knee involvement occurred in 71% percent of the patients with OA, whereas left knee involvement occurred in 29 percent of the patients.

Table:1 Gender wise distribution patients

Gender of patients	Number of patients	Percentage
Male	7	20%
Female	28	80%
Total	35	100%

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Table: 2 Age-wise distributions of patients

Age group	Number of patients	percentage
44 to 55	6	17.1%
56-65	22	62.8%
More than 65	7	20
Total	35	100%

Figure: 1Surgical Exposure using Fibular Posterolateral approach.

Figure: 2 Fibular Osteotomy done approximately 6-10 cm (around four finger breadth) from fibular head.

Table: 3 Mean VAS score at different time intervals

Time intervals	Mean VAS score	p- value
Pre-operative	7.89	0.00 (Significant)
Post-operative	4.74	
Post operative6 weeks	2.47	
Post operative 9weeks	1.52	

In present study reported as VAS score at pre-operative, postoperative, postoperative 6 weeks and postoperative 9 months were found to be 7.89, 4.74, 2.47and 1.52correspondingly. Considerable results were obtained while comparing the mean VAS at different postoperative time intervals.

Table:4 Mean KSS score at different time intervals

Time intervals	Mean KSS score	p- value
Pre-operative	43.04	0.00 (Significant)
Post-operative	53.50	
Post operative6 weeks	67.11	
Post operative 9weeks	68.14	

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Our study results KSS score at pre-operative, postoperative, postoperative 6 weeks and postoperative 9 months were establish to be 43.04, 53.50, 67.11and 68.14 respectively. Significant results were obtained while comparing the mean KSS at different postoperative time intervals. (Table-4).

4. DISCUSSION:

Patients along with Osteoarthritis are at an advanced risk of death compared with the broad- spectrum population. Who had with diabetes, cancer and heart disease were most important risk factors. Osteoarthritis of the knee is the most frequent degenerative condition of the knee after the 5th decade. For the mostpart of the time, it infects the medial compartment of the knee causing major pain. There is a 4-fold increase in odds of medial progression of the knee with various alignment[5].

The purpose of fibular osteotomy is to make certain protection of the peroneal nerve and to attain accurate fibular osteotomy height and length. The stage fibular osteotomy in an area 4-7 cm far from the fibular head lowers the danger of peroneal nerve injury and produces great curative effects after operation[6]. Under the PFO system, a minimum of 10 mm piece of fibula is removed six to nine cm under the fibular head which relieves the medial compartment stress and realigns the knee. It is recommended that the space from fibular head tip have to be closest to the knee joint, with none harm to the lateral popliteal nerve. The dimensions have to be 6 cm below in five toes tall, 7 cm in five. Five feet, and eight cm in six toes tall sufferers [7].

Our look at also reported the equal fashion with the VAS score enhancing from 7.89 preoperatively to 1.52 of their nine-month postoperative that's correlated with Zhang et al. [8] in 2015 offered a set of 38 patients with early OA and in comparison, their preoperative and postoperative rankings the use of VAS, WOMAC and Oxford Knee Scores. According to their findings the VAS Score advanced from seven pre-operatively to two. Fifty-eight insidethe twentieth week put up-operative follow up. Consequently, our effects without delay support their inference that PFO improves joint function and relieves pain in knee osteoarthritis.

The most notable result in present study was the pain relief and a raise in the joint space on the medial feature. Even though, the report on period being shorter than normal with up to 9 months, we establish that majority of our patients felt palpable pain relief right away after PFO and then felt a constant improvement in pain, axial position and function over the summarize period with 3 patients finding no pain in their 6 month follow up. Hence PFO can probably become a promising alternative treatment for osteoarthritis of the medial compartment of the knee, in particular countries that have financial boundaries and healthcare barriers and in patients that cannot endure TKA caused by scientific diagnosable.

CONCLUSION:

The PFO is a promising surgical choice in countries that lack financial and scientific assets. As in comparison to TKA or HTO, the PFO is a simple, secure, fast and low-cost surgery that does not require insertion of extra implants main to less complications and a shorter recovery duration. Currently brief term effects from some reporting facilities advocate that PFO might be a suitable system for early OA knees. Nevertheless, a potential looks at with longer comply with up periods focusing on pre-surgical and post-surgical gait evaluation is important to evaluate whether the useful consequences of PFO are sustained over a time period.

Conflicts of interest

The authors declared no conflict of interest.

Compliance With Ethics Requirements

This article does not contain any studies with human or animal subjects.

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