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Original Research

Assessment of functional outcome of hybrid close wedge high tibial Osteotomy in uni compartment osteoarthritis knee joint

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ABSTRACT:

Background: Osteoarthritis is a complex illness, one of the main contributing components is excessive stress brought on by biomechanical modification. The present study was conducted to assess the functional outcome of medial opening hybrid close wedge tibial osteotomy in unicompartmental osteoarthritis knee. **Materials & Methods:**76 patients of unicompartmental osteoarthritis of both genders were examined. Pre-operative planning was done by Miniaci method and pre-operative evaluation by visual analogue pain scale, and knee society knee scale. High tibial opening wedge osteotomy was done using Tomofix plate. Parameters such as side, varus angle (degree), VAS, and complications etc. was recorded. **Results:** Out of 76 patients, males were 46 and females were 30. The side involved was right in 34 and left in 42 patients. JOA Knee score pre-operatively was 54.3 and postoperatively was 81.7. Functional Knee Society score pre-operatively was 71.3 and postoperatively was 90.5. VAS pre-operatively was 5.2 and postoperatively was 2.4. Complications were superficial infection in 1 and delayed healing in 2 patients. The difference was significant (P< 0.05). **Conclusion:** In the early phases of medial compartmental primary osteoarthritis of the knee, medial opening wedge high tibial osteotomy with osteosynthesis is a physiologically superior surgical procedure.

Keywords: primary osteoarthritis, tibial osteotomy, Knee score

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INTRODUCTION

Osteoarthritis is a complex illness, one of the main contributing components is excessive stress brought on by biomechanical modification. A mild knee deformity, such as valgus or varus, changes the force applied to the tibial and femoral condyles.[1] Osteoarthritis is characterized by deformity, restricted movement, and incapacitating pain. The first line of treatment for symptoms includes painkillers, rest, and exercise. Periodically, a variety of surgical techniques, including synovectomy, joint debridement, arthrodesis, patellectomy, patelloplasty, and menisectomy, are published in the literature.[2] Since their introduction in the 1950s, tibial osteotomies have undergone numerous modifications and uses. The knee's weight-bearing axis is altered by these osteotomies. In addition to axial realignment, venous decongestion has also been implicated in pain alleviation. Medial compartment osteoarthritis refers to the excessive loading of weight onto the medial femoral condyle and medial tibial plateau. This imbalance of load creates stress risers along the medial compartment of knee.[3]A medial opening wedge high tibial osteotomy (MOWHTO) is a surgical procedure performed to realign the knee joint, particularly in cases of medial compartment osteoarthritis or malalignment.[4] MOWHTO is typically recommended for patients with symptomatic medial compartment osteoarthritis of the knee, particularly when conservative treatments have failed to provide adequate relief. It may also be indicated for patients with varus malalignment of the knee, where the knee bows inward, leading to increased pressure on the medial compartment.[5] The present study was conducted to assess the functional outcome of medial opening hybrid close wedge tibial osteotomy in unicompartmental osteoarthritis knee

MATERIALS & METHODS

The present study consisted of 76 patients of unicompartmental osteoarthritis of both genders. All gave their written consent to participate in the study.Data such as name, age, gender etc. was recorded. Pre-operative planning was done by Miniaci method and pre-operative evaluation by visual analogue pain scale, and knee society knee scale. High tibial opening wedge osteotomy was done using Tomofix plate. Parameters such as side, varus angle (degree), VAS, and complications etc. was recorded. Data thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

RESULTS

Table: I Distribution of patients

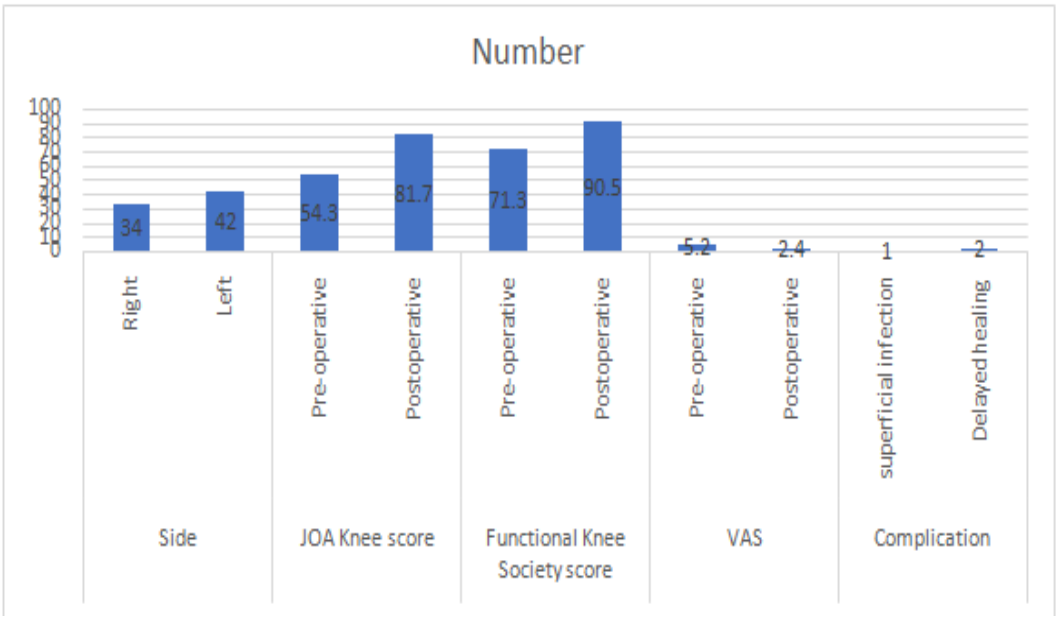
Total- 76		
Gender	**Male**	**Female**
Number	46	30

Table: I shows that out of 76 patients, males were 46 and females were 30.

Table: II Assessment of parameters

Parameters	Variables	Number	P value
Side	Right	34	0.63
	Left	42	
JOA Knee score	Pre-operative	54.3	0.01
	Postoperative	81.7	
Functional Knee Society score	Pre-operative	71.3	0.02
	Postoperative	90.5	
VAS	Pre-operative	5.2	0.01
	Postoperative	2.4	
Complication	Superficial infection	1	0.05
	Delayed healing	2	

Table: II, graph I show that the side involved was right in 34 and left in 42 patients. JOA Knee score pre-operatively was 54.3 and postoperatively was 81.7. Functional Knee Society score pre-operatively was 71.3 and postoperatively was 90.5. VAS pre-operatively was 5.2 and postoperatively was 2.4. Complications were superficial infection in 1 and delayed healing in 2 patients. The difference was significant (P< 0.05).



DISCUSSION

Osteoarthrosis of knee is the commonest of all symptomatic joint arthroses in Indian subcontinent.[6] Patients who have osteoarthritis of the knee experience a successive wearing on the menisci and articular cartilage, which may develop tears. The degeneration of these tissues limits the knee's ability to glide smoothly and can result in popping, catching, locking, clicking and pain.[7,8,9]The present study was conducted to assess the functional outcome of medial opening wedge high tibial osteotomy in unicompartmental osteoarthritis knee.We found that

out of 76 patients, males were 46 and females were 30. Rathod et al[10] found that major group of patients belonged to age group 46-50 years (62%). The mean age of patients in our study is 48.38 years, the mean time of union is 4.04 months. As far as complications are concerned there were 3 complications, 1 among them was superficial infection 1 had lateral tibial condyle involvement due to a higher correction angle 1 patient had under correction noted on post-operative HKA axis scanogram. The average JOA Knee score preoperatively was 52.6 which improved postoperatively with an average score of 82.9average. The functional knee society score was 70.80 preoperatively which improved postoperatively to 90.57. VAS score preoperatively was 6.95 which reduced considerably to an average score of 2.09 postoperatively. They found excellent results in 18 patients (86%), good results in 2 patients (9.5%) and fair results in 1 patient (4.5%).We found that the side involved was right in 34 and left in 42 patients. JOA Knee score pre-operatively was 54.3 and postoperatively was 81.7. Functional Knee Society score pre-operatively was 71.3 and postoperatively was 90.5. VAS pre-operatively was 5.2 and postoperatively was 2.4. Complications were superficial infection in 1 and delayed healing in 2 patients. Pfahler et al[11] studied the results in patients who had undergone one hundred and four high tibial lateral osteotomies. Results were reviewed in 49 patients (62 knees) with an average follow-up of 10.2 years (range 6-14 years). Of the remaining 42 patients, 8 were lost to follow-up, 10 had died, and 24 were subsequently treated with total knee arthroplasty at an average 4.7 years after having had a high tibial osteotomy. Clinical results were evaluated using the Hospital for Special Surgery Score (HSS) and the Knee Society Score. Forty-four (90 percent) of the forty-nine patients stated the results met their expectations and given the same circumstances, they would have the operation once again. In these patients the knee score results were excellent. The same patients had excellent HSS and Knee Society Scores. Five patients (10 per cent) had a poor result and twenty-four patients were treated later by total knee arthroplasty because of pain. The following factors set these patients apart from those with more favorable results: previous arthroscopic debridement, obesity, lateral knee osteoarthritis, insufficient valgus correction, and an age of more than 55 years. High tibial valgus osteotomy provides good pain relief and improved function in carefully selected patients.Niemeyer et al[12]analyzed the 3-year clinical outcomes of patients who underwent open-wedge high tibial osteotomy (HTO) with an internal plate fixator for medial-compartment osteoarthritis of the knee and varus malalignment. At the time of surgery, radiographic and arthroscopic findings are associated with the clinical outcomes. The International Knee Documentation Committee score showed a substantial continuous rise from 47.25 ± 18.71 points prior to surgery to 72.72 ± 17.15 points 36 months following HTO. Clinical outcome was not substantially impacted by the degree of cartilage injury in the medial compartment or the partial-thickness defects in the lateral compartment. After HTO, there was a significant correlation between the tibial bone varus angle and improved clinical outcome and greater improvement. Although surgical causes accounted for the majority of the 8.6% overall complication rate, 40.6% of patients experienced implant-related discomfort at some point during the follow-up period. The limitation of the study is the small sample size.

CONCLUSION

Authors found that in the early phases of medial compartmentional primary osteoarthritis of the knee, medial opening wedge high tibial osteotomy with osteosynthesis is a physiologically superior surgical procedure.

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