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A STUDY ON OUTCOME OF HIGH TIBIAL OSTEOTOMY IN OSTEOARTHRITIS OF KNEE IN MGM MEDICAL COLLEGE & L.S.K HOSPITAL, KISHANGANJ

Orthopaedics

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ABSTRACT

Introduction: Osteoarthritis is disorder of cartilage degradation, synovial inflammation, osteophyte formation, thinning of joint space and sub-chondral sclerosis

Aims & objectives: To analyse the results of observational study on short term outcome after high tibialosteotomy in unicompartment osteoarthritis.

Specific:

- To study the functional outcome among patients undergoing high tibialosteotomy.
- To study the radiologic outcome in the patients.
- To study the clinical outcome in the patients.
- Complications and treatment done on follow-up.

Materials and methods: The present study was conducted after obtaining clearance from institutional ethics committee with informed consent from participating patients. MGM MEDICAL COLLEGE & L.S.K HOSPITAL, KISHANGANJ , Department of Orthopaedics. March 2018-September 2020 [2 year]

Conclusion: We also found that mean WBLA was decreased in POST OP period which was statistically significant.

KEYWORDS

osteophyte, osteotomy and Osteoarthritis.

INTRODUCTION

Osteoarthritis is disorder of cartilage degradation, synovial inflammation, osteophyte formation, thinning of joint space and sub-chondral sclerosis [1].Osteoarthritis leads to pain, disability as well as difficulty in joints and restricts the routine movements of human beings.

Osteoarthritis accounts as most prevalent musculoskeletal disease among the world [2],and is most common reason of joint disability in approximately 100 million people among world having age over 45 years[3],which is approximately 15% of all musculoskeletal disorders more than 50% population over 65 years have radiographic confirmation of osteoarthritis in any of the joints and younger population is also prone to osteoarthritis.

In Indians, nearly 80% of population shows osteoarthritis among the patients who claimed for knee pain, out of which approximately 20% reported incapability in daily activities and around 11% need pecular care4.Approximately 40% population of more than 70 years shows osteoarthritis, in which nearly 2% have severe knee pain and disability. Treatment options for osteoarthritis are non-operative and non operative. Antiinflamatory agents and physiotherapy are the non-operative treatment options. Whereas High tibialosteotomy, Unicondyler knee arthroplasty, Total knee replacements are the surgical options.

High tibial osteotomy (HTO) is a proven treatment option for medial compartment osteoarthritis with varus malalignment. Although the goals of both HTO and total knee arthroplasty (TKA) are the same, namely load redistribution, axis realignment, pain relief and better mobility, these are often performed at different stages of arthritis. HTO has been shown to be successful in well selected patients provided adequate intraoperative correction was achieved.[4] Even though short-term followup of tibial osteotomy have shown good clinical outcomes, the results seem to deteriorate over the course of time because of progressive arthritis and loss of alignment. Although the results of TKA after HTO are said to be comparable to that of primary TKA, conversion of an HTO to a TKA is technically demanding, with varying results.[5],

A high tibial medial open wedge osteotomy has proved to be effective in mild to moderate osteoarthritis of medial compartment of knee in active young individuals, is less invasive, safe, easier to perform, correction of deformity close to origin, provides more predictable correction intraoperatively, better preservation of bone stock, avoid peroneal nerve injury and proximal tibio-fibular joints disruption, avoid compartment syndrome, less expansive and the relative ease of combining it with other procedures. It reduces pain, improves mobility, range of movement, activity, survival.

To analyse the results of observational study on short term outcome after high tibialosteotomy in unicompartment osteoarthritis.

- To study the functional outcome among patients undergoing high tibialosteotomy.
- To study the radiologic outcome in the patients.
- To study the clinical outcome in the patients.
- Complications and treatment done on follow-up.

MATERIALS AND METHODS

STUDY POPULATION:

Patients attending OPD and emergency with non traumatic chronic knee pain at MGM MEDICAL COLLEGE & L.S.K HOSPITAL, KISHANGANJ, Department of Orthopaedics

INCLUSION CRITERIA:

The following patients were included in the study

a) Primary medial compartment degenerative arthritis
b) Secondary medial compartment degenerative arthritis
c) Less than 65 years old primary or secondary osteoarthritis
d) Osteoarthritis with varus deformity
e) Unicompartment osteoarthritis in overweight patients

EXCLUSION CRITERIA:

a) Osteoarthritis with severe joint destruction (>/=Ahlback grade III)
b) Patient aged more than 65 years
c) Patients with advanced patellofemoral arthritis
d) Patients with knee ROM <900.
e) Patient with >/= 150 of flexion contracture
f) Patient with knee joint instability
g) Patient with rheumatoid arthritis
h) Patient not fit for surgery

STATISTICALANALYSIS:
For statistical analysis data were entered into a Microsoft excel spreadsheet and then analyzed by SPSS (version 27.0; SPSS Inc., Chicago, IL, USA) and GraphPad Prism version 5. Data had been summarized as mean and standard deviation for numerical variables and count and percentages for categorical variables. Two-sample t-tests for a difference in mean involved independent samples or unpaired samples. Paired t-tests were a form of blocking and had greater power than unpaired tests. A chi-squared test ($\chi 2$ test) was any statistical hypothesis test wherein the sampling distribution of the test statistic is a chi-squared distribution when the null hypothesis is true. Without other qualification, 'chi-squared test' often is used as short for Pearson's chi-squared test. Unpaired proportions were compared by Chi-square test or Fischer's exact test, as appropriate. p-value ≤ 0.05 was considered for statistically significant.

RESULT AND DISCUSSION
In our study, 12(60.0%) patients were 41-50years old and 8(40.0%) patient were 51-60 years old. In our study, 11(55.0%) patients were Female and 9(45.0%) patient were male.

In our study, 1(5.0%) patients were BUSINESSMAN, 1(5.0%) patients were DRIVER, 4(20.0%) patients were FARMER, 8(40.0%) patients were HOUSEWIFE, 5(25.0%) patients were LABOUREER and 1(5.0%) patients had PRIVATE JOB.

Pal CP et al 6 (2016) showed that the associated factors were found to be female gender (prevalence of 31.6%) (P = 0.007), obesity (P = 0.04), age (P = 0.001) and sedentary work (P = 0.001). There is scarcity of studies done in India which has varied socio geographical background and communities. They conducted this study for analyzing the current prevalence of OA in different locations.

In our study, 6(30.0%) patients were in APL ECONOMIC STATUS and 14(70.0%) patients were in BPL ECONOMIC STATUS. In our study, 11(55.0%) patients were in LEFT SITE and 9(45.0%) patients were in RIGHT SITE. In our study, 1(5.0%) patients were USED T PLATE IMPLANT and 19(95.0%) patients were USED TOMOFIX IMPLANT. In our study, 6(30.0%) patients had PRE OP FA 3, 8(40.0%) patients had PRE OP FA 4 and 6(30.0%) patients had PRE OP FA 5.In our study, 10(50.0%) patients had PRE OP WBLA 2 and 10(50.0%) patients had PRE OP WBLA 3.In our study, 11(55.0%) patients had PRE OP JOINT ANGLE 4, 3(15.0%) patients had PRE OP JOINT ANGLE 5 and 6(30.0%) patients had PRE OP JOINT ANGLE 6.x. In our study, 6(30.0%) patients had POST OP TA 2 and 14(70.0%) patients had POST OP TA 3.

In our study, 10(50.0%) patients had POST OP FA 1, 9(45.0%) patients had POST OP FA 2 and 1(5.0%) patients had POST OP FA 3.

Sardana V et al 7 (2019) found that average follow-up: 2.3 years. 97% patients reported they would have this procedure performed again, if indicated. Re-operation rate: 6.1% and complication rate: 12.1%. Patients had decreased KOOS for symptoms when compared to non-navigation based HTO (p = 0.000).

We found in our study, 10(50.0%) patients had POST OP WBLA 1 and 10(50.0%) patients had POST OP WBLA 2.In above table showed that the mean AGE (mean± s.d.) of patients was 50.1500± 3.8699. In above table showed that the mean BMI (mean± s.d.) of patients was 24.0585± 1.4159. In above table showed that the mean PRE - OP OXFORD KNEE SCORE(mean± s.d.) of patients was 22.8500± 3.6168. In above table showed that the mean POST - OP OXFORD KNEE SCORE AFTER 3 MONTHS (mean± s.d.) of patients was 31.1000± 4.3758. In above table showed that the mean POST - OP OXFORD KNEE SCORE AFTER 6 MONTHS (mean± s.d.) of patients was 39.7000± 3.4198.

In above table showed that the mean PRE OP KSS-1 (mean± s.d.) of patients was 52.1500± 8.1193. In above table showed that the mean POST OP KSS-1 AFTER 3 MONTHS (mean± s.d.) of patients was 69.0000± 5.6195. In above table showed that the mean POST OP KSS-1 AFTER 6 MONTHS (mean± s.d.) of patients was 82.8000± 3.6505.In above table showed that the mean PRE OP KSS-2 (mean± s.d.) of patients was 53.3000± 9.0676. In above table showed that the mean POST OP KSS-2 AFTER 3 MONTHS (mean± s.d.) of patients was 65.3500± 8.2862. In above table showed that the mean POST OP KSS-2 AFTER 6 MONTHS (mean± s.d.) of patients was 76.6000± 6.7777.

Ravidas S et al 8 (2019) found that The average age of patients in this study was 54.8 years, with a female predominance (61.2%). KSS1 results were excellent in 80%, good in 14.4% and poor in 5.6% of patients. In terms of knee society score functional (KSS2) results were excellent (86.7%), good (13.3%). LYSHOLM Score results included excellent (20.2%), Good (46.6%), fair (26.6%), poor (6.6%). The present study shows that HTO is a good option in isolated medial compartment OA of knee. It works by unloading the medial compartment and shifting the weight bearing axis to lateral compartment.

In above table showed that the mean PRE OP LYSHOLM (mean± s.d.) of patients was 57.8000± 4.5722. In above table showed that the mean POST OP LYSHOLM AFTER 3 MONTHS (mean± s.d.) of patients was 72.0500± 2.8186. In above table showed that the mean POST OP LYSHOLM AFTER 6 MONTHS (mean± s.d.) of patients was 85.9000± 3.0070.

Chen X et al 9 (2020) found that Total knee arthroplasty after tibial osteotomy is a technically challenging procedure and provide inferior clinical outcomes than primary TKA. Given the success of primary TKA, it may be considered as the first choice in young patients with high activity demand.

In above table showed that the mean PRE OP HKA (mean± s.d.) of patients was 161.4500± 4.5128. In above table showed that the mean PRE OP TA (mean± s.d.) of patients was 10.1000± 1.2524. In above table showed that the mean POST OP TA (mean± s.d.) of patients was 2.7000± .4702. In above table showed that the mean PRE OP FA (mean± s.d.) of patients was 4.0000± .7947. In above table showed that the mean POST OP FA (mean± s.d.) of patients was 1.5500± .6048.In above table showed that the mean PRE OP WBLA (mean± s.d.) of patients was 2.5000± .5130. In above table showed that the mean POST OP WBLA (mean± s.d.) of patients was 1.5000± .5130. In above table showed that the mean PRE OP LdfA (mean± s.d.) of patients was 80.5500± 1.9861.In above table showed that the mean PRE OP JOINT ANGLE (mean± s.d.) of patients was 4.7500± .9105. In above table showed that the mean PRE OP MPTA (mean± s.d.) of patients was 89.1000± 2.1740. In above table showed that the mean POST OP MPTA (mean± s.d.) of patients was 98.8500± 1.6311.

Table: Distribution of mean PRE - OP OXFORD KNEE SCORE, POST - OP OXFORD KNEE SCORE AFTER 3 MONTHS, POST - OP OXFORD KNEE SCORE AFTER 6 MONTHS, PRE OP KSS-1, POST OP KSS-1 AFTER 3 MONTHS, POST OP KSS-1 AFTER 6 MONTHS, PRE OP KSS-2, POST OP KSS-2 AFTER 3 MONTHS, POST OP KSS-2 AFTER 6 MONTHS, PRE OP LYSHOLM, POST OP LYSHOLM AFTER 3 MONTHS and POST OP LYSHOLM AFTER 6 MONTHS

	Number	Mean	SD	Minimum	Maximum	Median
PRE - OP OXFORD KNEE SCORE	20	22.8500	3.6168	18.0000	30.0000	22.0000
POST - OP OXFORD KNEE SCORE AFTER 3 MONTHS	20	31.1000	4.3758	22.0000	39.0000	32.0000
POST - OP OXFORD KNEE SCORE AFTER 6 MONTHS	20	39.7000	3.4198	33.0000	46.0000	40.0000
PRE OP KSS-1	20	52.1500	8.1193	43.0000	70.0000	49.0000
POST OP KSS-1 AFTER 3 MONTHS	20	69.0000	5.6195	56.0000	78.0000	70.0000
POST OP KSS-1 AFTER 6 MONTHS	20	82.8000	3.6505	77.0000	88.0000	82.5000
PRE OP KSS-2	20	53.3000	9.0676	40.0000	65.0000	52.0000
POST OP KSS-2 AFTER 3 MONTHS	20	65.3500	8.2862	54.0000	75.0000	65.0000
POST OP KSS-2 AFTER 6 MONTHS	20	76.6000	6.7777	65.0000	85.0000	80.0000

PRE OP LYSHOLM	20	57.8000	4.5722	52.0000	66.0000	56.5000
POST OP LYSHOLM AFTER 3 MONTHS	20	72.0500	2.8186	66.0000	75.0000	72.0000
POST OP LYSHOLM AFTER 6 MONTHS	20	85.9000	3.0070	80.0000	90.0000	86.0000

CONCLUSION

- In our study, 12(60.0%) patients were 41-50years old and 8(40.0%) patient were 51-60 years old.
- In our study, 11(55.0%) patients were Female and 9(45.0%) patient were male.
- In our study, 1(5.0%) patients were USED T PLATE IMPLANT and 19(95.0%) patients were USED TOMOFIX IMPLANT.
- We found that OXFORD KNEE SCORE was increased after 6 month follow-up which was statistically significant.
- It was found that KSS-1 was increased after 6 month follow-up which was statistically significant.
- We found that KSS-2 was increased after 6 month follow-up which was statistically significant.
- In this study LYSHOLM SCORE was increased after 6 month follow-up which was statistically significant.
- We also found that mean TA and FA were decreased in POST OP period which were statistically significant.
- In this study MPTA was decreased in POST OP period which was statistically significant.
- We also found that mean WBLA was decreased in POST OP period which was statistically significant.

REFERENCES

1. Benito, M. J., Veale, D. J, FitzGerald, O., et al. Synovial tissue inflammation in early and late osteoarthritis. Ann.RHEUM.52,3492-3501.
2. Felson DT, NaimarkA, Anderson J, Kazis L, et al, The prevalence of knee osteoarthritis in the elderly.The Framingham osteoarthritis study1998.
3. Felson DT ,Zhang Y, Hannan MT, Naimark A, et al. The incidence and natural history of knee osteoarthritis in elderly.1995 .
4. Coventry MB. Osteotomy of the upper portion of the tibia for degenerative arthritis of the knee: A preliminary report. J Bone Joint Surg. 1965;47:984–90. [PubMed] [Google Scholar]
5. Haslam P, Armstrong M, Geutjens G, Wilton TJ. Total knee arthroplasty after failed high tibial osteotomy: Long term follow up of matched groups. J Arthroplasty. 2007;22:245–50. [PubMed] [Google Scholar]
6. Pal CP, Singh P, Chaturvedi S, Pruthi KK, Vij A. Epidemiology of knee osteoarthritis in India and related factors. Indian journal of orthopaedics. 2016 Oct;50:518-22.
7. Sardana V, Burzynski JM, Stone N, Weening BS, Zalzal PK. Short-term functional outcomes of computer assisted navigated high tibial osteotomy. Journal of orthopaedics. 2019 Mar 1;16(2):166-70.
8. Ravidas S, Palak J, Manjhi LB. Functional and radiological outcome of high tibial osteotomy in osteoarthritis patients with varus knee. International Journal of Orthopaedics. 2019;5(4):1005-9.
9. Chen X, Yang Z, Li H, Zhu S, Wang Y, Qian W. Higher risk of revision in total knee arthroplasty after high tibial osteotomy: a systematic review and updated meta-analysis. BMC Musculoskeletal Disorders. 2020 Dec;21(1):1-8.