

Functional Outcome of High Tibial Lateral Closed Wedge Osteotomy in Osteoarthritis

Dr. SSV Ramana MS ortho, Dr. K.Kiran MS Ortho, Dr. M.Madhava Reddy,
post graduate.

Abstract

INTRODUCTION: Osteoarthritis of knee is more common among all types of arthritic conditions. High tibial osteotomy (HTO) is a widely accepted operation for medial tibiofemoral osteoarthritis and varus deformity of the lower extremity. The rationale behind this surgery is shifting of axis of load transfer from the damaged medial compartment to the intact lateral one via correcting the varus deformity in the frontal plane.

AIM: To assess the functional outcome among patients undergoing high tibial osteotomy.

METHODOLOGY: A prospective study was done on 20 patients with osteoarthritis with varus deformity in government hospital Guntur in orthopaedic department. Proper pre operative assessment was done, surgical intervention with high tibial lateral closed wedge osteotomy was done and outcome was evaluated using knee society scoring system.

RESULTS: The preoperative mean knee score and the mean functional score of the patients before surgery were 58.2 and 52.8 respectively. The postoperative mean knee score and functional score at 12 months was 81.9 and 80.6 respectively. So the preoperative and postoperative comparison score showed statistically significant improvement in both the knee society score and the functional score.

CONCLUSION: High tibial osteotomy is a procedure with encouraging results in patients of osteoarthritis with proper patient selection, osteotomy type and precise surgical procedure and fixation.

Date of Submission: 26-06-2020

Date of Acceptance: 15-07-2020

I. Introduction:

A recent World Health Organization report on the worldwide burden of disease indicates that Knee Osteoarthritis alone is likely to become the 4th most important cause of disability in women and the 8th in men (1). Medial compartment osteoarthritis (MCOA) of the knee leading to varus deformity and subsequent disability is a common problem. (2) During the early stages of osteoarthritis (OA), nonsurgical treatment options include weight loss, low-impact activity, and physiotherapy. On disease progression, high tibial lateral closed wedge osteotomy proves to be a good option for young patients. When performed successfully, HTO is a joint-preserving procedure that does not compromise future TKA. It is a good option for young patients with isolated MCOA and varus deformity. (3) The biomechanical principle of HTO in MCOA is to redistribute the weightbearing forces from the worn medial compartment across to the lateral compartment to relieve pain and to slow disease progression. The methods of high tibial osteotomy include medial open wedge osteotomy and lateral closed wedge osteotomy, the latter procedure being more popular. The main indication for high tibial osteotomy is pain and angular deformity of the knee due to unicompartmental gonarthrosis. In the present study, outcome after high tibial osteotomy has been evaluated with respect to postoperative improvement and individual goal achievement.

AIM AND OBJECTIVE: To assess the functional outcome of high tibial osteotomy among the patients with medial compartmental osteoarthritis of knee with varus deformity.

II. Materials And Methods:

A hospital based prospective interventional study was conducted in our hospital for a period of 18 Months between August 2018 to Jan 2020 and in that 20 patients with medial compartment osteoarthritis with varus deformity were included for the study. The patients selection was done based on both clinical and radiological assessment. Patients with grade 2 and grade 3 osteoarthritis (KELLGREN – LAWRENCE classification) with age group <60 years with medial compartmental OA are included in the study who are fit for surgical intervention and willing for surgery. Grade 4 OA patients, with age > 60 years and not fit for surgery are excluded from the study.

There are various high tibial osteotomy techniques including closing wedge osteotomy, opening wedge osteotomy, dome osteotomy. Of all these we mainly performed opening wedge high tibial osteotomy and closing

wedge high tibial osteotomy as being considered as the most common methods. Assessment and evaluation was done using are protocol which included the symptoms of the patients, associated medical conditions, knee society score and knee society functional score The Knee Society Score[4] is a special score which has been widely accepted as an objective measure of knee status in patients undergoing high tibial Osteotomy. It is a hundred points scoring system and based on the scores the results of the patients were classified as follows.:

Score between 100–85 points are considered excellent

84–70 points are considered good results

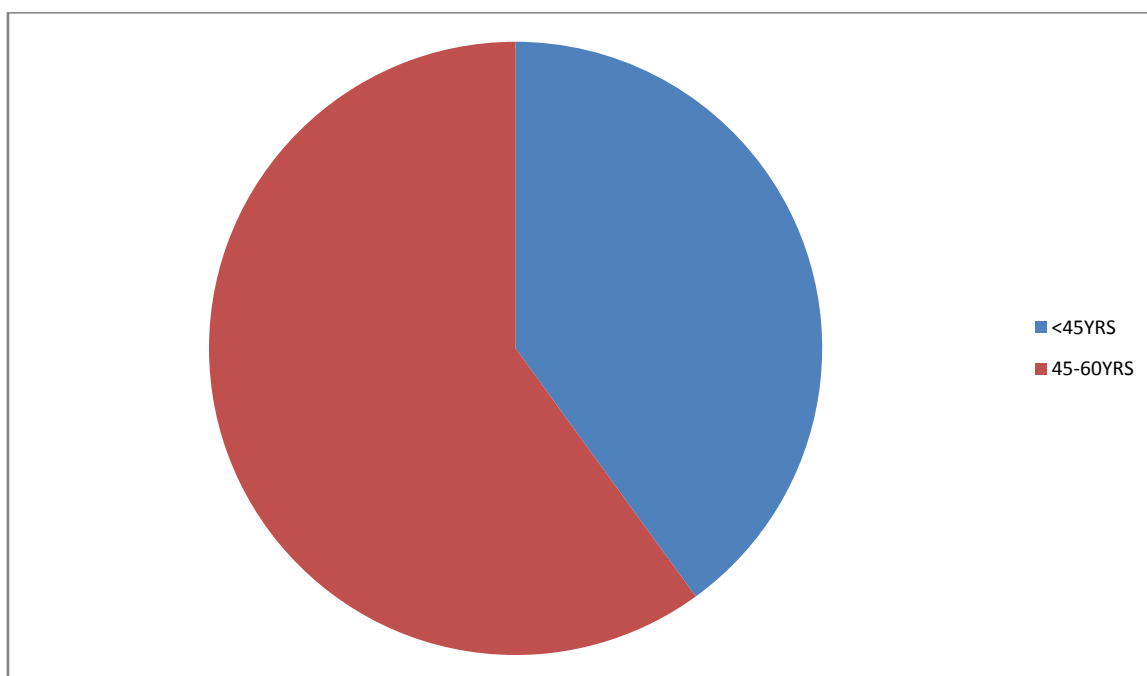
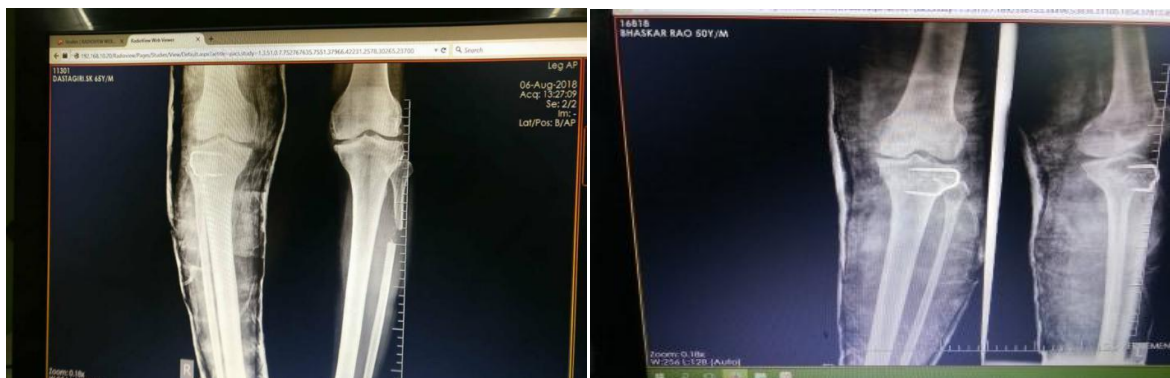
69–60 points are considered poor results

<60 points are considered very poor results.

PROCEDURE: Lateral closed wedge high tibial osteotomy was done for the selected case, it mostly requires a Coventry (fibular osteotomy) or release of proximal tibio fibular joint. Patient kept in supine position, lateral incision given and osteotomy cuts done, one parallel to knee joint and other at required wedge, leaving the medial hinge to safeguard the medial periosteal attachment for better osteosynthesis. Coventry osteotomy of fibular head done simultaneously in the same incision. Varus correction done and staples used for fixation of lateral wedge osteotomy. Immobilization done for 5 to 6 weeks later weight bearing advised based on subsequent followup radiographs.

PRE OP, INTRA OP AND POST OPERATIVE IMAGES OF THE CASES:





SCORING	BEFORE SURGERY	AFTER SURGERY
KNEE SOCIETY SCORE	58.2	81.9
FUNCTIONAL SCORE	52.8	80.6

III. Results:

As per the study ,out of the 20 cases taken under study , age distribution being <60years with mean distribution of age being 51.9years.Out of which 12 were males and 8 were females. There is improvement in knee society score and functional score post operatively after a followup of 3weeks ,3months ,6 months and 1 year .post operative complications were very minimal as 1 case reported infection at surgical site ,and no case of foot drop noticed in the cases done.Excellent results of improvement were found in the cases after a follow up of 1 year.

IV. Discussion:

The main indication of high tibial osteotomy in young and middle aged individuals is pain relief and 95% of the cases done achieved pain relief. The knee society score improved from 58.2 to 81.9 and functional score improved from 52.8 to 80.6.The limitation of the study is that of a very small sample size.Excellent encouraging results were found with less complication rate .The difficulty in revising a unicompartmental to a total arthroplasty has been a concern.The degree of valgus alignment obtained at surgery and,more so, the remaining valgus alignment with passage of time has been reported as positive factors affecting the results[6].Almost 90% of our patients had maintained their valgus alignment.

CONCLUSION:High tibial Lateral closed wedge osteotomy is a procedure with encouraging results in patients of medial compartmental osteoarthritis with proper patient selection, osteotomy type and precise surgical procedure and fixation.

References:

- [1]. Shah SN, Anand MP, Acharya VN, Karnad DR, Bichile SK, Kamath SA et al. API Text book of Medicine. Vol.2. 9th ed. Mumbai: The Association of Physicians of India, 2012, 1818.
- [2]. Catherine Hui, Lucy Salmon J, Alison Kok, Heidi Williams A, Niels Hockers, Willem M. van der Tempel, Rishi Chana, Leo A. Pinczewski. Long-Term Survival of High Tibial Osteotomy for Medial Compartment Osteoarthritis of the Knee. *The American Journal of Sports Medicine*. 2011; 39(1):64-70.
- [3]. Su Chan Lee, Kwang Am Jung, Chang Hyun Nam, Soong Hyun Jung, Seung Hyun Hwang. The Short-term Follow-up Results of Open Wedge High Tibial Osteotomy with Using an Aescula Open Wedge Plate and an Allogenic Bone Graft: The Minimum 1-Year Followup Results. *Clinics in Orthopedic Surgery*. 2010; 2:47-54.
- [4]. Keene JS, Dyreby Jr JR. High tibial osteotomy in the treatment of osteoarthritis of the knee. The role of preoperative arthroscopy. *J Bone Joint Surg Am*. 1983; 65:36-42.
- [5]. Keene JS, Monson DK, Roberts JM, Dyreby Jr JR. Evaluation of patients for high tibial osteotomy. *Clinical*.