

Original Article

Follow up study of High Tibial Osteomy using medial open wedge Osteotomy in medial unicompartamental Osteoarthritis of knee

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High Tibial Osteomy (HTO) was a very popular method to treat Osteo Arthritis (OA) Knee for years. Its suitable for treating mainly medial compartment OA of Knee. We have treated 20 Knees with genu Varum deformity with Medial Open Wedge osteotomy preceded by Arthroscopic lavage. Except few minor complications, medial open wedge osteotomy showed favorable outcome in all patients.

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Key words : OA knee, Medial open wedge osteotomy.

Osteoarthritis of knee is one of the oldest afflictions of mankind. It is now considered primarily a disease of cartilage, in which intrinsic Biochemical and mechanical alteration lead to its breakdown. It can be classified as primary OA where cause is unknown and secondary OA where a cause is known.

HTO is a satisfactory surgical method in unicompartamental knee osteoarthritis here the main principle is shifting the mechanical axis. HTO has been widely accepted since the Coventry, who first reported favorable outcome¹⁻³.

The High Tibial Medial open wedge valgus osteotomy in a varus knee using a medial plate is a popular Surgical Technique⁴⁻⁶.

Operative Technique : Recently HTO is becoming more popular because:

- (1) Growing no of more physiologically young patient.
- (2) Arthroplasty is not an ideal option for young active individuals.
- (3) Due to the development of newer generation implants.
- (4) It can be converted to total joint replacement in future.

Aims and Objectives : In this study we have planned to manage unicompartamental OA Knee with varus deformity by arthroscopic debridement & medial open wedge osteotomy with plate fixation. The aim is to show the follow up results by clinical, radiological and functional aspects according to the standard scoring system.

Materials and Methods : In this study we have taken 20 knees of twenty adult patient's age between 40-60 years with medial compartment OA and genuvarum deformity.

Preoperative Assessment : We have asserted all the

pt. by taking history regarding symptoms as pain was the predominant complain in all the cases detailed history was aggravating and relieving factor, character and radiation. Any episode of knee effusion also asked. Knee score of all patients were determined following the guidelines of knee society.

Surgical Procedure : All patients were treated with high tibial osteotomy with medial open wedge technique preceded by arthroscopic lavage.

Anesthesia : All patients were operated under spinal Anesthesia.

Operative Steps : (1) Calculation of degree of correction and we prefer using the exact measurements for the base of osteotomy. By using the formulae w is equal to the diameter of tibia at the level of osteotomy $\times 0.02$ X angle of correction.

Patient Position : Patient is positioned in supine position. A tourniquet is applied and inflated after taking the graft from iliac crest Diagnostic arthroscopy and arthroscopic lavage is done.

A 10 CM incision is given between the Tibial Crest and Postero medial corner of medial condyle of tibia.

Upper border of pesanserinus identified and a transverse mark given by electro Cautery.

Osteotomy is done keeping the knee in 90 degree flexed position and protecting the posterior neurovascular structure. Osteotomy curved above the Tibial Tuberosity.

Lateral Osteotomy site will be 2 CM distal from lateral joint line. Position is verified with fluoroscopy and 2.5 MM k wire is used as guide for osteotomy. Osteotomy opened by insertion of three chisels, Fujisawa point is checked with diathermy cord and image intensifier appropriate sized bone graft placed in osteotomy site. Osteotomy fixed with tomofix plate wound close with drain.

After Treatment : Drain removed after 48 hours. Post

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operative X-ray done. Removal of stitches done after 2 weeks.

Follow up : Done at every 4 weeks up 3.5 Months then 6 months, 9 months & 1 Year and after that at 6 months interval. Patient allowed to walk with crutches after 2-3 days. Non Wt.

bearing crutch walking upto 6 weeks Full at bearing allowed after consolidation of osteotomy site. Full length X-Ray done at 4 weeks interval to assess union collapse etc. Knee score determined by clinical assessment about Pain, Stiffness, and Instability other abnormality.

Result and Analysis : 16 out of 20 patient had scored 10 for pain pre-operatively signifies that it was continuous 3 patient had scored 20 the pain was occasional 1 patient scored 30 signifying that pain was only on climbing stair.

Radiological Assessment : Average pre op femoro tibial VARUS angle was 6.5 average post op VALGUS angle was 6.8 Joint line convergence angle average preop was 3.7, Average post-op JLCA was 2.3.

Complication : Early post op infection and delayed wound healing in 3 patients. One screw penetration in joint surface in one patient. No nonunion or post op varus collapse occur. After analyzing all pre and post operative data we found our outcome as – excellent in 14, good in 6, no fair or poor result. Regarding patient satisfaction 14 patients were highly satisfied, 5 were satisfied and 1 not satisfied.

Discussion : High tibial osteotomy is a well documented procedure produced satisfactory clinical results^{2,7,8}. It is cost effective and non mutilating operation. Medial open wedge osteotomy is technically easy. Disadvantage of tricortical bonegraft can be overcome by using Tomofix plate^{5,9}. So from our study we can conclude that medial open wedge osteotomy can be done for the treatment of medial unicompartmental osteoarthritis of knee^{4,10,11}.



REFERENCES

- 1 Lee DC, Byun SJ — High tibial osteotomy. *Knee Surg Relat Res* 2012; **24**: 61.
- 2 Cass JR, Bryan RS — High tibial osteotomy. *Clin Orthop* 1988; 196-9.
- 3 Insall JN, Joseph DM, Msika C — High tibial osteotomy for varus gonarthrosis. A long-term follow-up study. *J Bone Joint Surg Am* 1984; **66**: 1040-8.
- 4 Niemeyer P — Two-year results of open-wedge high tibial osteotomy with fixation by medial plate fixator for medial compartment arthritis with varus malalignment of the knee. *Arthroscopy* 2008; **24**: 796-804.
- 5 Staubli AE, De Simoni C, Babst R, Lobenhoffer P — TomoFix: a new LCP-concept for open wedge osteotomy of the medial proximal tibia—early results in 92 cases. *Injury* 2003; **34**: 55-62.
- 6 Stoffel K, Stachowiak G, Kuster M — Open wedge high tibial osteotomy: biomechanical investigation of the modified Arthrex Osteotomy Plate (Puddu Plate) and the Tomo Fix Plate. *Clin Biomech* 2004; **19**: 944-50.
- 7 Fujisawa Y, Masuhara K, Shiomi S — The effect of high tibial osteotomy on osteoarthritis of the knee. An arthroscopic study of 54 knee joints. *Orthop. Clin. North Am* 1979; **10**: 585-608.
- 8 Agneskirchner JD, Freiling D, Hurschler C, Lobenhoffer P — Primary stability of four different implants for opening wedge high tibial osteotomy. *Knee Surg. Sports Traumatol. Arthrosc* 2006; **14**: 291-300.
- 9 Lobenhoffer P, Agneskirchner JD — Improvements in surgical technique of valgus high tibial osteotomy. *Knee Surg. Sports Traumatol Arthrosc* 2003; **11**: 132-8.
- 10 Takeuchi R — Medial opening wedge high tibial osteotomy with early full weight bearing. *Arthroscopy* 2009; **25**: 46-53.
- 11 Agneskirchner JD, Hurschler C, Wrann CD, Lobenhoffer P — The effects of valgus medial opening wedge high tibial osteotomy on articular cartilage pressure of the knee: a biomechanical study. *Arthroscopy* 2007; **23**: 852-61.