

High Tibial Osteotomy Open Wedge Osteotomy versus Close Wedge Osteotomy in Relation to Patella Baja as Asequale to this Osteotomy

Zuhair Gheni Abd Ali*

*Senior Specialist Orthopedic Surgery, Iraq/ Al Najaf, Al Sadder Medical City

Email: zuhairg@yahoo.com, Mobile: 009647801613490

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الخلاصة :- أجريت هذه الدراسة على ثمانية عشر مريض ومريضه بين عام 2004 الى عام 2008 ،معدل عمر المرضى في هذه الدراسة 45 سنة في مراكز مختلفة في محافظة بغداد ومحافظة النجف الأشرف. تم تعديل زاوية الركبة في كلا المجموعتين من المرضى من 168 درجة الى 184 درجة. وجد من خلال هذه الدراسة حصول الرضفة الهابطة في كلا المجموعتين اي مجموعة قص العظم المفتوح او مجموعة قص العظم المغلق ولكن حصول الرضفة الهابطة اكثر في مجموعة عملية قص اعلى عظم القصبه المفتوح من مجموعة عملية قص اعلى عظم القصبه المغلق. لذلك المضاعفات عقابيل عملية قص اعلى عظم القصبه المفتوح اكثر من المضاعفات عقابيل عملية قص اعلى عظم القصبه المغلق.

Abstract :

Study design :

Our study is aretrospective study to asses the level of the patella after valgus high tibial osteotomy in 2 groups of patients group A perform to them open wedge valgus high tibial osteotomy and groupB perform to them close wedge valgus high tibial osteotomy.

material and method :

Our study include 18 patients perform to them valgus high tibial osteotomy from January 2004 – October 2008 in multi center in Baghdad and alnajaf cities ,age between 40-60 years average 45 years 9 of them perform to them open wedge valgus high tibial osteotomy and 9 of them perform to them close wedge high tibial osteotomy.

Result:

The mechanical hip-knee-ankle angle improved from average 168 degree to average184 degree . patella baja observed in both groups of patients but it is more sever in group A than in group B i.e it is more sever in patients with open wedge valgus high tibial osteotomy than in close wedge valgus high tibial osteotomy .

conclusion :

Patella baja is common after valgus high tibial osteotomy , it is more sever in patient with open wedge valgus high tibial osteotomy than close wedge valgus high tibial osteotomy ,according to the blackburne – peel index and insall salvati index , this effect the function of the joint according to the severity of the patella baja in both groups of patients .

Introduction :

The body weight applies on the knee through the femoro –tibial mechanical axis of the limb. it passes across the center of the knee, In cases of varus deformation , the mechanical axis is deviated medially ,increasing load compression forces on the medial compartment of the knee, and thus acartilge lesion lead to medial arthrosis, high tibial valgus osteotomy consist in

realignment of the varus osteoarthritic knee joint to gain better distribution of force , high tibial valgus osteotomy inclusion criteria include medial joint line pain and tenderness and minimal lateral compartment and patella femoral joint symptoms,the knee flexion contracture was less than 10 degree and flexion range was greater than 90 degree, radiograph of the knee showed varus deformity and predominant narrowing of medial joint

space while the lateral joint space and patella femoral joint space were preserved, exclusion criteria of valgus high tibial osteotomy include tricompartmental osteoarthritis, inflammatory arthritis, complete collateral deficiency, poor knee joint range of motion, and age older than 60 years, patient with significant tenderness of patella femoral joint associated with greater than 50% of patella femoral narrowing shown in sky line view. High tibial osteotomy has been well described as an effective procedure for treatment of medial compartmental osteoarthritis of the knee joint¹; it could be done with barrel-volut osteotomy as described by magnet or with close wedge osteotomy as suggested by Coventry or with open wedge osteotomy as described by Herngou.^{2,3,4,5}

Patella baja one of the sequale of valgus high tibial osteotomy, it is more apparent in open wedge valgus osteotomy than in the other type of valgus high tibial osteotomy,^{6,7,8} assessment of patella baja perform by 2 type of index either blackburne index or insall salvati index^{9,10}.

material and method:

Between January 2004 to august 2008, 18 high tibial osteotomy performed as 2 groups of patients group A include 9 patients perform to them open wedge valgus high tibial osteotomy and group B also include 9 patients perform to them close wedge valgus high tibial osteotomy.

Surgical procedure in group A patient include sharp dissection of the Sartorius fascia and pes anserinus tendens, there is no risk of instability as the deepest tibio-meniscal bundle of ligament remain intact, blunt retractor is placed dorsally, deep to the collateral ligament, anteriorly a second retractor is placed under the patellar tendon, the procedure is facilitated by flexion of the knee joint, the guide pin is drilled by the

free hand, oriented obliquely, starting 4 cm distally to the superior edge of tibial tubercle to 1 cm below the joint line, osteotomy is then performed, keeping the oscillating saw blade below and parallel to the guide pin. The anterior and posterior cortices are completely interrupted, preserving a lateral hinge of about 0.5 cm of intact bone, no fibular osteotomy is done, wedge opening with bone graft from the iliac crest followed by internal fixation.

surgical procedure in group B patients with close wedge osteotomy, the surgery is done through lateral approach, the important consideration during this surgery is knee should be flexed to 90 degree, osteotomy of the fibula perform and osteotomy of the tibia according to the calculating degree, fixation by staples.

For the assessment of the level of patella baja we used 2 types of index first one was blackburne-peel index, in which a lateral radiograph of the knee with 30 degree of flexion is obtained and a horizontal line parallel to the tibial plateau perform and then a second line perpendicular to the horizontal line, until the inferior aspect of the patellar articular surface, the measurement of this line (B), a second measurement (A) is made along the patellar articular surface, so B/A give blackburne index which reveal the height of the patella, the second index used in this study called insall-salvati index which is the ratio between the patellar tendon length to the length of the patella, this can be measured by lateral radiograph, ideally the knee is flexed 30 degree, so the ratio between tendon length (TL)/ patellar length (PL) give the insall-salvati index, normal ratio for both index (0.8-1.2) any ratio below 0.8 indicate the occurrence of patella baja.

Result :

The mean follow up period for both groups of patients was 18 months, patella baja occurred in all patients in both group of patients who perform to them valgus

high tibial osteotomy with the blackburne –peel index and insall salvati index ,both of them normally are (0,8 -1,2), this index decrease to(0,5) in group A patients and decrease to (0,7) in group (B) patients.

Group A complain include 3 patients complain from difficulty in bending past 100^o ,2 patients complain from difficulty in straighten the leg ,3 patient get difficulty in doing stairs ,1 patient complain from subluxation of the patella ,standing or sitting Table 1.

Group B complain include 1 patient get difficulty in bending the knee post

100^oTable1 . According to this study there is arelation between the level of the patella and the post operative complain of the patients , so in group A the level of the patella lower than group B so patella baja more sever in group A than group B and post operative complain more than group B.

The patellar height was maintend until the last follow up with blackburne index and insall salvati index and it is as mentioned above normally about (0.8 - 1.2) decrease to 0.5 in group A patients and to 0,7 im group B patients

Table 1:

	GROUP A	GROUP B
Difficulty bending past 100 ^o	3	1
Difficulty in straighten the leg	2	0
Difficulty in doing stairs	3	0
Subluxation of the patella	1	0

Discussion :

Analysis of the result above we observe that the level of the patella in both group of patients remain constant from the the first post operative follow up assessment tell the last post operative assessment by blackburne index and insall salvati index and according to this there was amechanical dearrangement of the level of the patella ,so there is astructural cause of decrease the height of the patella rather than biological cause i.e scarring or fibrosis , more over the size of the anterior bone graft was found to be signficantly but inversely related to the blackburne index and insall salvati index ,we find the larger the size of the anterior bone graft ,the longer was the patellar descent ,the smaller was the blackburne index and insall salvati index , so for our the elevation of the tibial plateau after open wedge valgus high tibial osteotomy has important role in causing patella baja ,that it is more prominent in open wedge valgus high tibial osteotomy than close wedge valgus high tibial osteotomy ,because in close wedge ,there is decrease

in the length of the tibia so less amont of decrease of the height of the patella and aless level of patella baja according to blackburne –peel index and insall salvati index ,so that it is imporent to perform pre opertative assessment of the level of the patella and see the blackburne and insall salvati index , so those with alarge index can perform to them open wedge valgus high tibial osteotomy and those with asmall index perform to them close wedge valgus high tibial osteotomy .

conclusion :

patella baja acmmon sequale after valgus high tibial osteotomy but it is more prominent in open wedge high tibial osteotomy than close wedge high tibial osteotomy according to blackburne index and insall salvati index ,we find that the cause of the patella baja was mechanical dearrangement rather than biological factars ,so it is important to perform pre operative assessment for the level of the patella to calculate the amount of blackburne index and insall salvati index,those with high index can go with the line of open wedge valgus high tibial

osteotomy and those with small index go with them with the line of close wedge valgus high tibial osteotomy .

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