Medial Collateral Ligament release in Open Wedge High Tibial Osteotomy, How & How much

H.Makhmalbaf

Consultant Orthopedic & knee surgeon

Associate Professor

Mashhad University Of Medical Sciences

Tehran 20/Nov/2017

Open Wedge high Tibial Osteotomy

- Is more accurate, has the
- Advantage of using a medial approach,
- Eliminates the need for a fibular osteotomy with the risk of peroneal nerve damage and fibular pseudarthrosis

E. M. Nelissen & E. J. van Langelaan &

R. G. H. H. Nelissen 2008

Review Article

Knee Surg Relat Res 2012;24(2):61-69
http://dx.doi.org/10.5792/ksrr.2012.24.2.61
pISSN 2234-0726 · eISSN 2234-2451

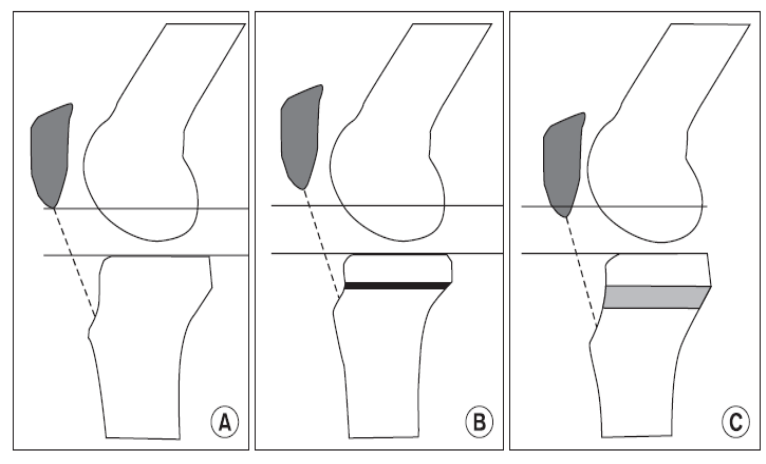
KSRR
Knee Surgery & Related Research

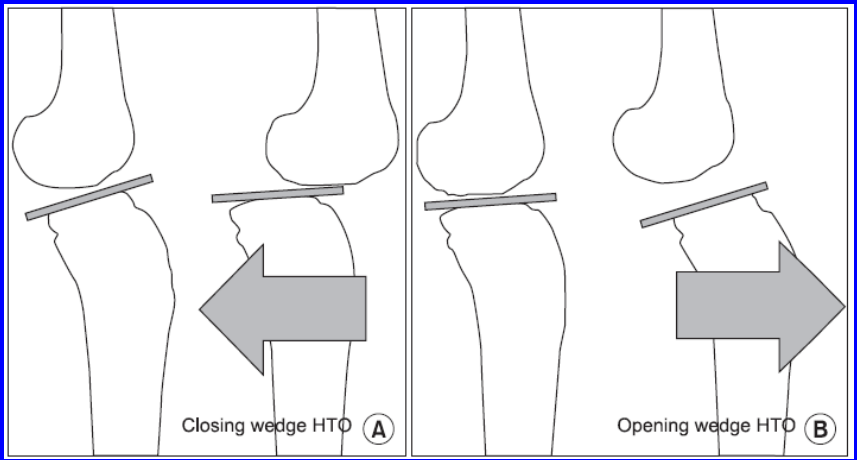
High Tibial Osteotomy

Dong Chul Lee, MD and Seong Joon Byun, MD
Department of Orthopedic Surgery, Yeungnam University College of Medicine, Daegu, Korea

- Associated with high nonunion rates,
- long period of weight-bearing restriction,
- and leg lengthening.
- Other disadvantages include harvest site morbidity,
- loss of correction due to unstable fixation,
- and increase in posterior tibial slope due to anterior position of the metal plate.

Posterior Tibial Slope and Patellar Height after HTO





Dietrich Pape et al. 2005

- Partial release of the superficial medial collateral ligament for open-wedge high tibial osteotomy
- A human cadaver study evaluating medial joint opening by stress radiography
- Any release could affect med, join laxity
- When valgus stress applied

- Clinically however, post-surgical valgus instability following HTO with partial MCL release is an uncommon complication.
- open-wedge procedure can re-tention an intact MCL by the width of the base of the wedge..

- This re-tentioning effect is uncertain in :
- Small wedge sizes
- Preexisting medial compartment laxity &
- In the presence of a partially detached MCL.

- a partial release of the superficial MCL for HTO does not play a crucial role in stabilizing valgus forces in the human knee.
- effect of partial versus complete release of the superficial MCL to determine medial knee laxity
- represented by the amount of medial joint opening (MJO) under valgus stress in this human cadaver study

- In ten knee pairs,
- the superficial and deep MCL were sectioned in sequence
- abduction force of 15 kp
- superficial and deep MCL were sectioned
- the superficial MCL was completely sectioned
- Group 1&2
- sectioning of the superficial MCL was restricted to the anterior border to

- MJO within knee pairs were statistically evaluated.
- Stress radiography did not reveal any significant differences in increments of MJO between knee pair specimens with complete versus partial release of the superficial MCL.
- We disproved our hypothesis and concluded that the anterior fibers of the superficial MCL do play a crucial role in maintaining valgus stability in this biomechanical setting.

Conclusion:

- Therefore, the release of the superficial MCL for open-wedge HTO should be kept to a minimum to decrease the potential of late valgus instability

- **Does Superficial Medial Collateral Ligament Release in Open-Wedge High Tibial Osteotomy for Varus Osteoarthritic Knees Increase Valgus Laxity?**
- Seung-Suk Seo, Chang-Wan Kim, Jin-Hyuk Seo, Do-Hun Kim, Chang-Rack Lee
- *American Journal of Sports Medicine 2016, 44 (4): 908-15*
- 26823451

- : To evaluate the changes in medial laxity of the knee joint as related to the complete release of the sMCL through serial valgus stress radiographs in patients who underwent OWHTO.

- of 48 patients (54 knees)
- who received OWHTO
- followed for more than a year
- and for whom serial valgus stress radiography data were available
- were retrospectively reviewed.
- To assess the medial laxity of knee joint

surgery before release of the sMCL under anesthesia, after the well as 3, 6, and 12 months after surgery. Serially measured MJOs were a

- The MJO was measured before surgery,
- during surgery before release of the sMCL under anesthesia,
- after the well as 3, 6, and 12 months after surgery.
- Serially measured MJOs were analyzed to evaluate the changes of medial laxity.

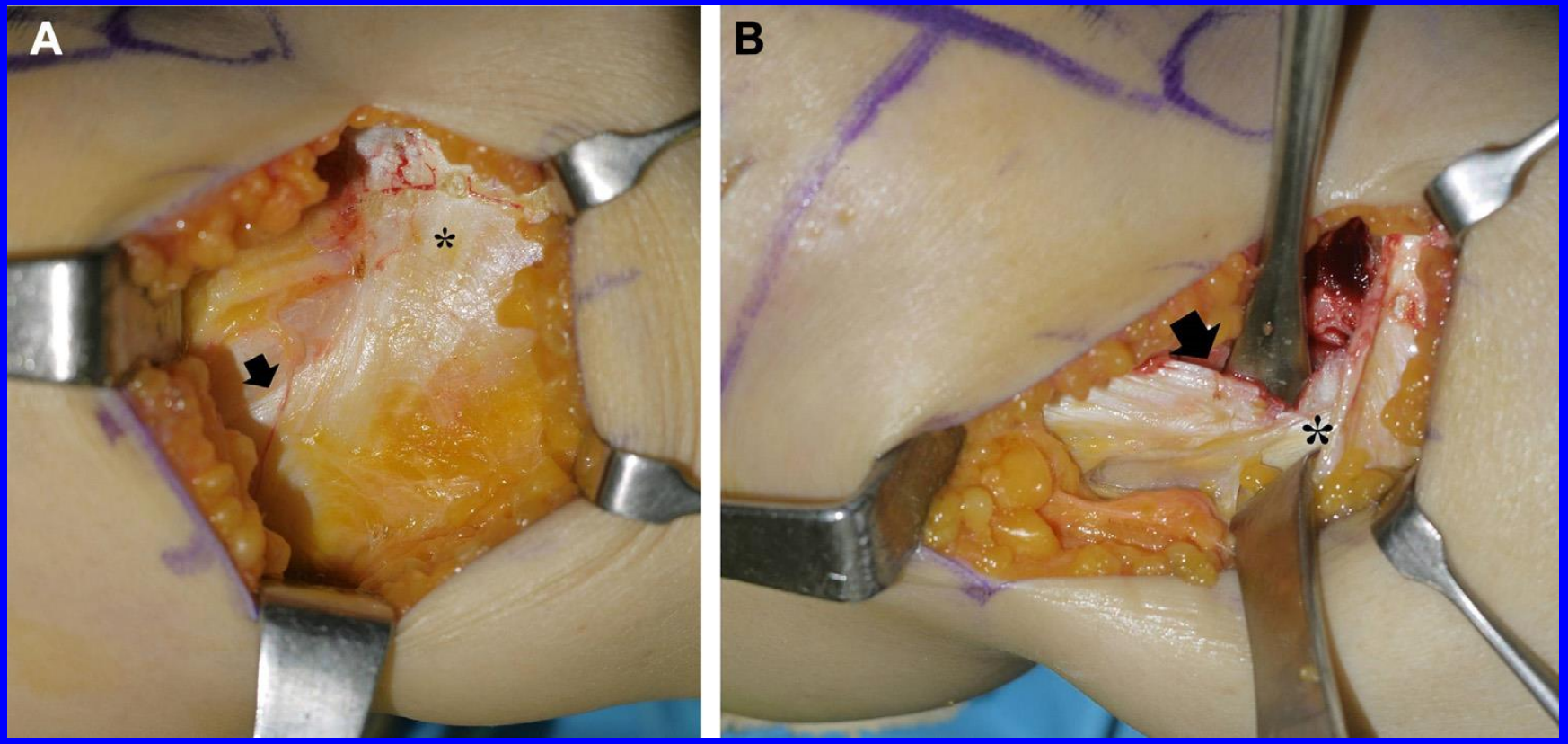
Results:

- : The MJO significantly increased after the release of the sMCL
- The MJO measured after fixing with the TomoFix plate following the opening of the osteotomy site was significantly decreased
- compared with that measured after the release of the sMCL and was not significantly different from the MJO measured before release of the sMCL.

- No significant difference was observed among MJOs that were measured 3, 6, and 12 months after surgery. Comparison of MJOs before and after surgery also showed no significant differences

Conclusion:

- : Complete release of the sMCL during OWHTO increases the MJO.
- However, the MJO decreased to the level before sMCL release after fixing with the TomoFix plate following the opening of the osteotomy site.
- Medial laxity induced by the complete release of the sMCL can be recovered by opening the osteotomy site.


A
B


Newton
NT-501A INDICATOR
14.98
kg
Max
Min
e=d=
CAS


Center of
femoral head
α
62.5%
0%
25%
50%
75%
100%
α
Center of ankle

Arthroscopy: The Journal of Arthroscopic & Related Surgery
Volume 23, Issue 8, August 2007, Pages 852-861

Original Article

The Effects of Valgus Medial Opening Wedge High Tibial Osteotomy on Articular Cartilage Pressure of the Knee: A Biomechanical Study

Jens Dominik Agneskirchner M.D. [a], Christof Hurschler Ph.D. [b], Christiane D. Wrann D.V.M. [a], Philipp Lobenhoffer M.D. [a]

Purpose: The objective of this study was to quantify the effect of different loading axes and of a valgus opening wedge high tibial osteotomy (HTO) on tibiofemoral cartilage pressure.

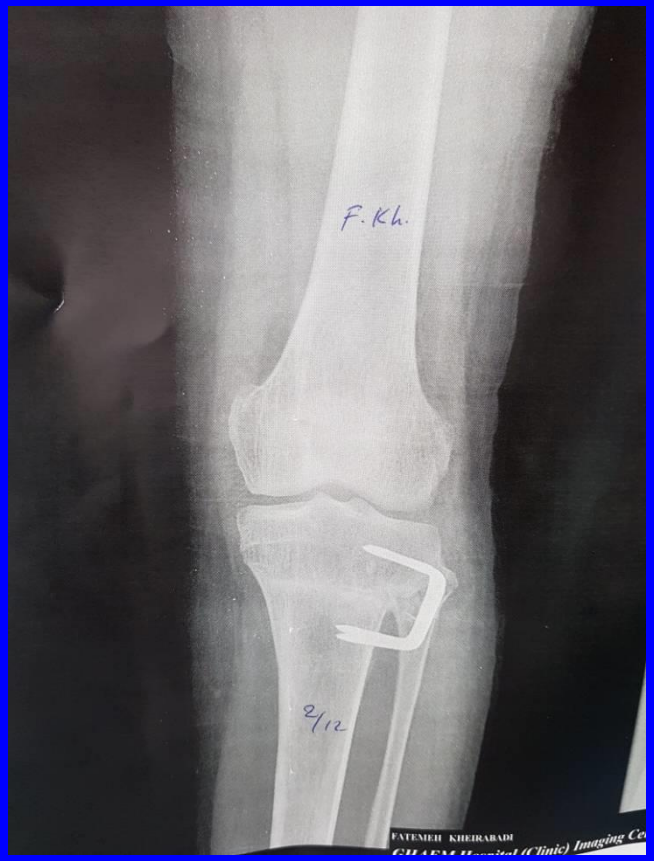
Campbell's Operative Orthopaedics 2017 p. 501

- Medial open wedge osteotomy
- is more precise, more exact correction
- Tricortical autograft illiac crest
- Rigid plate fixation
- If leg is shorter
- In patients with lax MCL+ - ACL deficient

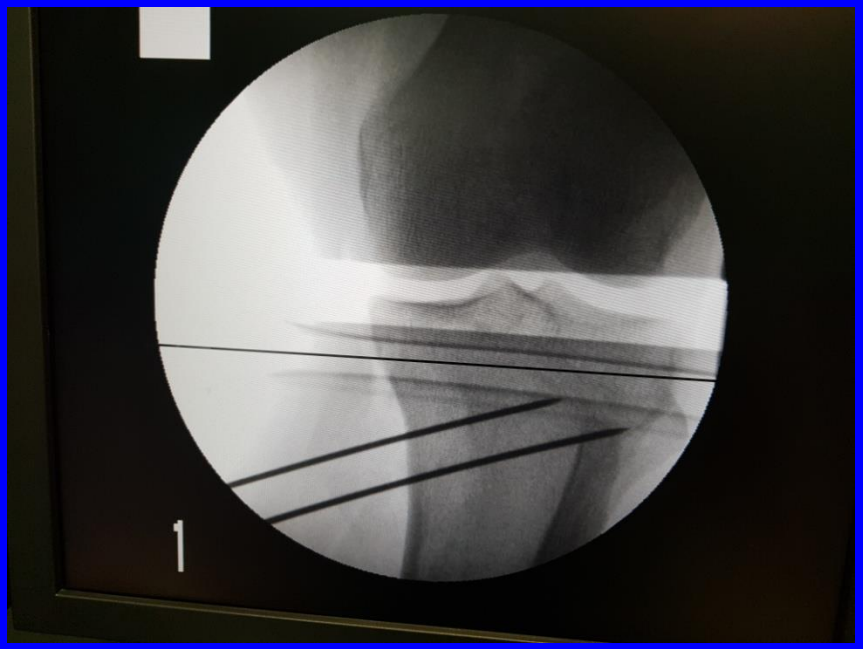
Cambpell's Operative Orth.

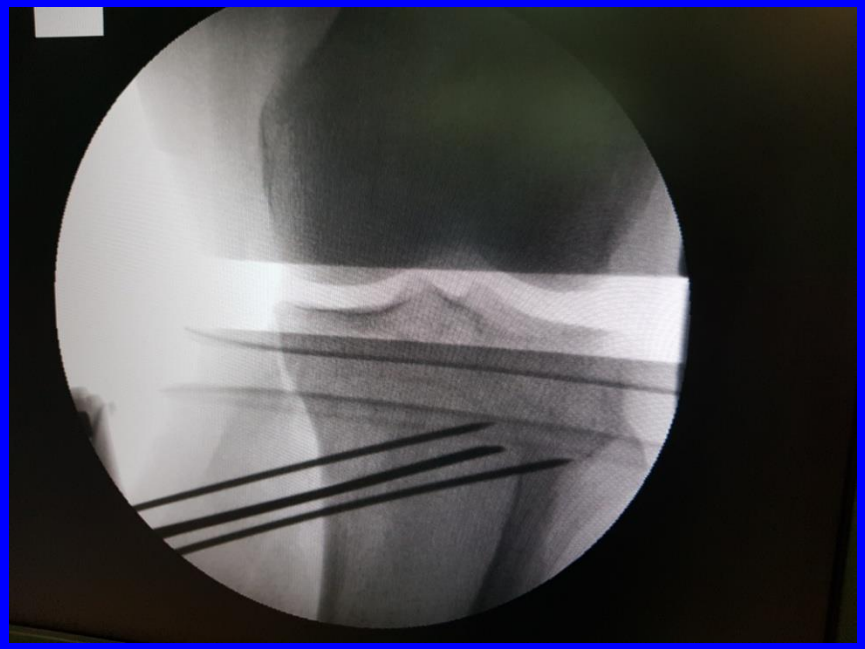
- In chronic grade III posterolateral corner instability + varus
- Arthur et al. MOWHTO as initial treatment
- 21 patients, 2/3 did not require 2nd stage lig. reconstruction
- LaPrade et al. : open wedge proximal tibial osteotomy decreased varus & external rotation laxity in posterolateral corner-deficient knees due to tightening of the sMCL

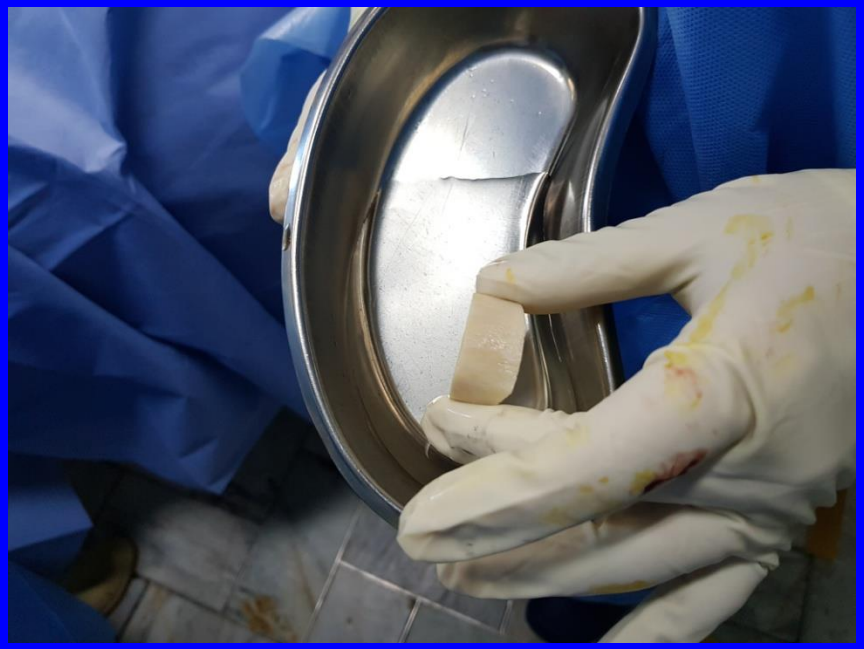
Coventry UTO



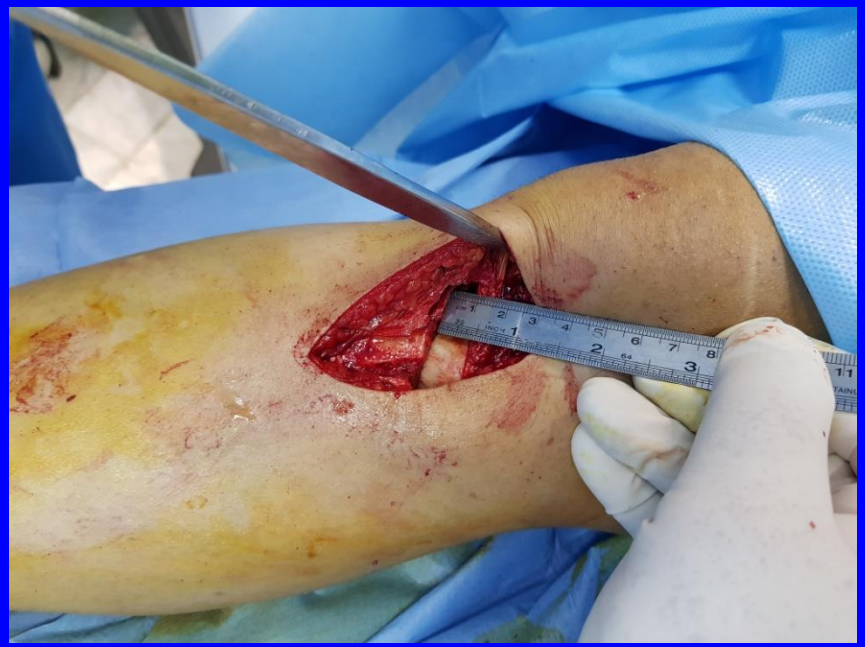
MOWHTO technique

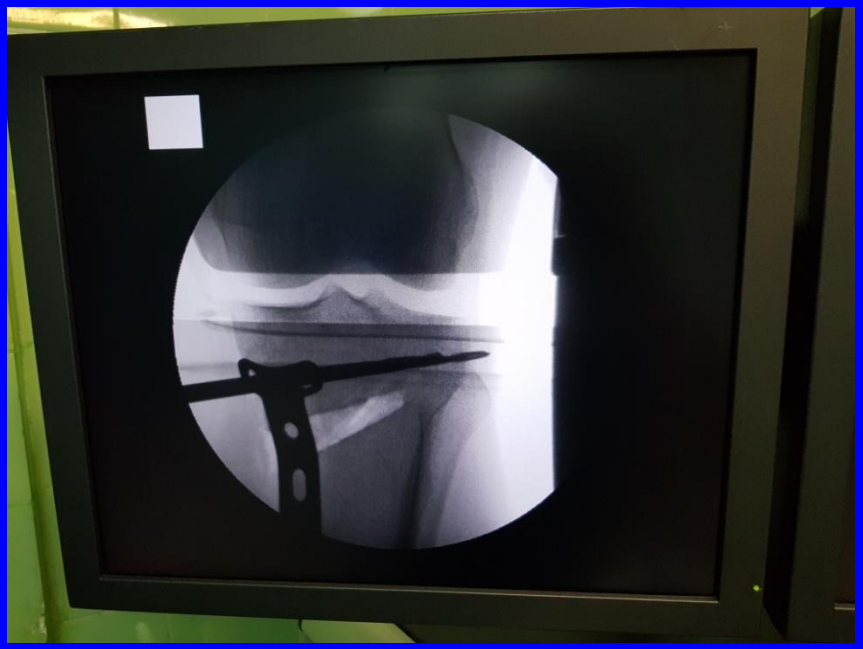

1

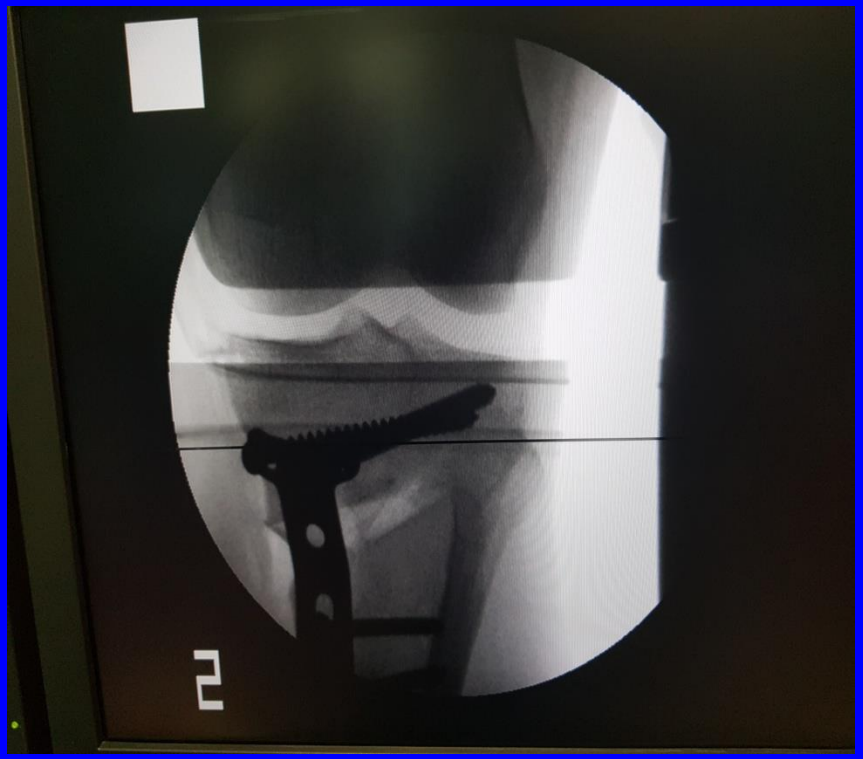





CenoBone
Gamme Sterile CenoBone
Lab.No:58
Cat.Code: D22146
Exp Sep 2022
www.trcir.com
Tissue Regeneration Corporation
Doc.Code:IFU-01
Rev.:02
ISO 13485
ISO 9001
ISO 14001
OHSAS 18001
CenoBone
بیو ایمپلنت استخوانی از منشا آلوگرافت
محصول استریل
NOTICE
STERILE R





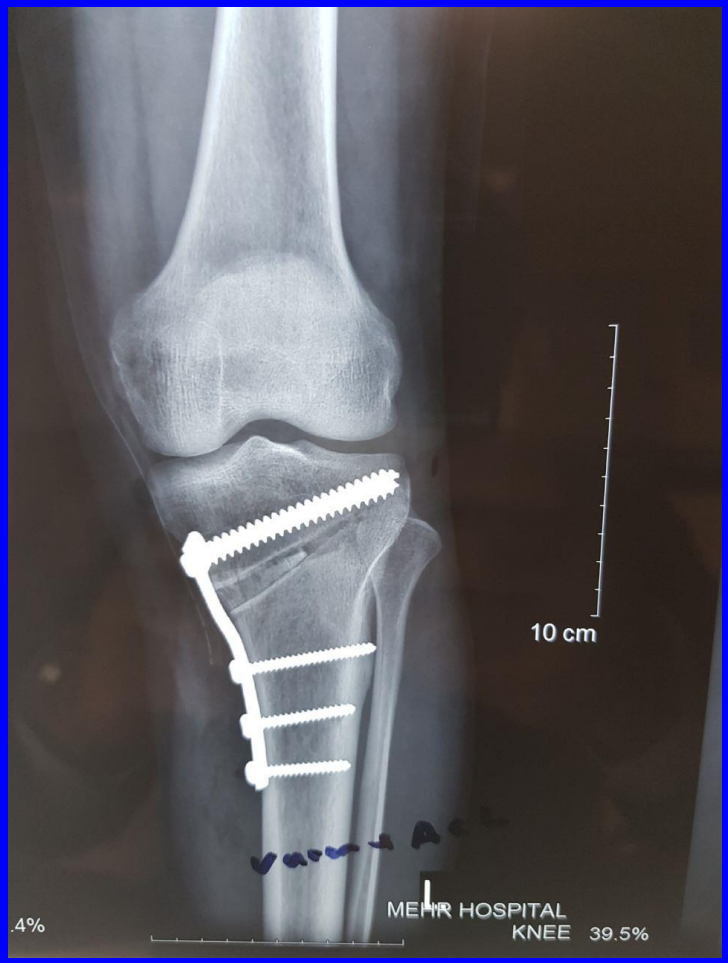

2


10 cm
10 c


10 cm
R

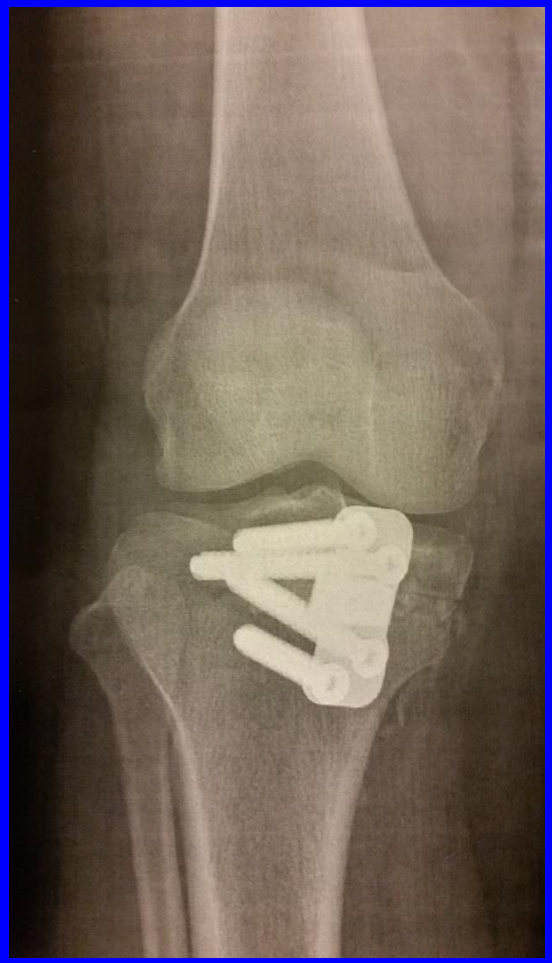

D=495mm
D=503mm
21.0°
10.9°
D=419mm
D=419mm
50 cm
RIGHT


L=902mm
L=922mm
50 cm


10 cm
MEHR HOSPITAL
KNEE 39.5%


L

Complications & pitfalls




R


R