ARTHROSCOPIC TREATMENT of PERIARTICULAR FRACTURES AROUND the KNEE

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FRACTURES AROUND the KNEE

• Tibial Eminence Fx
• Patella Fx
• Plateau Tibia Fx
• Distal Femur Fx
ARTHROSCOPY

• Treatment modality

• Assistive method

• Not the only way !!!
Why Arthroscopy?

• Low risks!!
  – infection
  – wound healing
  – early mobilization

• Evaluation of concomitant injuries (most important)

• Better rehabilitation

• But need experienced surgeon
INTRAARTICULAR FRACTURES

- Anatomic joint surface restoration
- Rigid fixation
- Early mobilization
TECHNIQUE (General)

- Arthropump (extravasation risk)
- Experienced assistant
- C-arm Fluoroscopy
Tibial Eminence Fractures
Type I - II - III
Meyers and McKeever classification of intercondylar eminence fracture
TECHNIQUE
(Tibial Eminence Fx)

• Standart + accessory portals
• Debride the fracture bed (be gentle)
• K-wire as joystick and reduction
• Probe or curette for reduction
TECHNIQUE
(Tibial Eminence Fx)

- Cannulated screws – miniAcutrack??
- 2 screws if possible
- Do not destroy the avulsed fragment
- Suture fixation
- Take care of physis
TECHNIQUE
(Tibial Eminence Fx)

• Near extension locked brace 2 weeks

• 2-4 weeks ROM: 0-90

• No weight bearing for 4 weeks

• Partial weight bearing 4-6 weeks
Arthroscopic EndoButton Fixation for Tibial Eminence Fractures

Surgical Technique

Dietrich Pape, MD
Robert Giffin, MD, FRCS(C)

The Journal of Knee Surgery; Jul 2005; 18, 3; ProQuest Health and Medical Complete pg. 203

Fixation with EndoButton
Arthroscopic Fixation of Intercondylar Eminence Fractures Using a 4-Portal Technique

Mehmet S. Binnet, M.D., Ilksen Gürkan, M.D., Cengiz Yilmaz, M.D., Ataç Karakas, M.D., and Cem Çetin, M.D.


Always use accessory portals
Arthroscopic fixation of the fractures of the intercondylar eminence via transquadricipital tendinous portal
Suture fixation is better for fractures with small fragments.
Arthroscopic Fixation of Displaced Tibial Eminence Fractures: A New Growth Plate–Sparing Method

Jorge R. Vega, M.D., Luis A. Irribarra, M.D., Alejandro K. Baar, M.D., Magaly Iñiguez, M.D., Martín Salgado, M.D., and Natalia Gana, R.N.


Fixation with suture anchor
Meniscal entrapment may prevent anatomic reduction
MAJOR COMPLICATIONS

• Loss of knee extension,

• Pain on knee extension
  – CYCLOPS LESION, (not very rare)

• Anterior instability = residual laxity
  – Mostly asymptomatic
  
  • this is an AVULSION injury
Plateau Tibia Fractures
Schatzker classification of plateau tibia fractures
TECHNIQUE
(Plateau Tibia Fx)

• Evaluate the neurovascular status preoperatively

• Evaluate the ligamentous stability under anaesthesia

• Standart portals
TECHNIQUE
(Plateau Tibia Fx)

• Irrigation: ‘Solution to pollution is dilution’
• Check calf and thigh perop
• K-wires as joystick
• ACL guide in depressed fx
• Cannulated screws – Acutrack???
TECHNIQUE
(Plateau Tibia Fx)

• Do not forget concomitant injuries
  – always try to repair meniscus
  – mostly easy before fx fixation
  – Ligamentous repair, easy after fx fixation
TECHNIQUE (Plateau Tibia Fx)

• At the end do not forget to examine varus – valgus instability

• Early ROM

• No weight bearing 6 weeks

• Partial weight bearing 6-10 weeks

• Full weight bearing after 10-12 weeks
Medium-term results of percutaneous, arthroscopically-assisted osteosynthesis of fractures of the tibial plateau

T. Scheerlinck, C. S. Ng, F. Handelberg, P. P. Casteleyn

From the Academic Hospital, Free University of Brussels, Belgium

The technique has proved to be safe but demanding. It facilitates diagnosis and appropriate treatment of associated intra-articular lesions.


K-wire as a joystick
Arthroscopy-assisted operative management of tibial plateau fractures
Tamping up of the articular surface
Arthroscopic Evaluation of Soft Tissue Injuries in Tibial Plateau Fractures: Retrospective Analysis of 98 Cases

Mohamed Zaki Abdel-Hamid, M.D., Chung-Hsun Chang, M.D., Yi-Sheng Chan, M.D., Yang-Pin Lo, M.D., Jau-Wen Huang, M.D., Kuo-Yao Hsu, M.D., and Ching-Jen Wang, M.D.


<table>
<thead>
<tr>
<th>Fracture Type</th>
<th>No. of Patients</th>
<th>Peripheral Tear</th>
<th>Radial Tear</th>
<th>Flap Tear</th>
<th>Frequency of Meniscal Tears</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type I</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>50% (1/2)</td>
</tr>
<tr>
<td>Type II</td>
<td>45</td>
<td>24</td>
<td>4</td>
<td>0</td>
<td>62% (28/45)</td>
</tr>
<tr>
<td>Type III</td>
<td>8</td>
<td>4</td>
<td>2</td>
<td>0</td>
<td>75% (6/8)</td>
</tr>
<tr>
<td>Type IV</td>
<td>19</td>
<td>4</td>
<td>5</td>
<td>0</td>
<td>47% (9/19)</td>
</tr>
<tr>
<td>Type V</td>
<td>12</td>
<td>3</td>
<td>4</td>
<td>1</td>
<td>72% (8/12)</td>
</tr>
<tr>
<td>Type VI</td>
<td>12</td>
<td>1</td>
<td>3</td>
<td>0</td>
<td>33% (4/12)</td>
</tr>
<tr>
<td>Total injuries</td>
<td>98</td>
<td>37*</td>
<td>18</td>
<td>1</td>
<td>57% (56/98)</td>
</tr>
</tbody>
</table>

*P < .05 when compared with radial and flap tears.
Arthroscopic Evaluation of Soft Tissue Injuries in Tibial Plateau Fractures: Retrospective Analysis of 98 Cases

Mohamed Zaki Abdel-Hamid, M.D., Chung-Hsun Chang, M.D., Yi-Sheng Chan, M.D., Yang-Pin Lo, M.D., Jau-Wen Huang, M.D., Kuo-Yao Hsu, M.D., and Ching-Jen Wang, M.D.


**Table 3. Relationship Between Fracture type and ACL Injury**

<table>
<thead>
<tr>
<th>Fracture Type</th>
<th>No. of Patients</th>
<th>Avulsion Fracture</th>
<th>Partial Tear</th>
<th>Complete Tear</th>
<th>Frequency of ACL Tears</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type I</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0% (0/2)</td>
</tr>
<tr>
<td>Type II</td>
<td>45</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>9% (4/45)</td>
</tr>
<tr>
<td>Type III</td>
<td>8</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>12% (1/8)</td>
</tr>
<tr>
<td>Type IV</td>
<td>19</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>53% (10/19)*</td>
</tr>
<tr>
<td>Type V</td>
<td>12</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>25% (3/12)</td>
</tr>
<tr>
<td>Type VI</td>
<td>12</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>50% (6/12)*</td>
</tr>
<tr>
<td>Total injuries</td>
<td>98</td>
<td>10</td>
<td>10</td>
<td>4</td>
<td>25% (24/98)</td>
</tr>
</tbody>
</table>

*P < .05 when compared with types I, II, III, and IV.*
Patella Fractures
**TECHNIQUE (PatellaFx)**

- Standart + superomedial + superolateral portals
- For selected fx
- Better for transverse patellar fx
- When the extensor retinaculum is intact
- Less than 8 mm of displacement
- 2 cannulated screws + cerclage wire when possible
Arthroscopic-Assisted Percutaneous Screw Fixation of Select Patellar Fractures

Reha N. Tandogan, M.D., Huseyin Demirors, M.D., Cengiz I. Tuncay, M.D., Necip Cesur, M.D., and Murat Hersekli, M.D.


Percutaneous towel clamp for closed reduction
Add cerclage wires for a stable fixation
Before and after reduction
TECHNIQUE
(Patella Fx)

• ROM 0-30 for 2 weeks

• Full ROM at 6-8 weeks

• Partial weight bearing at 3 weeks

• Full weight bearing after 6 weeks
Distal Femur Fractures
Arthroscopic assisted reduction and internal fixation of lateral femoral epiphyseal injury in adolescent soccer player: a report of one case

Yong Seuk Lee · Young Bok Jung · Jin Hwan Ahn · Jong Seop Shim · Dae Cheol Nam

Arthroscopy assisted IF of distal femoral epiphyseal injury
Arthroscopy assisted Hoffa fracture treatment
(Case by Poyanli O., MD)
Arthroscopy assisted Hoffa fracture treatment
Arthroscopy assisted Hoffa fracture treatment
Arthroscopy assisted retrograd femoral nailing
Tibial Tubercle Fractures??
Arthroscopic Excision of an Ununited Ossicle Due to Osgood-Schlatter Disease

Tahsin Beyzadeoglu, M.D., Muharrem Inan, M.D., Halil Bekler, M.D., and Faik Altintas, M.D.

ATTENTION
Do not forget!

• Arthroscopy is just assistive, not the only way
• Restoration of joint surface is important
• Prefer open techniques if in trouble with arthroscopy
• We have good open reduction opportunities
• If not experienced in arthroscopy, do it open