

Val d'Isère, 01-2018

Multiligament injuries: one or different stages ?

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Orthopaedic
Surgery



Centre Hospitalier
de Luxembourg

Sports Medicine
Research Laboratory



Luxembourg
Institute of Health

Get full picture



Don't get fooled by first impression !



- Complete diagnosis
- Associated injuries
- Patient profile/expectations

Associated injuries

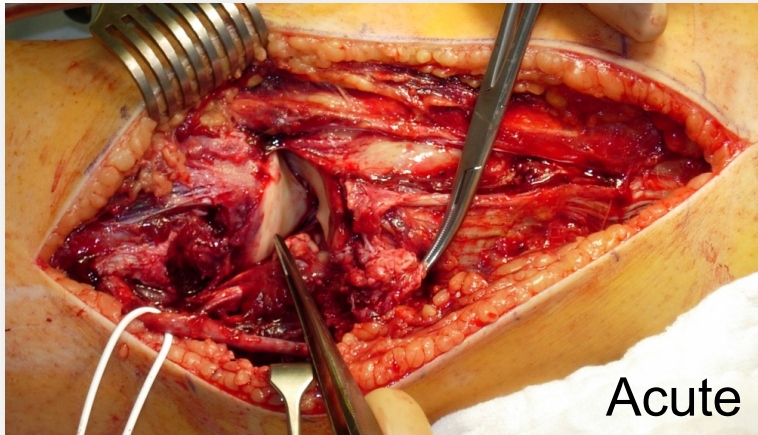
Intraarticular

- Cartilage
- Meniscus

Extraarticular

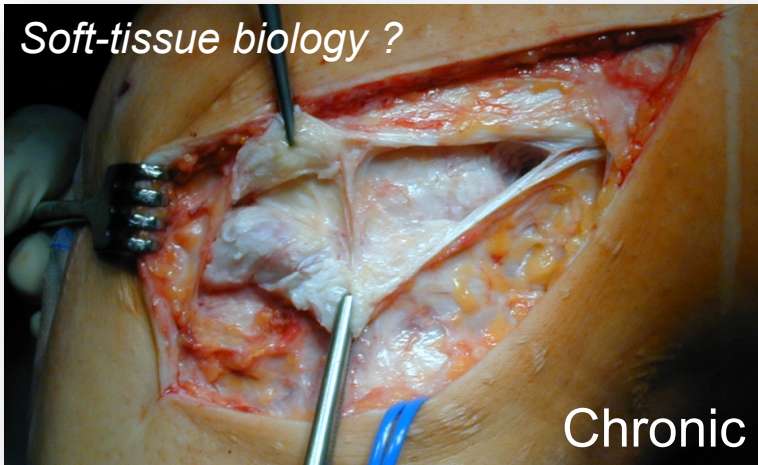
- Fractures
- Skin & soft tissues
- Neurovascular

Recognize & treat early



Primary treatment is key !

- ✧ Avoid chronicity
- ✧ Address all injuries
- ✧ Don't overestimate repair
- ✧ Consider alignment





Fallbericht

Niklaus F. Friederich, Heinz Widmer, Werner Müller, Thomas Schwamborn, Jürg Hauswirth*

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In 12 Monaten von der Knieluxation
zurück zur Weltspitze –
Das unglaubliche Comeback der jungen J.K.



Schweizerische Zeitschrift für «Sportmedizin und Sporttraumatologie» 49 (1), 00–00, 2001

Surgical Treatment of Complex Bicruciate Knee Ligament Injuries in Elite Athletes

What Long-term Outcome Can We Expect?

Michael Tobias Hirschmann,^{*†} MD, Farhad Iranpour,[‡] MD, Werner Müller,[§] MD, and Niklaus F. Friederich,[†] MD
From the [†]Department of Orthopaedic Surgery and Traumatology, Kantonsspital Bruderholz, Bruderholz, Switzerland, the [‡]Department of Musculoskeletal Surgery, Imperial College London, London, United Kingdom, and [§]Riehen, Switzerland

Ideal world scenario

Early complete 1-stage reconstruction/repair (N=26 elite athletes; FU 2-8 years)

<u>Class</u>	<u>Description</u>
KD I	Cruciates intact
KD II	ACL/PCL torn, LCL/MCL intact
KD III	ACL/PCL torn, MCL or LCL torn
KD IV	ACL/PCL/MCL/LCL torn
KD V	Periarticular fracture dislocation

Schenck RC, South Med J, 1992

- Time injury-surgery > 40 d → worse
- Tegner preop 9; postop 7
- KD IIIM > KD IIIL or KD IV

Hirschmann MT, Am J Sports Med 2010

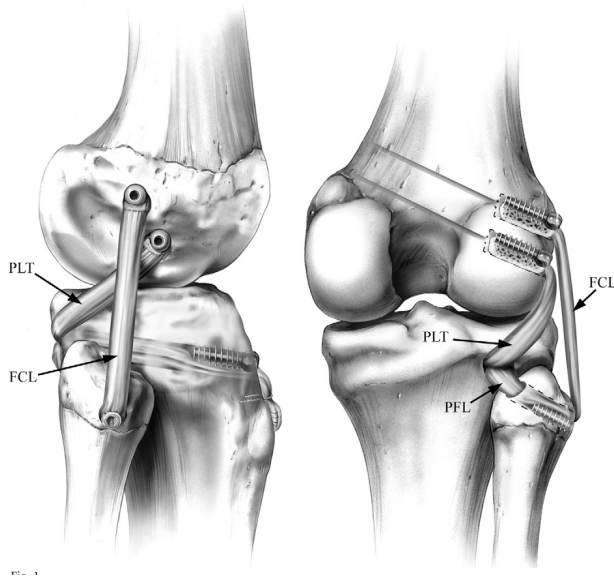
Outcomes of an Anatomic Posterolateral Knee Reconstruction

By Robert F. LaPrade, MD, PhD, Steinar Johansen, MD, Julie Agel, MA, May Arna Risberg, PT, PhD,
Havard Moksnes, PT, and Lars Engebretsen, MD, PhD

*Investigation performed at the Department of Orthopaedic Surgery, University of Minnesota, Minneapolis, Minnesota, and the Department of
Orthopaedic Surgery, Ullevaal University Hospital, University of Oslo, Oslo, Norway*

Ideal world scenario

1-stage reconstruction (N=18 isolated PL; 46 PL + cruciate(s))



- grade 3 instabilities
- > 4 y. FU
- improved clinical outcomes
- objective stability

LaPrade RF, Engebretsen L, JBJS A 2010



Associated injuries:

- ✧ Soft-tissues (open/close/compartiment)
- ✧ Neurovascular
- ✧ Fracture dislocations



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- ✧ Soft-tissues (open/close(compartment)
- ✧ Neurovascular
- ✧ Fracture dislocations



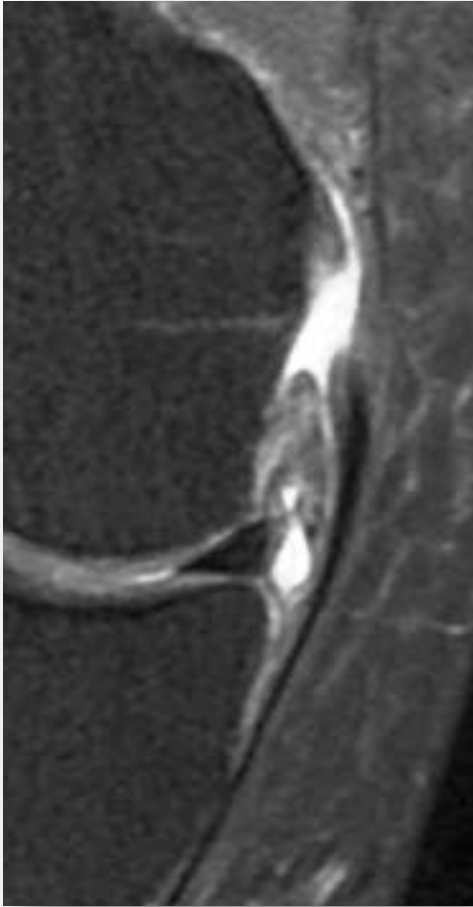
Morbidly obese patient
→ External fixator

Associated injuries:

- ✧ Soft-tissues (open/close(compartment))
- ✧ Neurovascular
- ✧ Fracture dislocations

- Goals:**
- Restore anatomy in 1 procedure
 - Acute delayed surgery: you have 3 weeks...
- Pro's:**
- Allows for complete ligament reconstruction
 - May allow for repair (periphery)
 - May prevent chronicity
- Con's:**
- Technically more demanding (long, complex)
 - Graft availability (?)
 - Higher risk of arthrofibrosis

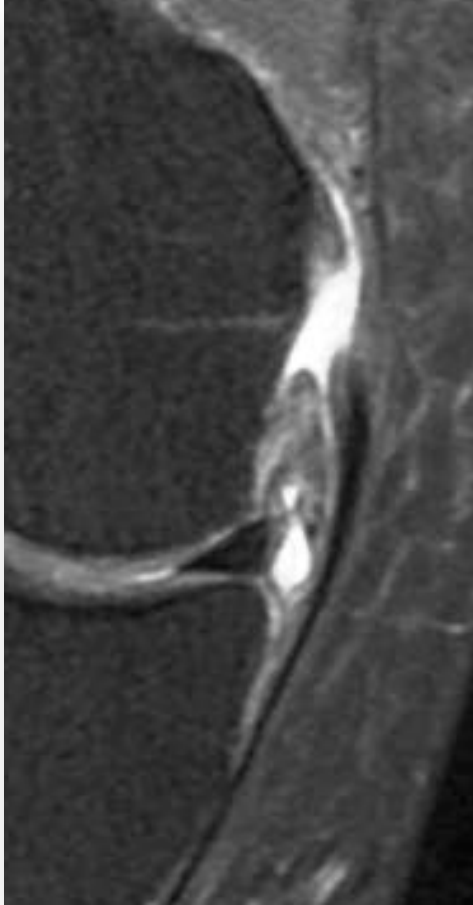
- Goals:**
- Restore neutral position of the knee
 - Treat remaining laxity in second stage
- Pro's:**
- Surgery may be simpler during first stage (periphery)
 - The more technically demanding surgery planned for second stage
- Con's:**
- Longer duration of treatment
 - Possible complications during the first stage (i.e. infection) may delay the or contra-indicate the second stage



More important than the question of
1 vs 2 stages is the fact...

- To make a correct & complete diagnosis
- To perform adequate surgery

Prevent failure of multiligament reconstruction



- ✧ Missed diagnosis
- ✧ Inadequate surgery
 - Insufficient primary repair
 - Inadequate graft fixation
 - Tunnel malplacement
- ✧ Malalignment (varus)
- ✧ Chronicity of lesions

Case example

Missed diagnosis



1 year after initial surgery:

Still in rehabilitation centre

Gross multidirectional instability

Walking difficulties

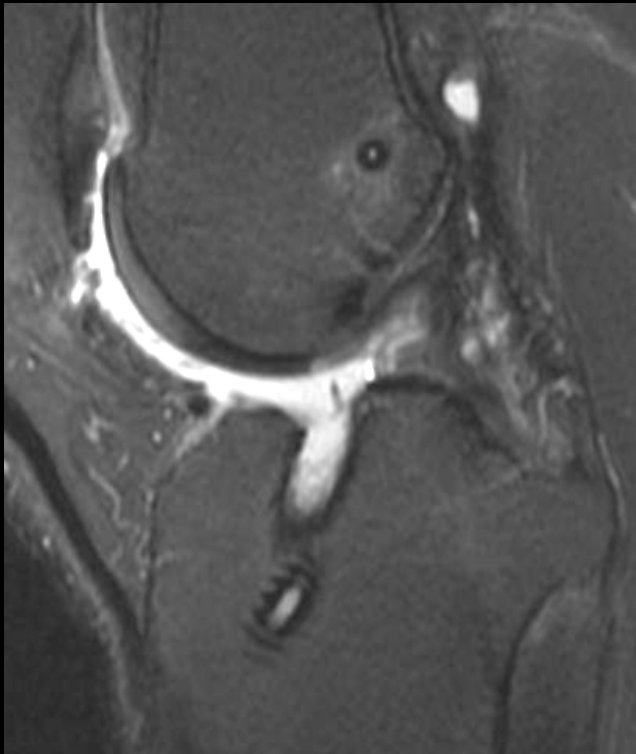
Recurrent effusion

Unable to work

♂, 35 years, football, taxi driver

Case example

Missed diagnosis



Initial surgery:

ACL reconstruction + MCL repair

1 year postop:

Biological + biomechanical ACL failure

→ Reconstruction of ACL/PCL/LCL/Pop

→ MM repair

♂, 35 years, football, taxi driver

Case example



- ✧ Difficult & long surgery
- ✧ Thorough preoperative planning
- ✧ Tourniquet time
- ✧ Surgical sequence
- ✧ Availability of material (hardware, ligament graft, bone)

Case example

Missed diagnosis



1) Every knee must be considered individually and requires a specific strategy

Personal preference: all in one, but
standardized protocol can not be
systematically recommended

2) Correct treatment is determined after:

Clinical examination with stress radiographs and MRI

Neurovascular complications have been ruled out

Associated fractures should be included in the strategy

Other complications: polytrauma, compartment syndrome should be considered

Patient status (age, weight, activities, sports)

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18th ESSKA Congress 9 – 12 May 2018

SECC, Glasgow, Scotland

www.esska-congress.org

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