MULTILIGAMENT RECONSTRUCTIONS: ONE-STAGE SURGERY

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CLINICA ORTOPEDICA II
LAB. di BIOMECCANICA e INNOVAZIONE TECNOLOGICA
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ISTITUTO ORTOPEDICO RIZZOLI
### Schenk classification

<table>
<thead>
<tr>
<th>Grade</th>
<th>Injured Structures</th>
<th>Intact Structures</th>
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<tbody>
<tr>
<td>I</td>
<td>Single cruciate + collateral</td>
<td>ACL + collateral</td>
</tr>
<tr>
<td>II</td>
<td>ACL/PCL</td>
<td>Collaterals</td>
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<tr>
<td>III M</td>
<td>ACL/PCL/MCL/ LCL + PLC</td>
<td>LCL + PLC</td>
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<tr>
<td>III L</td>
<td>ACL/PCL/LCL + PLC</td>
<td>MCL</td>
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<tr>
<td>IV</td>
<td>ACL/PCL/MCL/ LCL + PLC</td>
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<tr>
<td>V</td>
<td>Fracture dislocation</td>
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</tr>
</tbody>
</table>

**Abbreviations:** ACL, anterior cruciate ligament; LCL, lateral collateral ligament; MCL, medial collateral ligament; PCL, posterior cruciate ligament; PLC, posterolateral corner.

*Adapted from Schenk R. Classification of knee dislocations. Oper Tech Sports Med 2003;11(3):193–8; with permission.*
COMBINED INSTABILITY

LIGAMENTS RECONSTRUCTION

ACUTE
- < 3 WEEKS
- USUALLY OPEN
- BETTER CLINICAL RESULTS
- NOT ALWAYS INDICATED

CHRONIC
- > 3 WEEKS
- ARTHROSCOPY
- LESSER RESULTS

Hohmann E, THE KNEE, 2017
WHY ONE-STAGED RECONSTRUCTION?

↑ CLINICAL SCORES (LYSHOLM)

31% REPORT NORMAL/NEAR NORMAL KNEE (IKDC)

SIMULTANEOUS EVALUATION OF COMPLEX INSTABILITIES

BETTER IN CHRONIC OR SUBACUTE SETTING
COMBINED INSTABILITY

ACL +

MCL (FREQUENT)

LCL (RARE)

PCL +

PMC (RARE)

PLC (FREQUENT)

COMBINED INSTABILITY
ORDER OF RECONSTRUCTIONS

CENTRAL STRUCTURES

PCL FIRST!!!
(ANATOMICAL TIBIAL REDUCTION)

ACL SECOND

THIRD

PERIFERAL STRUCTURES

- MCL
- LCL
- PLC
- ALL
ACL and PCL RECONSTRUCTION + ALL and MCL

CHRONIC SETTING WITH ANTEROMEDIAL + POSTERIOR INSTABILITY
AUTOGRAFT/ALLORGAFT
HAMSTRINGS
PCL RECONSTRUCTION

Zaffagnini et al, Musculoskeletal Surgery 2011
ARTHROSCOPIC TECHNIQUE: AM PORTAL

- STUMP REMOVAL POSSIBLE
- CONTROL OF TIBIAL INSERTION POSSIBLE
- EXECUTION OF TIBIAL TUNNEL POSSIBLE
- TECHNICALLY DIFFICULT
- DIFFICULT ORIENTATION
- RISK TO BE MORE ANTERIOR WITH TIBIAL TUNNEL
ARTHROSCOPIC TECHNIQUE: PM PORTAL

✓ ACCURATE VISUALIZATION OF TIBIAL INSERTION
✓ BETTER CONTROL OF TUNNEL LOCATION
ARTHROSCOPIC TECHNIQUE: TIBIAL TUNNEL
ARTHROSCOPIC TECHNIQUE: FEMORAL TUNNEL
ARTHROSCOPIC TECHNIQUE: FEMORAL TUNNEL

✓ REPRODUCTION OF A-L BUNDLE FOR SINGLE BUNDLE REC.
✓ SMOOTH THE POSTERIOR EDGE TO REDUCE THE KILLER ANGLE
✓ POSSIBLE IMPROVEMENT ONLAY ON THE FEMUR?
ARTHROSCOPIC TECHNIQUE: GRAFT
STAPLE FIXATION ON MFC
ACL RECONSTRUCTION

Marcacci, 1998
PLC+ACL+ALL
ASSOCIATED

La Prade, J Knee Surg 2005
MAT + HTO + ACL + ALL ASSOCIATED

3 MONTHS X-RAY

- 42 Y FEMALE
- ACL RECONSTRUCTION AND MM 24 YEARS BEFORE
- PROGRESSIVE INSTABILITY
- VARUS KNEE, MEDIAL PAIN

MEDIAL MAT + VALGUS HTO + ACL REVISION

3 MONTHS 2nd LOOK

RETURN TO SKIING AFTER 1 YEAR
WHY ONE STAGE IS BETTER BECAUSE:

ADDRESS ALL LIGAMENT LAXITY

NO RESIDUAL PARTIAL INSTABILITY THAT COULD DETERIORATE THE RESULT

LESS MORBIDITY FOR THE PATIENT

LESS TIME LOSS TO RETURN TO ADL

GOOD CLINICAL RESULTS
Thank you

Prof. Stefano Zaffagnini