European Society of Sports Traumatology, Knee Surgery & Arthroscopy

ESSKA

ESSKA **European ACL Revision Consensus**

Chairmen: Thomas Tischer, Vincenzo Condello

This brochure is a summary of the ESSKA European ACL Revision Consensus Project.

Full text is available on **www.esska.org/page/projects**

GRADING DESCRIPTION

- *Grade A: high scientific level*
- *Grade B: scientific presumption*
- *Grade C: low scientific level*
- *Grade D: expert opinion*

PRESIDENTIAL FOREWORD

There is great variation across Europe when it comes to medical praxis. Agreeing a common approach to pathologies or procedures has always been a challenge. But some such agreement is important, if we are to ensure standards.

For years now, one of ESSKA's objectives has been to work on professional standards. Thus, ESSKA has developed a strict and painstaking methodology which employs our considerable European expertise. We call it **ESSKA's European Consensus.**

Our first European Consensus was presented in 2016 -2018 on Meniscus (Degenerative lesions and Traumatic tears). More information is available on **www.esska.org.**

This year, at ESSKA 2022 Paris Congress, we are delighted to launch the **ESSKA European ACL Revision Consensus.**

We thank Thomas Tischer and Vincenzo Condello- the Project leaders, our Consensus Projects Advisor, Prof. Philippe Beaufils, as well as the members of the Steering, Rating, and Peer Review Groups for their efforts and dedication.

A special acknowledgement also for our staff, and particularly Mrs Anna Hansen Rak, without whom this would have been not possible.

Jacques Menetrey
ESSKA President
2020-2022

David Dejour
ESSKA President
2018-2020

Roland Becker
ESSKA President
2022-2024

CHAIRMEN FOREWORD

Anterior cruciate ligament revision surgery is complex surgery and many factors need to be taken into account for a successful outcome like available grafts, meniscus status, tibial slope, cartilage lesions, bone tunnel widening, additional ligamentous lesions, patient age and activity level and many more.

Currently, there are still numerous open questions, starting from the correct diagnosis, taking different comorbidities and other factors into account, to distinguish between surgical or nonsurgical management better and, if needed, to improve preoperative planning, surgery, and rehabilitation. To address these and many more questions, an expert group within the ESSKA has conducted a formal consensus combining both expert opinion and literature-based evidence on relevant questions within the formerly mentioned areas. Additionally, a RAND/UCLA Appropriateness Method (RAM) process has been performed to define the appropriateness of the indication for ACL revision surgery based on different clinical scenarios. This true European consensus involved 88 people from 27 european countries.

We hope to give clear guidelines for surgeons in Europe and worldwide in order to achieve better and more reliable outcomes, especially for the non-expert surgeons.

Thomas Tischer
Chairman

Vincenzo Condello
Chairman

STEERING AND LITERATURE GROUP MEMBERS

P. Beaufils – France
ESSKA Consensus Projects Advisor

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R. Seil – Luxembourg
J. Menetrey – Switzerland
N. Pujol – France
M. Feucht – Germany
S. Ahmad – Germany
M. Bonomo – Italy
M. Rathcke – Denmark

DIAGNOSTICS AND PREOPERATIVE PLANNING

How is a failed ACL reconstruction defined?

Failure of ACLR is defined by abnormal knee function associated with a previous primary reconstruction. This could be due to graft failure itself with abnormal laxity (IKDC C/D) or failure to recreate a functional knee according to the expected outcome. Reasons for failure could be a new trauma with graft rupture, repeated microtrauma, surgical technical errors, biological failure, unaddressed associated lesions, or complications associated with the primary procedure. *Grade B*

Which radiographic/imaging studies should be used to evaluate a known or suspected failed ACL Reconstruction?

Weight-bearing anteroposterior (AP) and lateral x-rays (superimposed posterior condyles, preferably in monopodal stance), with at least 15cm of proximal tibia visible, as well as MRI (without contrast agent) should be used in every case of suspected ACL reconstruction failure. Parameters assessed on x-ray include joint narrowing, patellar height, tibial slope, static anterior tibial translation, tunnel placement and widening, and retained hardware. *Grade D*

Which additional radiographic/imaging studies can be used to evaluate a known or suspected failed ACL Reconstruction?

Based on patient history, symptoms, physical evaluation and results of initial radiological assessment, further studies can be used:

- Long weight bearing radiographs can be used to measure lower limb axes in the case of suspected knee malalignment and/or unicompartimental osteoarthritis.
- Lateral long leg radiographs can be used when there is suspicion of extraarticular tibial deformity (tibial bowing), to accurately measure the tibial slope.
- CT scan is the most reliable method to assess tunnel widening and osteolysis, but due to costs and radiation exposure, should be used only if there is concern about tunnel widening and osteolysis, or if it is not possible to properly identify tunnel placement. 3D CT might be of additional value.
- Flexed knee postero-anterior weight bearing radiographs (Schuss or Rosenberg) can be used to increase the sensitivity of standard x-rays in order to document joint space narrowing
- Axial view radiographs can be used to document the amount PF OA and its progression
- Stress radiographs (bilateral) can be used to quantify the amount of laxity, or in cases of chronic multidirectional laxity, to quantify the main directions of laxity. *Grade D*

SURGICAL STRATEGY

Which factors are relevant to the surgical strategy when the decision is made to revise a previously reconstructed ACL?

The following factors are relevant to the surgical strategy:

Range of motion

- Severely Restricted ROM
  Significant Hyperextension (>5°)

Availability of graft material

- Autograft or allograft? Ipsilateral or contralateral graft harvesting? Bone block or soft tissue graft?

Previous tunnel size and location

- Are the tunnel diameters of preexisting tunnels acceptable? Can the tunnels be reused or are new tunnels necessary? Can new tunnels be drilled without creating a bony defect (confluent tunnels)? Can stable fixation be achieved?

Previous graft fixation

- Is it necessary to remove previous fixation material? Will removal of fixation material create a relevant bony defect?

Limb alignment (coronal/sagittal)

- Is limb alignment a possible factor for ACL graft failure? Can limb alignment be corrected in a single stage procedure or is a two-stage procedure preferred?

Meniscal status

- Does a specific meniscal tear need to be addressed (root tear, ramp lesion)? Is significant meniscal loss a possible reason for ACL graft failure? Is meniscal reconstruction or transplantation necessary?

Cartilage status / Preexisting OA

- Is a cartilage repair procedure indicated? May an osteotomy to unload unicompartmental OA be an option?

Concomitant ligament insufficiency

- Are there relevant concomitant ligament insufficiencies contributing to ACL graft failure? Can all ligaments be treated in a single-stage procedure? May the patient benefit from additional anterolateral stabilization?

Grade of laxity

- Is concomitant anterolateral stabilization indicated? Is a posterolateral root tear or posteromedial ramp lesion present?

Bone quality

- Can adequate fixation stability be achieved with standard fixation methods? Are alternative techniques necessary (e.g. back-up fixation or oversized screws?)

Patient activity and expectation

- May the patient benefit from an additional anterolateral stabilization?

Infection status

- Is an active infection evident? Suspected low-grade infection? *Grade B*

When is bone grafting of a widened or malpositioned tunnel indicated?

Bone grafting is generally recommended if secure graft fixation cannot be achieved in an anatomic position due to an increased tunnel diameter. No absolute threshold exists for the "critical tunnel diameter", with values ranging between 12 and 15 mm. In fact, the threshold may vary with regard to graft choice, drilling technique, fixation technique, and knee size.

Three scenarios exist in which bone grafting may be indicated:

- A previously partially malpositioned tunnel, which will interfere with a new anatomic tunnel, resulting in a confluent tunnel exceeding the critical diameter
- A previous anatomic tunnel position exceeding the critical diameter
- Intra OP widening caused by difficult fixation hardware removal

However, by using specific techniques such as outside-in drilling with a different tunnel trajectory, over the top technique, using grafts with large bone blocks and large interference screws, bone grafting may not be necessary.

Bone grafting is usually performed as a two-stage procedure; however, with specific techniques (e.g. impaction bone grafting) bone grafting can also be performed as a one-stage procedure.

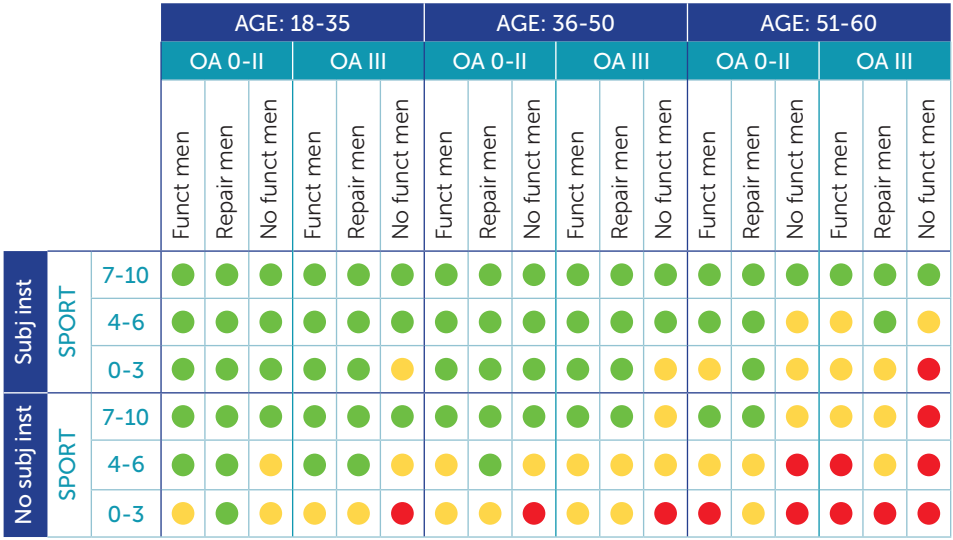
If preexisting tunnels do not interfere with new tunnel placement or graft fixation, they can usually be left alone, and bone grafting is not necessary/indicated. *Grade C*

When is an additional extraarticular antero-lateral procedure indicated in ACLR surgery?

Systematic use of additional extraarticular anterolateral procedure should be considered in revision ACL-reconstruction, especially when patients present with gross laxity (pivot shift +++, grade II and III (IKDC) of AP instability and/or in pivoting sports or in hyperlaxity). Also check for laxity on the medial side, because it can also increase anterolateral instability. However, there is still a lack of high levels of evidence in existing studies. *Grade B*

INDICATION

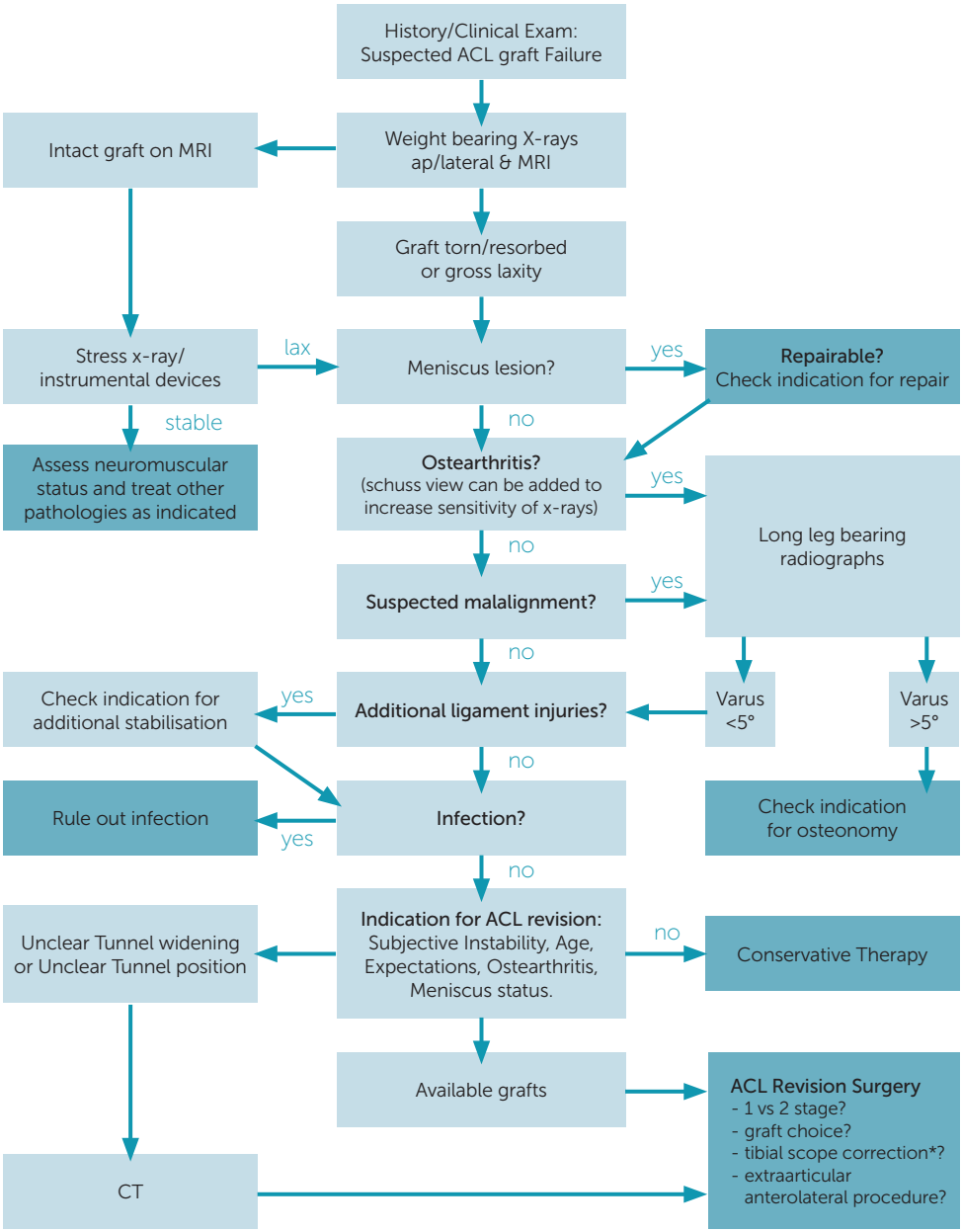
The RAND/UCLA Appropriateness Method (RAM) analyzed the indications for first ACL graft revision. A list of specific clinical scenarios was produced regarding ACL re-rupture with increased laxity in an aligned knee in adults. Scenarios were created based on age, sport expectation, instability symptoms, meniscus status and osteoarthritis. Based on the five clinical variables identified as more relevant for the treatment choice, a set of 108 clinical scenarios was developed, where ACL revision indication was rated as being either appropriate, inappropriate, or uncertain.



Schematic representation of the appropriate (green), inappropriate (red), and uncertain (yellow) scenarios for the first ACL revision in adults based on the RAM consensus.

While in 32 scenarios the "uncertain" results can reflect either the ambiguous state of current evidence or equivocal appropriateness due to a moderately unfavorable risk profile or to limited efficacy, in 70% of the cases a recommendation was reached by the consensus on the indication to perform ACL revision, being either appropriate or inappropriate in 63 and 13 scenarios, respectively.

MANAGEMENT OF FAILED ACL RECONSTRUCTION



*in rare cases isolated slope correction might suffice

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