



Time to focus on ACL revision: ESSKA 2022 consensus

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Received: 1 February 2022 / Accepted: 15 March 2022 / Published online: 19 March 2022

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Anterior cruciate ligament (ACL) reconstruction is generally regarded as a safe and effective procedure with high return to sport and low rerupture rates (4.9% rerupture rate after a mean FU time of 8.1 years according to the Norwegian Knee Ligament Registry) [10]. However, subgroups such as adolescents or young women are at higher risk of failure. For instance, in adolescents, the failure rate is twice as high as that in young adults [13]. Nonetheless, due to the increasing number of ACL reconstructions performed annually, the number of ACL revisions (ACL-Rs) is rising automatically. ACL-R is not merely a second primary ACL reconstruction [5]. Concomitant pathologies, such as cartilage damage, meniscus lesions, bony defects caused by the initial tunnels, or additional peripheral laxity, may predominantly challenge revision surgery [1, 3, 6, 8]. Furthermore, how do we address anatomical deformities such as high posterior tibial slope or varus malalignment? Surgeons should be aware that ACL-R is associated with an increased risk of 30-day hospital readmission (0.6% vs. 1.9%), reoperation (0.5% vs. 1.9%), and surgical complications (0.5% vs.

1.9%) compared with primary ACL reconstruction [11]. A review of numerous studies demonstrated inferior outcomes after ACL-R surgery compared to primary reconstruction at 5 years of follow-up based on both objective and patient-reported outcome parameters [15]. Joint effusion, degree of anteroposterior instability, lack of quadriceps strength and degree of patellofemoral osteoarthritis significantly deteriorate clinical outcome after ACL revision [2].

Failure rates for ACL-R surgery reported by the MARS group ranged between 3.1 and 10.6% after 6 years of follow-up, depending on the graft choice [7]. Bone tendon bone (BTB) and soft tissue autografts had a decreased risk of graft rerupture compared with BTB allografts. BTB autografts were also associated with higher activity levels than BTB allografts at 6 years after revision reconstruction [7]. The risk of retear after ACL-R ranged from 2 to 25%, with an average rate of under 5% according to a systematic review [5]. However, when including additional objective criteria of clinical failure, such as pathological laxity measurements, pivot shift phenomenon, Lachman test, or IKDC Grade C or D, the failure rate may increase up to 20%–30%. Patient expectations seem to be lower for ACL-R than for primary reconstruction, but the former group remains demanding, especially athletes [4].

ACL registries may help to provide further insight into the outcome after both primary and revision ACL reconstruction [10, 12, 13]. Artificial intelligence might be of help soon to handle demographic and patients' specific data properly to allow surgeons a more individualized approach for ligament surgery [9, 10]. International consensus statements further help in the decision process, especially in difficult-to-treat patients after failed ACL reconstruction. It is indeed the educational role of scientific societies, especially of ESSKA, to promote and support such consensus projects.

Currently, there are 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. What is the correct definition of ACL failure—solely the

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retear of an ACL graft or rather the poor function directly related to ACL reconstruction?

The impact of both coronal and sagittal alignment on knee laxity should not be underestimated, and long-leg weight-bearing radiography and lateral view for assessing lower limb alignment and tibial slope, respectively, are mandatory for surgical planning [14]. There is still a lack of clarity regarding how to correctly measure the posterior tibial slope. Studies have shown a range from 7.8 to 13.8° in the same knee depending on the method used for measurement [16]. How do knee surgeons deal with hyperlaxity in ACL-R surgery? How should tunnel widening be handled? One of the most important questions is which factors may have the utmost relevance for patients' treatment after failed ACL reconstruction. Should ACLR surgery be performed as a one-stage procedure or a two-stage procedure? When should osteotomy also be performed? When is an additional extra-articular procedure indicated? However, in addition to diagnostics, planning and surgical strategy, the correct indication for surgery is probably one of the most important factors. What is the impact of age on ACL-R? Should ACL revision surgery be performed in patients older than 60 years of age? Do people with early osteoarthritis still benefit from ACLR surgery? What is the role of the meniscus in revision surgery? Does the indication change with the activity of the patients?

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. The results of the formal ESSKA consensus called "First Anterior Cruciate Ligament Revision in Adults" will be presented at the annual congress in Paris in 2022.

Funding There is no funding for this study.

Declarations

Conflict of interest The authors declare no conflicts of interest relevant to this manuscript.

Ethical approval This article does not contain any studies with human participants or animals performed by any of the authors.

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