Primary repair of the anterior cruciate ligament: real innovation or reinvention of the wheel?

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It is a frequently encountered fact that if one waits long enough in orthopaedic surgery, procedures that have fallen out of favour in the past become popular again. One can find numerous recent examples which have experienced a resurgence despite historically unsatisfying results. Typically, reintroduction of a previously used procedure is based upon theoretical improvements due to modern advances and is accompanied by a tremendous marketing effort that highlights the potential benefits of the procedure. The orthopaedic surgeon has to make a well-balanced decision and weight the risk against the possible benefits of performing such a procedure. When a surgeon decides to take the

often at this stage unknown risk, he would face the threat of being defined as an early adopter. Early adopters place more emphasis on the benefits of these innovations than on their risks [10]. They offer innovations at an early stage to their patients, although there is usually limited clinical data available. However, in an evidence-based orthopaedic world, it is important to analyze the outcome of every procedure in high-quality clinical studies. It is our responsibility as orthopaedic surgeons to learn from historical experience and not to repeat the mistakes of the past.

ACL repair had been, for a long time, the mainstay of open ACL surgery. Recognising a considerably high failure rate at mid-term follow-up in the 1980s, the era of ACL reconstruction—first open and later arthroscopic—began and ACL repair was entirely put aside. The one size fits all approach—acute, open repair for all tears—was replaced with a different one size fits all approach—reconstruction for all tears in athletic patients—which is still the current treatment algorithm used for ACL injuries.

However, the unveiled reality is that the results of ACL reconstruction are not overwhelmingly satisfying for all patients. Modern day interest in primary ACL repair has been resurgent and several different techniques have been proposed. This may be because primary repair has several potential advantages including preservation of native

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tissue, proprioception as well as a potentially easier recovery in terms of pain and range of motion [13].

The orthopaedic dogma that the ACL “can’t heal” was based on rather historic surgical and rehabilitation protocols [11]. The dogma was not questioned or truly challenged throughout the last decades, during which ACL reconstruction was being taught and expanded throughout the globe. However, it is necessary to challenge historic dogmas for progress to be made. In a nutshell, it is not true that the ACL cannot heal, but that not all but only selected tears have that healing capacity [11, 12]. Clearly, this is supported by a huge amount of basic and clinical scientific evidence [4, 6–8, 11].

A great variety of different modern day techniques for primary ACL repair have been described and outcomes reported. All have one observation in common: proximal ACL tears with preserved ACL volume are most likely to provide promising outcomes when primarily repaired [3–5, 7, 12].

It is also clear that indiscriminate use of primary ACL repair, independent from the technique used, comes along with a considerable number of re-injuries and failures. It has been already shown that with optimal patient selection and more narrow indications, re-injury and failure rates could be reduced [4, 7, 9]. Hence, we need to refocus our research effort on identification of key factors determining outcomes after primary ACL repair.

In addition, revision of a failed primary ACL repair is technically often more like a primary ACL reconstruction than a revision of a failed reconstructed ACL, which has well-documented limitations [1, 2].

In summary, it is fair to state that based on current evidence, there is a place for arthroscopic primary ACL repair in our surgical armamentarium. Arthroscopic primary ACL repair is one puzzle piece in a multifaceted approach to the treatment of the ACL injured patient. In this issue, multiple facets regarding primary ACL repair will be scientifically discussed to improve our understanding of the issue, sharpen our indications and optimise our patient care.

Compliance with ethical standards

Conflict of interest Gregory Difelice has served as a consult for the company Arthrex and received research support. Jelle Van der List served as a consultant for the company Arthrex. Atesch Ateschrang received research support from the company Mathys. The remaining authors declare no conflict of interest.

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