

Time for a paradigm change in meniscal repair: save the meniscus!

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One of the most important clinical achievements highlighted at the third international meeting “The Meniscus: Preserve the future”, held in Porto in early February this year [9], was the improvement made in the field of meniscal repair. The loss of the meniscus can be regarded as a pre-arthritic condition for the knee due to the loss of protective function [2, 3]. However, the tear pattern has a crucial

impact on that risk, and it became obvious that the differentiation of tear types and repair techniques has resulted in significant progress over the last few years.

In 2016, numerous advanced techniques for meniscal repair are being performed, regardless of the site of the tear [4, 26]. There is no place in the knee that cannot be reached by the arthroscope. However, some of the repair techniques are in the early stages of development and require further improvement to reach global acceptance [24]. They appear very promising, as many surgeons have adopted them in a short period of time.

Meniscus repair is gaining in popularity among an increasing number of surgeons. A better understanding, more sophisticated devices for meniscus repair and the increasing success rate might be some of the explanations. The increasing popularity of meniscus repair also includes meniscus lesions, which are associated with anterior cruciate ligament (ACL) injuries. At several European centres, meniscal repair procedures are now being performed in up to 40–60 % of all ACL reconstructions. In addition, these repairs are being extended increasingly to an athletic population and even professional athletes and football players. The medial meniscus in particular is becoming the focus of attention. As the main secondary stabiliser in anteroposterior laxity after an ACL injury, it is well known that this structure plays an important role in the long-term development of osteoarthritis and, as shown recently by Robb et al. [21], its absence negatively affects the fate of ACL graft survival. These are the reasons why efforts have recently been made to increase our understanding of medial meniscus tears [27], to rediscover certain types of injury like the meniscosynovial or ramp lesions [1, 5, 8, 19, 23, 25] and to improve long-existing repair techniques [15, 20].

Another new development in meniscal repair relates to root tears, which have moved into focus over the last

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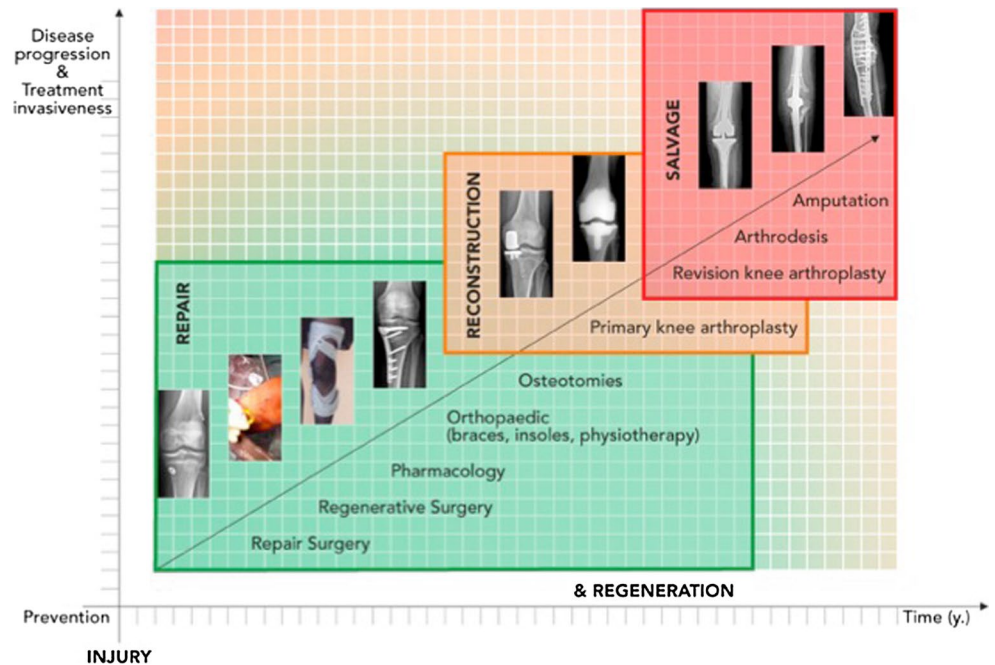
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Fig. 1 Chart representing disease progression and treatment invasiveness in the long term after knee injury and subsequent degeneration. The goal of meniscal repair and joint preservation techniques should be to bring the patient to an age at which the longevity of knee arthroplasty matches life expectancy



5–10 years [6, 7, 11–13]. Unknown a decade ago, they are attracting extraordinary attention nowadays, from both a clinical and a research perspective. Lateral meniscus root tears frequently occur in conjunction with ACL injuries. For this reason, much more attention may be paid to the posterior horn of the lateral meniscus during ACL reconstructions nowadays [7]. Root tears at the posterior horn of the medial meniscus are also detrimental. Although they may occur in younger individuals after an acute trauma, the majority of them can be observed after a minor event in patients over the age of 50 and particularly in women. The first meta-analyses show that the clinical results improved after surgery and the progression of osteoarthritis could be prevented in the short term in the majority of patients. Perfect results with complete healing and the reduction in meniscal extrusion were observed in about 60 % of patients [7]. This is undoubtedly lower than what can be expected after meniscal repair in younger patients, but, given the age of the patients and the limited options for biological treatment alternatives, these results may be superior to what can be expected as a result of salvage procedures [14]. In addition to this, two recent studies found an association between medial meniscus root tears and spontaneous aseptic osteonecrosis of the medial femoral condyle [22, 28]. Although the causal effect and the deeper understanding of this association still need to be proven, the occurrence of a sudden biomechanical change in the medial tibiofemoral compartment induced by a posterior meniscal root tear may explain the currently most recognised cause of spontaneous osteonecrosis in elderly patients, which is not osteoporosis [16] but an insufficiency fracture [29]. This would further increase the evidence indicating

that spontaneous osteonecrosis of the medial femoral condyle is not induced by arthroscopy [17, 18].

When we were trained as residents in our late 20s and early 30s, meniscal repair was only recommended for patients of our age at that time or younger. Twenty years later, general recommendations for repair extend to patients in their 50s—so still of our age, provided that the type of lesion and the patients' biological healing potential appear adequate. Although we feel blessed to live in such a lucky period of rapid medical and surgical progress, it is obvious that our scientific community needs stronger evidence to support this trend fully. As not all the drawbacks of these advanced repair techniques may have been reported and as medical evidence is lacking in relation to surgical innovation, it is reasonable to suppose that the spectrum of indications for meniscal repair may have to be revisited in a couple of years. At the same time, improvement of surgical techniques, coupled with a high-quality education, will help us to realise the goal of joint preservation. The aim is to bring an increasing number of patients up to an age from which their life expectancy [10] matches the longevity of joint replacement (Fig. 1) [10].

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