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Chondral injury due to migration of a Mitek RapidLoc meniscal repair implant after successful meniscal repair: a case report

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Abstract A case of chondral lesion of the medial femoral condyle caused by a bioabsorbable Mitek RapidLoc meniscal repair implant is presented. Meniscal repair was quite successful, but migration of one of the implanted fixation devices resulted in chondral damage, 12 months postoperatively. All orthopaedic surgeons using these new devices should be aware of the possibility of chondral damage of the adjacent femoral condyles.

Keywords Meniscus re-fixation · Chondral injury · Mitek RapidLoc meniscal repair system · Migration

Introduction

Treatment of meniscal tears with partial or total excision of the meniscus is considered as a predisposing factor for the development of degenerative changes in the knee joint [11, 16]. On the contrary, preservation of meniscus, especially if the tear is located at the vascular zone, using arthroscopic meniscal repair techniques has proved an effective procedure for younger patients [9, 15]. There are three main techniques for repairing meniscal tears: the inside-out, the outside-in and the all-inside technique. The classic outside-in and inside-out techniques, despite their widespread acceptation and the excellent reported _results, have been associated with a relatively high risk of neurovascular injuries or deep infections [12]. However, the all-inside technique for meniscus repair has gained popularity recently, as it is a safe and fast fixation technique [6].

The Mitek RapidLoc (Mitek Surgical Products, Westwood, MA, USA) meniscal repair implant is a new arthroscopic meniscal repair system consisting of three components: a soft tissue anchor (back-stop), a connecting suture and a ''top hat'' that compresses the meniscal tear against the backstop. Controlled compression with a knot pusher can be applied as the top hat is sliding down to the suture. No knot tying is required because the device is delivered with a pretied knot. It is available in three different needle angles [straight (0°), 12°, and 27°]. Although the device is too new to evaluate its overall clinical success, we present a case of a successful meniscal repair using this device, which resulted in a chondral injury of the medial condyle.

Case report

A 40-year-old industrial worker presented to our outpatient department complaining of pain and mild swelling of the medial compartment of his left knee, 12 months after he had undergone an arthroscopic ACL reconstruction and medial meniscal tear repair. Fixation of the large tear extending from the middle third to the posterior horn of the medial meniscus had been performed using no. 2.0 nonabsorbable vertical mattress

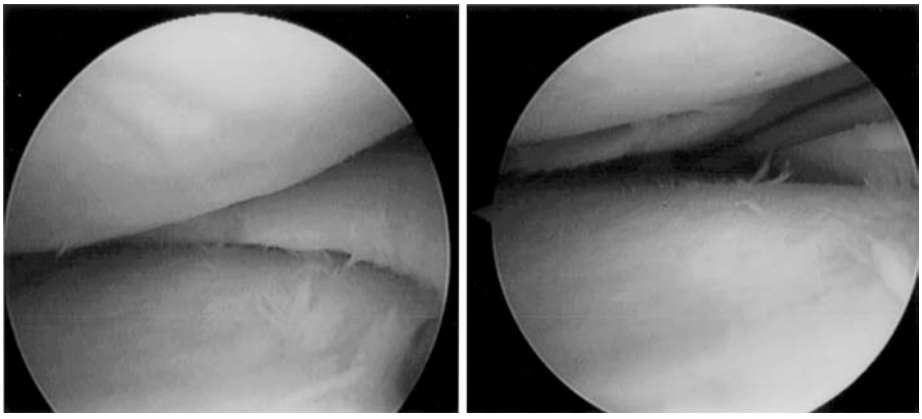

Fig. 1 Successful meniscal repair using bioabsorbable Mitek RapidLoc meniscal repair implants, on 12-month second-look arthroscopy

sutures in the anterior portion of the tear and two Mitek RapidLoc meniscal repair implants in the posterior portion of the tear. Postoperatively, the patient's recovery was uncomplicated and he followed the usual ACL rehabilitation program without any problem. Twelve months postoperatively, he complained of tenderness in the medial compartment of the operated knee and pain that was mild during the night but became severe when the flexion exceeded 90° . Initial management included rest and anti-inflammatory medications for 1 week. Since his symptoms were not relieved, the patient underwent a diagnostic arthroscopy, which showed healing of the whole area of the previous meniscal tear (Fig. 1) and a marked chondral injury of the medial femoral condyle (Fig. 2a). On a second careful look at the area, we found a part of the implant impacted in the posterior horn of the meniscus (Fig. 3). The implant was removed and the chondral lesion was abraded with the shaver. Drillings were also performed for better healing of the lesion (Fig. 2b). Postoperatively, the patient reported immediate relief of his symptoms and after a 1-week period of recovery, he returned to his usual daily activities.

Discussion

The all-inside technique of meniscal repair using absorbable implants has become an increasingly popular mode of treatment [1, 6, 10]. The all-inside technique has the advantage of repairing all meniscal lesions without harming any other structures around the knee joint.

The introduction of these new implants has made the whole procedure faster and less technically demanding, eliminating the need for additional incisions and knot tying. On the other hand, although it seems quite easy to place the implant on the meniscal tear, the proper angle of insertion and the number of the implants that must be used is fundamental for successful outcome of the procedure.

Subcutaneous migration of meniscal arrows is a well-documented complication in the all-inside meniscal repair technique [3, 4, 7, 13, 17]. Migration of the arrows into the popliteal fossa has also been reported [8]. Chondral injury due to the presence or migration of broken and nonbroken devices inside the knee joint is an uncommon but serious complication [2, 5, 14, 18, 19]

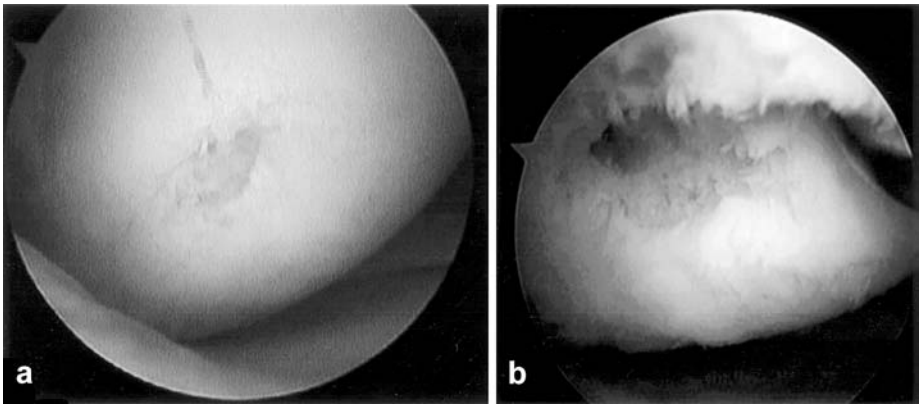

Fig. 2 **a** Chondral lesion of the medial femoral condyle caused by the migrated portion of the Mitek RapidLoc implant. **b** Shaving and drilling of the lesion

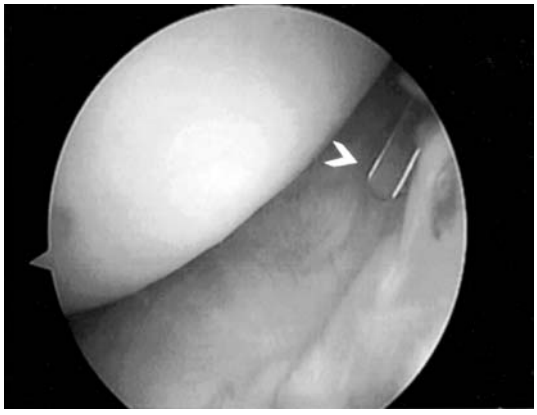

Fig. 3 Part of the implant anchored to the posterior horn of the meniscus (*arrow*)

and is mostly observed in unhealed repairs of the meniscus. There has been one report of chondral injury with a Mitek RapidLoc implant after a failed meniscal repair [5]. Our case is similar but to our knowledge we are the first to describe a late chondral injury after a successful meniscal repair with this specific implant.

The actual cause of these implant failures is unclear in most of the cases. Apart from inappropriate insertion techniques such as false positioning or wrong arrow size, several contributory factors have been proposed, such as early weight-bearing, different degradation times of the implant components, different vascularization zones of the meniscus, and low fixation strengths of the implants [2, 3, 14, 18, 19]. In our case, the successful outcome of meniscal repair and the onset of symptoms indicate that the problem is inherent mainly in the implant itself and not in improper surgical technique. Otherwise, the symptoms should have started immediately after the meniscal repair. A logical explanation is that the absorption of the three different components of the implant is not simultaneous. This can lead to serious complications, especially if the first component to be absorbed is the connecting suture.

The choice of biodegradable meniscal repair implants may lead to potential complications even after a successful medium-term clinical outcome. Long-term results will be required to evaluate the effectiveness and safety of these new implants. Awareness of potential complications associated with new technology is essential for all surgeons.

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