Patella Tendon Rupture After Arthroscopic Resection of the Prepatellar Bursa
A Case Report

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Abstract

The use of arthroscopic techniques for excision of the prepatellar bursa has become more common in recent years for the treatment of prepatellar bursitis. The current literature includes several case series that report few complications with this technique. We report the case of a 73-year-old male who sustained a low-energy patella tendon rupture 2 months after arthroscopic resection of the prepatellar bursa. We hypothesize that during arthroscopic excision of the prepatellar bursa there was an iatrogenic injury to the patellar tendon, which contributed to the subsequent rupture. Surgical repair was successfully performed using an open technique with a 1-year follow-up. To our knowledge, this is the first case report of patella tendon rupture following arthroscopic excision of the prepatellar bursa.

Open excision of the prepatellar bursa for the surgical treatment of chronic prepatellar bursitis has been complicated by hypesthesia, painful scar formation, and poor scar cosmesis. As a result of these morbidities associated with open surgical excision, arthroscopic excision of the prepatellar bursa has become a viable alternative, with up to 80% of patients having no pain or mild residual pain. Arthroscopic excision can be performed for both aseptic and septic prepatellar bursitis. Reported complications of this procedure include superficial wound infection, delayed wound closure, and recurrence of bursitis. To our knowledge, there have been no reports of patella tendon rupture after arthroscopic excision of the prepatellar bursa.

Case Report

A 73-year-old retired male office worker, with a 2-year history of chronic prepatellar bursitis of his left knee, presented to our institution with the inability to ambulate and pain in the left knee. During the preceding year, the patient had two prepatellar steroid injections, trials of nonsteroidal antiinflammatory medications, and compressive dressings. Two months prior to presentation, he underwent arthroscopic excision of the prepatellar bursa. His immediate postoperative course was uncomplicated; 2-weeks postoperatively, he returned to full activities as tolerated. He reported attempting to climb over a small concrete block 3 days prior to presentation when he felt a “pop” in his left knee. He noted no significant external trauma to the knee during the injury mechanism. On examination, the patient had a large knee effusion, with significant erythema (Fig. 1A); an inability to actively extend his knee; and a palpable defect in the patella tendon. Range of motion was limited, secondary to a large knee effusion. Neurologic examination and muscle strength were otherwise normal. His medical history was significant for hypothyroidism and a hemorrhagic cerebrovascular accident 6 months prior to presentation, with resultant mild cognitive deficit.

At the time of initial presentation, the prepatellar bursa was aspirated with sterile technique. The culture of this aspirate was negative for any bacterial growth, and infection of the prepatellar bursa was ruled out. The patient was placed in a knee immobilizer and made
weightbearing as tolerated. A radiograph taken at the time of injury revealed patella alta, and a magnetic resonance image (MRI) confirmed the diagnosis of patella tendon rupture (Fig. 1B).

Open surgical repair of the patella tendon using a standard midline incision was performed 25 days after presentation. The patella tendon was torn from the inferior pole of the patella, with tears extending both medially and laterally into the retinaculum (Fig. 2A). A large clotted hematoma was noted in the communicating space of the knee joint and the prepatellar bursa. An intraoperative frozen section of the scarred bursal tissue revealed a focal histiocytic reaction, granulation tissue, and one to two polymorphonuclear cells per high-powered field, and in concordance with preoperative aspiration results, ruled out chronic infection.

After debridement of the tendon stump and the inferior pole of the patella, the tendon was prepared using No. 2 polyester braided suture in a modified Krackow fashion, and the suture ends were passed through three drill holes in the patella. Prior to tying the sutures, a No. 2 braided polyester tape was passed through a drill hole in the tibial tuberosity and through the quadriceps tendon at the superior pole of the patella (Fig. 2B). The patient was placed in a long-leg fiberglass cast, with a window over the surgical incision to allow wound care while protecting the repair.

Postoperatively, the patient was made weightbearing as tolerated. His wound was monitored through the windowed cast. The cast was removed at the 6-week follow-up visit, and he was placed in a hinged knee brace for ambulation. At that time, he began physical therapy. Three months postoperatively, his active range of motion was 10° to 110° with active straight-leg raise and no extensor lag. At 1-year follow-up, he had returned to his usual activities, and his range of motion was 10° to 125°.

Discussion

Kerr and Carpenter first described arthroscopic excision of the prepatellar bursa, in 1990, in which they reported on three cases of prepatellar bursitis that had failed nonoperative treatment.4 Two patients with traumatic bursitis had good results; however, one patient with an inflammatory bursitis, secondary to CREST (calcinosis, Raynaud’s phenomenon, esophageal dysmotility, sclerodactyly, telangiectasia) syndrome, obtained an unsatisfactory result. The investigators cautioned that patients with an inflammatory cause of prepatellar bursitis, such as rheumatoid arthritis, might not be good candidates for arthroscopic excision of the prepatellar bursa.

A more recent report by Ogilvie-Harris and Gilbart described a satisfactory excision of the bursa, with good to excellent results in most patients.2 The investigators reported on 19 cases of refractory prepatellar bursitis. All patients had undergone prepatellar bursal aspiration and injection with corticosteroid. Patients then underwent arthroscopic bursal resection, removing all of the bursal sac

Figure 1 A. Clinical photos of a patient who felt a “pop” in his knee while walking 2 months after arthroscopic prepatellar bursal resection. Preoperative aspiration and intraoperative frozen section were negative for infection. B, Sagittal MRI image demonstrating the tear of the patellar tendon from the inferior pole of the patella.
that could be seen. Preoperatively, 19 of 21 (90%) patients complained of tenderness. Postoperatively, 5 of those 21 (24%) had pain with pressure, and only 2 of 21 (10%) had pain with kneeling. There was one recurrence, secondary to repetitive daily trauma to the knee, in a patient who worked as a tile layer. Importantly, there were no significant complications. There was one superficial infection that was treated with topical antibiotics and two cases of delayed wound healing.2

Chronic prepatellar bursitis will often present with thickening of the skin overlying the patella and palpably detectable thickening of the bursal wall. In order to rule out an infectious etiology, aspiration is recommended in all cases, because infection cannot be determined on a clinical basis alone.5

To gain access to the bursa, standard anteromedial and anterolateral arthroscopic portals can be used. Alternatively, two lateral portals can be utilized to avoid compromising the infrapatellar nerve.3 A 4.5-mm curved shaver is employed to excise systematically the bursal tissue. Bursal excision is complete when the subcutaneous area of the skin can be seen superficially, and the fibers of the patella tendon can be observed. The patella tendon itself is not violated. It has been suggested that in order to avoid postoperative problems of the anterior wall of the prepatellar bursa only the posterior wall can be removed.1

Arthroscopic excision of the prepatellar bursa is technically challenging, with importance placed on inflating the bursa prior to inserting the arthroscope, maintaining bursal distention and visualization throughout the procedure, and avoiding penetration of superficial skin and underlying patella tendon.5 Tendon injury during arthroscopic excision can be avoided by pointing the shaver blade away from the tendon and only turning the shaver on when in direct visualization of the blade tip.

Acute rupture of the patellar tendon is an unusual occurrence and, typically, follows a course of chronic tendinosis. Rarely, low-energy ruptures occur in patients with systemic disease and in those who have undergone steroid injections in and around the patellar tendon.6 Spontaneously ruptured tendons have been shown to have preexisting histopathologic alterations that can lead to rupture.7 The majority of low-energy patellar tendon ruptures take place at the osseotendinous junction, but can also occur in the substance of the tendon.6

It is possible that our patient sustained a patellar tendon rupture, secondary to causes other than the prior arthroscopic bursal excision, but there are factors that led us to believe it significantly contributed to the rupture. The timing, absence of significant trauma, and lack of systemic disease make it more likely that an iatrogenic patella tendon injury contributed to the rupture. Unfortunately, the prior surgeon’s operative report was not available to determine the extent of the bursal resection. Also, extensor mechanism ruptures in our patient’s age group (greater than 40 years of age) occur much more frequently in the quadriceps tendon.8 While it is certainly possible that the tendon was also weakened from the two corticosteroid injections and that the cause of the rupture was multifactorial, for the aforementioned reasons, we feel an injury during the prepatellar bursectomy may have contributed to the rupture.

Several investigators have reported only minor complications with arthroscopic excision.2, 4 Arthroscopic resection of the bursa has been shown to offer significantly lower morbidity than open excision and avoids the complications of skin incisions, such as hypoesthesia secondary to infrapatellar nerve damage, painful scar with deep flexion and kneeling, infection, and prolonged recovery. Arthroscopic excision
of the prepatellar bursa, however, remains a technically challenging procedure. In order to perform this procedure safely, adherence to surgical technique and proper shaver use is required.

Disclosure Statement
None of the authors have a financial or proprietary interest in the subject matter or materials discussed, including, but not limited to, employment, consultancies, stock ownership, honoraria, and paid expert testimony.

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