

Common Peroneal Nerve Neuropraxia After Arthroscopic Inside-Out Lateral Meniscus Repair

Case Report

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ABSTRACT: Common peroneal nerve injury caused by suture entrapment is a complication of arthroscopic inside-out lateral meniscus repair. In the literature, the treatment of this complication has been described as immediate reexploration. We present a case of recovery after late neurolysis performed 7 months postoperatively for a common peroneal nerve neuropraxia. In addition to describing return of function after late exploration, we discuss the management and prevention of this complication.

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INTRODUCTION

Arthroscopic repair for meniscus tears is a widely accepted method of preserving load bearing and stability of the knee joint.² Although the procedure is regarded as relatively safe, significant morbidity can be involved. In tracking complications of 959 arthroscopic meniscectomies of the knee, Sherman et al⁶ noted major complications in 7% of cases. Peripheral nerve damage represented 0.6% of the serious complications during arthroscopic meniscus repairs. In arthroscopic inside-out lateral meniscus repair, proximity to the anatomically variable common peroneal nerve is a major concern.

A rare pitfall in lateral meniscus repair involves entrapping, or tethering, the common peroneal nerve by arthroscopic suture placement. Although the precise incidence of this complication during lateral meniscus repair has not been reported, 2 cases have described its occurrence.^{3,5} These inherent perils have led surgeons to

recommend an incision with dissection, which allows for visualization of the lateral joint capsule. Also, the use of a deflection retractor anterior to the lateral gastrocnemius muscle and tendon has been postulated to further reduce the risk of complications during arthroscopic inside-out lateral meniscus repair. These strategies allow surgeons to visualize the entire path of the sutures while concurrently protecting the common peroneal nerve in both its classic and variable courses.^{3,5}

In this article, we report a case of common peroneal neurolysis 7 months after neuropraxia caused by suture entrapment during an arthroscopic inside-out lateral meniscus repair. The patient's postoperative course and recovery after the suture release and neurolysis is also described.

CASE REPORT

A 27-year-old man underwent an arthroscopic inside-out repair of a bucket-handle tear of his lateral meniscus with 2-0 nonabsorbable sutures in his right knee at an outside institution. His postoperative course was complicated by a right common peroneal palsy, which was noted immediately after surgery. An electromyogram (EMG) was performed 6 weeks postoperatively. Results indicated complete denervation in the distribution of the right common peroneal nerve. The patient presented to our clinic 4 months later with a persistent right foot drop. At this time, he was having difficulty climbing stairs and required an ankle-foot orthosis for ambulation. On physical examination, the patient had grade 0/5 strength in ankle dorsiflexion, foot eversion, and great toe extension. Also, sensation was diminished over the first dorsal webspace of his right foot to light touch and pinprick. Plantar flexion was graded as 5/5, with distal pulses rated at >2. Decompression of the common peroneal nerve was recommended. After an extended deliberation, the patient agreed with this assessment and surgery was performed 7 months after the initial procedure.

While the original surgical incision was parallel and posterior to the long head of the biceps femoris, we made a 10-cm inci-

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Figure. Dissection to the common peroneal nerve (lateral aspect of the right knee).

sion along the posterior border of the superficial layer of the iliotibial band.⁷ After a posteriorly based skin flap was dissected down to the long head of the biceps femoris, dissection was taken through considerable scar tissue posterior to the tendon of the long head of the biceps femoris to expose the common peroneal nerve (Figure). The nerve was visualized and noted to be encircled by a suture approximately 3 cm proximal to the fibular head. The suture was released and a neurolysis of the common peroneal nerve was performed due to the formation of a neuroma around the suture site. The neurolysis began approximately 6 cm proximal to the fibular head and ended just distal to the peroneus longus fascia.

The patient progressed well and was noted 2 weeks postoperatively to have some improvement in the subjective sensation over the dorsum of the right foot. In addition, he was noted to have 3/5 strength in ankle dorsiflexion and eversion. Four months postoperatively, he had recovered the normal sensory function in the common peroneal distribution. His motor strength was 5/5 in ankle dorsiflexion, foot eversion, and great toe extension. He was no longer using the ankle-foot orthosis for ambulation. Three years postoperatively, the patient continues to have 5/5 strength in ankle dorsiflexion, foot eversion, and great toe extension. His sensation remains intact and is symmetric to the contralateral extremity.

DISCUSSION

This case demonstrates 2 important points. First, there is a risk of common peroneal nerve entrapment during arthroscopic inside-out lateral meniscus repair. Avoiding an incision posterior to the tendon of the long head of the biceps femoris may help protect the common peroneal nerve during retraction. Also, visualizing the posterior capsule enables the surgeon to follow the path of all sutures used during meniscal repair. We chose an incision through the posterior border of the superficial layer of the iliotibial band to allow us to develop a posteriorly based

tissue flap along the lower border of the superficial layer of the iliotibial band and the long head of the biceps femoris through normal tissue planes. This is similar to the incision made to identify the common peroneal nerve during a surgical approach to the posterolateral knee.^{4,7}

Second, late exploration (up to 7 months in this case) and neurolysis of an injured common peroneal nerve after an arthroscopic lateral meniscus repair can result in improved motor and sensory function. To our knowledge, there are only 2 reported cases of motor and sensory compromise of the common peroneal nerve due to suture entrapment after an arthroscopic lateral meniscus repair.^{3,5} In both cases, the suture seen around the common peroneal nerve was removed within 5 days of the initial procedure. Common peroneal nerve function returned to normal in both patients by 6 months postoperatively.

Although many postoperative nerve injuries can be neuropraxias that recover with time, any kind of neuropathy noted in the recovery room or shortly thereafter should be addressed and documented promptly. Current recommendations suggest a complete neurological examination followed by an EMG at 3 to 6 weeks if no recovery is noted. At that point, the EMG should show normal spike potentials and should not display any fibrillations. If there is no improvement after 3 months, surgical reexploration should be considered.¹ For this patient, immediate reexploration should have been performed if suture entrapment was suspected. Nonetheless, this case is important because it shows return of function after late (7 months) exploration and decompression of the common peroneal nerve.

CONCLUSION

The most effective way to manage a common peroneal nerve injury with arthroscopic inside-out lateral meniscus repair is prevention. These measures include recognizing the potential variable course of the common peroneal nerve, making an incision anterior to the long head of the biceps femoris to visualize the lateral joint capsule, and maintaining soft tissue retraction anterior and lateral to the lateral gastrocnemius muscle and tendon.^{3,5} If these measures fail to protect the nerve and an injury occurs, reexploration as late as 7 months postoperatively may facilitate a return of common peroneal nerve function.

REFERENCES

1. Azar FM, Wright PE. Arthroplasty of shoulder and elbow. In: Canale ST. *Campbell's Operative Orthopaedics*. 10th ed. Philadelphia, PA: Mosby; 2002:483-533.
2. Baratz ME, Fu FH, Mengato R. Meniscal tears: The effect of meniscectomy and of repairs on intraarticular contact areas and stress in the human knee. A preliminary report. *Am J Sports Med*. 1986;14:270-275.

3. Jurist KA, Greene PW III, Shirkhoda A. Peroneal nerve dysfunction as a complication of lateral meniscus repair: A case report and anatomic dissection. *Arthroscopy*. 1989;5:141-147.
4. LaPrade RF, Johansen S, Wentorf FA, Engebretsen L, Esterberg JL, Tso A. An analysis of an anatomical posterolateral knee reconstruction: An in vitro biomechanical study and development of a surgical technique. *Am J Sports Med*. 2004;32:1405-1414.
5. Miller DB Jr. Arthroscopic meniscus repair. *Am J Sports Med*. 1988;16:315-320.
6. Sherman OH, Fox JM, Snyder SJ, et al. Arthroscopy—"No problem surgery." An analysis of complications in two thousand six hundred and forty cases. *J Bone Joint Surg Am*. 1986;68:256-265.
7. Terry GC, LaPrade RF. The posterolateral aspect of the knee. Anatomy and surgical approach. *Am J Sports Med*. 1996;24:732-739.