Tardy sciatic nerve palsy following apophyseal avulsion fracture of the ischial tuberosity

Case report

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This 41-year-old man presented with a 2-year history of symptoms and signs of sciatic nerve compression. Imaging studies revealed a large ossified fragment within the biceps muscle of the thigh abutting the sciatic nerve at the level of the lesser trochanter. The bony fragment resulted from an unrecognized apophyseal avulsion fracture of the ischial tuberosity, which the patient had sustained while sprinting 27 years earlier.

External neurolysis of the sciatic nerve and excision of the mass led to a successful outcome.

KEY WORDS • sciatic nerve compression • hamstring syndrome • avulsion fracture

The vast majority of sciatic nerve lesions appear immediately or days after injury or surgery. Delayed cases of sciatic nerve compression are rare and, when present, usually occur months or several years after hip or pelvic reconstructive or trauma surgery. We present the case of a patient with sciatic nerve compression. Compression was due to a large osseous fragment that had been displaced by an apophyseal injury of the ischial tuberosity, which the patient had sustained 27 years earlier. This case must be distinguished from rare reports of acute sciatic nerve compression due to an avulsion fracture of the ischial tuberosity and those due to myositis ossificans developing soon after proximal hamstring injury.

Case Report

History. This 41-year-old male football coach presented with a 2-year history of progressive weakness in the left leg, especially with dorsiflexion of the foot. He had noted some atrophy of the leg despite weight training, and a several-week history of increasing pain radiating down the back of the left leg with tingling into the left great toe and second toe web space. His symptoms were exacerbated when he participated in exertional activities and also when he was sitting. Initially the patient had experienced low-back pain for 5 days with bilateral posterior leg pain; this gradually cleared, but left him with some residual leg tingling in the left medial shin and left great and second toe and weakness in the left leg.

The patient’s medical history was significant for an athletic injury at the age of 14 years, which was diagnosed by his local physician as a hamstring rupture. While sprinting, the patient, who was a high school track star notable for his 10-second 100-yd dash, felt a snapping sensation with immediate onset of severe pain along the posterior inner portion of the left thigh. At the time of injury, he received a local steroid injection without other intervention. The injury was debilitating for 6 months. The patient returned to competitive activity the following year without incident.

At the age of 21 years, the patient injured his left knee during football practice and underwent open anterior cruciate ligament reconstruction and partial medial meniscectomy. Postoperatively, he had medial leg numbness and a mild foot drop, which resolved completely within 1 year. The transient neurological deficit did not receive diagnostic evaluation.

Examination. Clinical examination demonstrated mild anterior and posterior compartment leg atrophy. He had mild (−1) weakness of the left hamstrings, anterior tibial muscle, and gastrocnemius/soleus muscles. Toe walking was mildly limited (−1) and heel walking was significantly limited (−3). Bilateral lower-extremity deep ten-
don reflexes were normal. A large tender bony mass was palpable in the vicinity of the ischial tuberosity. They include deformity of the ischial tuberosity, as well as a large ossified mass in the adjacent soft tissues, with sclerosis, irregularity, and fragmentation of the apposing bone margins.

Electromyography performed at the time of consultation demonstrated fibrillation potentials in the posterior and anterior tibial muscles. There were no denervation changes in the proximal L-5 musculature, including the gluteus medius muscle and the tensor muscle of the fascia lata. The results of needle examination of the paraspinal muscles and nerve conduction studies were normal. Radiographs revealed a bony deformity of the ischial tuberosity compatible with an old apophyseal avulsion injury. In addition, there was a large ossified mass in the adjacent soft tissues just inferior and lateral to the ischial tuberosity, with sclerosis, irregularity, and bony fragmentation along the superior margin of the mass. These findings are typical of an apophyseal fracture nonunion with a bone overgrowth of the nonunited fragment secondary to chronic repetitive avulsion injury (Fig. 1). Magnetic resonance and computerized tomography imaging were helpful in defining the proximity of the mass to the sciatic nerve. They demonstrated the ossified fragment abutting the sciatic nerve at the level of, and just distal to, the lesser trochanter (Fig. 2). Evaluation performed at an outside hospital also included normal lumbosacral magnetic resonance imaging.

Operation. At surgery, a skin incision was made along the gluteal crease and continued distally along the posterolateral thigh. The posterior femoral cutaneous nerve was identified and preserved. Dissection was performed between the medial and lateral hamstring muscles. The sciatic nerve was identified distally and traced proximally to the ossified mass. The insertion of the gluteus maximus muscle was released, which allowed proximal retraction and visualization of the mass. The large, slightly mobile, ossific fragment directly abutted the sciatic nerve (Fig. 3). The medial hamstring-conjoined tendon was split and the bone mass was dissected while protecting the sciatic nerve. This large mass was removed totally along with the second, smaller bony fragment. The sciatic nerve appeared normal.

Postoperative Course. The patient experienced complete pain relief immediately after surgery. Postoperative physical therapy included hip and knee range-of-motion exercises, progressive resistance strengthening of the hip musculature, and a low-impact aerobic conditioning program. At the 1-year follow-up evaluation, the patient had regained near-normal strength in his limb and remained asymptomatic.

Discussion

As an adolescent, this patient sustained an apophyseal avulsion fracture of his ischial tuberosity that was misdiagnosed as a hamstring muscle strain. The displaced avulsion fracture fragment grew over time. The large size of the mass and its proximity to the sciatic nerve resulted in neural irritation 27 years later. There was no other specific inciting factor. Our case may represent an extreme part of the spectrum of the “hamstring syndrome,” a recently described overuse syndrome characterized by glu-
Tardy sciatic nerve palsy

Fig. 3. Intraoperative photograph showing the ossified mass abutting the sciatic nerve.

teal sciatic pain in athletes (especially sprinters, hurdlers, or jumpers). Posttraumatic or congenital fibrotic bands along the anterolateral portion of the biceps muscle of the thigh have been found at surgery and thought to irritate the sciatic nerve at the insertion site of the hamstring muscles at the ischial tuberosity. These patients present with pain localized to the ischial tuberosity; the pain radiates to the posterior thigh and is worse when the patient engages in activity or is sitting. The clinical diagnosis is established largely on the basis of the patient’s history and the presence of tenderness at the ischial tuberosity and proximal hamstrings in response to direct palpation or active stretching of the leg; other than this, the results of neurological examination and electrodagnostic studies are typically normal. Supportive radiographic findings include bony or calcific irregularities at the ischial tuberosity and fibrosis of the hamstring insertion or a narrowed fat triangle at the sciatic nerve observed on axial imaging. Good outcomes have been reported with surgical release of the tight band.

The cause of our patient’s foot drop years earlier following knee surgery remains uncertain. It may have represented transient peroneal nerve dysfunction from tourniquet use or iatrogenic injury. However, the occurrence of peroneal nerve injury following this type of surgery is unusual. Thus, one can speculate that, because the ossific nonunion was present already, surgery (with the hip flexed) may have aggravated a subclinical sciatic nerve compression, resulting in a preferential peroneal component of the sciatic nerve or predisposing the peroneal nerve to dysfunction as the distal site of a double-crush phenomenon. The fact that this patient presented initially with low-back pain underscores the importance of examining the sciatic nerve along its course in all patients with sciatica.

References


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