Failure of surgical decompression for a presumed case of piriformis syndrome

Case report

ROBERT J. SPINNER, M.D., NAJEEB M. THOMAS, M.D., AND DAVID G. KLINE, M.D.

Department of Neurosurgery, Louisiana State University Medical Center, New Orleans, Louisiana; and Department of Neurologic Surgery, Mayo Clinic, Rochester, Minnesota

Diagnosis of piriformis syndrome is difficult and its precise definition is highly controversial. In this article, the authors present the case of a patient who had clinical features suggestive of piriformis syndrome. During surgery the patient was found to have a rare variation in anatomical structures, in which the peroneal nerve was displaced by the piriformis muscle. Surgical decompression did not alleviate the patient’s symptoms.

KEY WORDS • piriformis syndrome • sciatic nerve • anatomical variation

Piriformis syndrome is a highly controversial entity, largely because it exhibits few or no objective findings. We present the case of a patient who had clinical features suggestive of piriformis syndrome, coupled with an extremely rare anatomical variation observed during surgery, which resulted in displacement of the peroneal nerve by the piriformis muscle. Despite the patient’s anatomical variation, she had a poor clinical outcome after surgical decompression.

Case Report

This 44-year-old woman had suffered from severe left buttock pain for 18 months. For 6 months she had experienced pain radiating down her posterior thigh and lateral lower leg to her dorsal foot, as well as numbness in the dorsolateral foot. These symptoms were aggravated by sitting and walking. The patient had no history of trauma and denied having back pain or bladder or bowel symptoms.

Initial Therapies and Examination. The patient had been examined by 10 physicians. Serial electrophysiological tests, plain x-ray films, magnetic resonance images of the pelvis and lumbar spine, and computerized tomography myelograms all demonstrated normal findings. Nonsteroidal antiinflammatory agents, physical therapy, and multiple caudal, piriformis, sciatic, and S-1 nerve root blocks provided no lasting relief. The patient was maintained on MS-Contin and Paxil. The woman, who was thin, experienced maximum tenderness near the sciatic notch; percussion applied to that area caused paresthesias distal to the dorsal foot and reproduced her leg pain. During the rectal examination, the same leg pain was experienced in response to deep palpation over the lateral pelvic wall. The patient’s motor function was normal. Her sensation in the dorsolateral foot was diminished and her ankle reflex was markedly depressed when compared with that of the opposite side. Straight leg raising and diagnostic maneuvers designed to detect piriformis syndrome produced buttock pain only.

Operation. Surgery was performed after nonoperative measures had been exhausted, other causes of sciatica had been excluded, and multiple referral services’ requests for sciatic nerve exploration had been received. The sciatic nerve was exposed at the buttock level via a Henry approach. A high division of the sciatic nerve into the peroneal and tibial divisions was noted. A neural loop of the peroneal division was identified and the peroneal nerve was found to reconstitute itself more distally. The two halves of the peroneal nerve loop, which were displaced by a large piriformis muscle (Fig. 1 left), appeared normal. The tibial nerve passed beneath the piriformis muscle and also appeared normal. Neurolysis of these elements was
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performed. An examination of the patient’s nerve action potentials showed that they were normal (in the range of 55 m/second).

The piriformis muscle was sectioned near its insertion, and a segment of muscle was removed (Fig. 1 right). The apparent displacement of the peroneal division was thought to be responsible for the patient’s clinical symptoms; the ankle jerk asymmetry may have been due to a mild distortion of the nerve division, but was more likely the sequela of a nerve root block.

Postoperative Course. After the operation, the patient’s buttock and thigh pain remained severe. At the 18-month follow-up evaluation, her medication regimen, which at the time was being administered by a pain-management team, was similar to the regimen she had followed preoperatively. Physical examination revealed no changes, except that the woman’s discomfort was now compounded by a tender incision site. The source of her pain remained uncertain, despite repetitive workups and follow-up examinations. As of the last examination, the patient was applying for medical disability.

Discussion

Some physicians believe that the piriformis muscle is responsible for many cases of buttock pain and sciatic nerve irritation. Other physicians, who recognize tumor, bone proliferation, and scar tissue as possible causes of sciatic nerve compression, do not acknowledge piriformis syndrome caused by muscular compression. Proposed explanations for this disease have targeted anatomical variations2,3,5 or pathological conditions affecting the nerve or muscle, or neighboring bone or vasculature. Many au-

Fig. 1. Intraoperative photographs. Left: The piriformis muscle (asterisk) passes through a peroneal neural loop, an anatomical variation not reported in large cadaveric studies. The peroneal nerve (P) is reconstituted more distally. The tibial nerve (T) passes beneath the piriformis muscle. The posterior femoral cutaneous nerve (blue vesiloops) arises from the inferior portion of the peroneal loop. Right: The piriformis muscle is reflected superiorly after its insertion was resected. Neurolysis of the peroneal and tibial divisions was performed.

Fig. 2. Artist’s illustration demonstrating the relationship of the sciatic nerve (and divisions) to the piriformis muscle found in 240 cadaveric specimens. The sciatic nerve typically passes beneath the piriformis muscle (a); however, variations are relatively common (b–d). Cases entitled “hypothetical” (e and f) have since been described by Lee and Tsai. Our patient had an unreported variation. This figure is reproduced from Beaton LE, Anson BJ: The sciatic nerve and the piriformis muscle: their interrelation a possible cause of coccygodynia. J Bone Joint Surg (Am) 20:686–688, 1938.
thors3–5 have asserted that there is a causal relationship between certain anatomical variations of the sciatic nerve and piriformis muscle and the development of piriformis syndrome. An example of this would be a case in which the sciatic nerve or its division(s) splits the muscle or passes posteriorly (Fig. 2).

The diagnosis of so-called piriformis syndrome is indeed difficult. Even the observation and correction of an anatomical variation that theoretically could result in tethering of the nerve does not ensure reversal of piriformis syndrome symptoms.

References