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THE PIRIFORMIS MUSCLE SYNDROME

Sciatic Nerve Entrapment Treated with Section of the Piriformis Muscle

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The piriformis muscle syndrome, a term applied to an abnormal condition of the piriformis muscle, is characterized by symptoms and signs due to sciatic nerve entrapment at the greater sciatic notch. Two patients with this syndrome, successfully treated with section of the piriformis muscle, are reported. The piriformis muscle syndrome should be suspected as part of the differential diagnosis in cases of low back and hip or thigh pain.

Key words: nerve entrapment syndrome; sciatic nerve; piriformis muscle

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Yeoman (1928) was the first to refer to the piriformis muscle in relation to sciatic pain. His description of the piriformis muscle syndrome was expanded by Freiberg & Vinkle (1934) and Thiele (1937). Freiberg (1937, 1941) reported excellent results in 10 out of 12 patients and Robinson (1947) in two patients, all treated by sectioning the piriformis muscle.

This report presents two patients treated with division of the piriformis muscle, underlining that this procedure may relieve pressure on the structures that accompany the piriformis muscle through the greater sciatic notch (Figure 1).

CASE REPORTS

Case 1. A 41-year-old woman had at the age of 21 years her fractured os coccyx removed, but some coccygeal pain persisted. During the 6 years prior to admission she suffered from persistent, radiating pain extending from the sacrum to the left buttock/hip and the dorsolateral aspect of the thigh. There was paraesthesia and a burning sensation on the skin in the same region. She had a limp on the left side and she complained of dyspareunia. She had been treated with several series of ultrasonics in the left greater trochanteric region, with only transitory effect, and physiotherapy without improvement.

On examination she had a persistent external rotation of the left leg, atrophy of the left gluteal muscles and a positive Lasègue's sign on the affected side. Distinct tendernesss over the piriformis muscle was elicited by external and internal (pelvic) examination. Freiberg's and Pace's signs were positive and combined adduction-flexion-internal rotation of her left hip produced pain. Skin sensation and the patellar and Achilles reflexes were normal. There was excellent range of motion of the lumbar spine and no tenderness in this area.

Lumbar, sacral and pelvic skeletal roentgenograms showed no pathology except the removed coccyx. Injection of local anaesthetics in the piriformis muscle relieved the pain.

Operation was performed with the patient in the prone position. An incision was made from the greater sciatic notch to the greater trochanter. The fibres of gluteus maximus were separated by blunt dissection and the left piriformis muscle sectioned at its musculotendinous junction. Light adhesions between the sciatic nerve and the piriformis muscle and surroundings were loosened.

Complete relief was obtained immediately after the operation. By the 11-month follow-up some coccygeal pain had reoccurred, but the considerable pain in the buttock and thigh was completely relieved by the operation.

Case 2. A 23-year-old woman, in her youth active in gymnastics, complained on admission of persistent pain of 7 years duration, in the left gluteal region radiating down the thigh. Sometimes she had paraesthesia in her left leg. She was not able to participate in sport. Rest,

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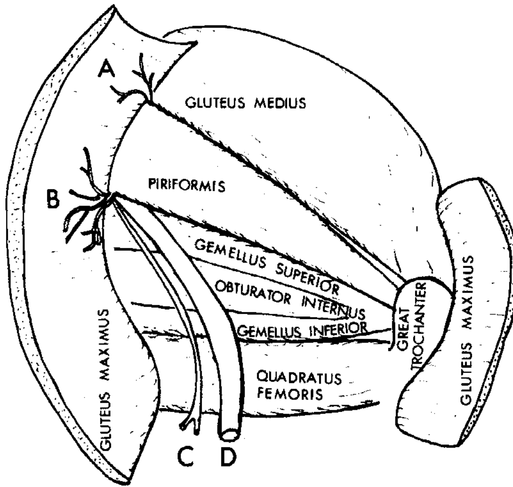

Figure 1. Dorsal view of the gluteal region shows the piriformis muscle passing through the greater sciatic notch accompanied by the superior gluteal nerve and blood vessels (A) at its upper border; the pudendal nerve and vessels, the inferior gluteal nerve and vessels (B), the posterior femoral cutaneus nerve (C) and the sciatic nerve (D) at its lower border.

traction treatment, physiotherapy, osteopathic manipulation, acupuncture, use of support and drugs had failed to give relief.

On examination she presented almost the same signs of the piriformis muscle syndrome as described in the first patient. X-ray examination of the lumbosacral column and pelvic and lumbar myelography were normal. Surgical treatment was identical with that in the first patient. After the operation her symptoms subsided and by the 10-month follow-up she had had no recurrence of pain and had started sporting activities.

DISCUSSION

The picture of the piriformis muscle syndrome is understandable when one considers the nerves and blood vessels that accompany the piriformis muscle through the greater sciatic notch. The symptoms are thought to be primarily due to entrapment of the sciatic nerve caused by an abnormal condition of the piriformis muscle. Spasm, hypertrophy or contracture of this muscle might be due to focal hyperirritability (Pace & Nagle 1976). There are no common causative factors in this syndrome, but a history of trauma to the buttocks, affecting the piriformis muscle directly or indirectly, is often elicited (Robinson 1947). Trauma to the buttocks during gymnastics was probably the cause in our second patient. Lesions of the sacroiliac and hip joints may involve the piriformis muscle (Yeoman 1928) and this muscle is also involved in disturbances of the pelvic diaphragm muscles (Sinaki et al. 1977).

The diagnosis of the piriformis muscle syndrome is entirely clinical. Characteristic complaints are pain and paraesthesia in the gluteal region extending to the hip and the back of the thigh as in sciatica. Female patients often complain of dyspareunia. The symptoms are usually unilateral with limp on the affected side.

On examination there may be gluteal atrophy (Robinson 1947). Typical signs are distinct tenderness and reproduction of the patient's complaints by digital pressure over the belly of the piriformis muscle in the gluteal region, especially towards the sciatic notch, and on the lateral pelvic wall by rectal or pelvic examination (Pace & Nagle 1976). Pain and weakness on resisted abduction-external rotation of the thigh is a sign of this syndrome (Pace & Nagle 1976). Thus Pace's sign simply tests for loss of function of the piriformis muscle. Pain on forced internal rotation of the extended thigh is a positive Freiberg's sign (Freiberg & Vinkle 1934). This manoeuver tightens the piriformis muscle and causes pressure on the sciatic nerve at the sarcospinous ligament (Thiele 1937). Stretching the piriformis muscle by combined addution-flexion-internal rotation of the affected hip aggravated the pain in our patients. A positive Lasègue's sign is often present. True neurological findings are uncommon. Diagnostic injection of local anaesthetics in the piriformis muscle relieved the pain in our patients.

Thiele (1937) reported treatment of this syndrome by transrectal massage of the piriformis muscle while Pace & Nagle (1976) used injection with local anaesthetics and cortisone into the muscle belly. Reports of successful surgical treatment (Freiberg 1937, 1941, Robinson 1947, Kopell & Thompson 1976, Mizuguchi 1976) encouraged us to section the piriformis muscle. The procedure proved to be beneficial in our two patients. The functional loss is minimal since this

muscle is the fourth strongest of the short external rotators of the hip.

The described piriformis muscle syndrome is one of a number of conditions giving rise to sciatic pain. If the piriformis muscle is found to be the cause of pain we regard section of the muscle as a simple procedure which may give relief of the symptoms.

REFERENCES

Freiberg, A. H. & Vinkle, T. H. (1934) Sciatica and the sacro-iliac joint. *J. Bone Jt Surg.* **16**, 126–136.

Freiberg, A. H. (1937) Sciatic pain and its relief by operations on muscle and fascia. *Arch. Surg.* **34**, 337–350.

Freiberg, A. H. (1941) The fascial elements in associated low-back and sciatic pain. *J. Bone Jt Surg.* **23**-A, 478–480.

Kopell, H. P. & Thompson, W. A. L. (1976) Peripheral entrapment neuropathies. 2th ed. pp. 64–70. Robert E. Krieger Publishing Company, New York.

Mizuguchi, T. (1976) Division of the pyriformis muscle for the treatment of sciatica. *Arch. Surg.* **111**, 719–722.

Pace, J. B. & Nagle, D. (1976) Piriform syndrome. *West. J. Med.* **124**, 435–439.

Robinson, D. R. (1947) Pyriformis syndrome in relation to sciatic pain. *Amer. J. Surg.* **73**, 355–358.

Sinaki, M., Merrit, J. L. & Stillwell, G. K. (1977) Tension myalgia of the pelvic floor. *Mayo Clin. Proc.* **52**, 717–722.

Thiele, G. H. (1937) Coccygodynia and pain in the superior gluteal region. *J. Amer. med. Ass.* **109**, 1271–1275.

Yoeman, W. (1928) The relation of arthritis of the sacroiliac joint to sciatica. *Lancet* **ii**, 1119–1122.

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