CASE REPORTS

DIAGNOSIS AND MANAGEMENT OF POSTTRAUMATIC PIRIFORMIS SYNDROME: A CASE STUDY

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ABSTRACT

Objective: The aim of this study is to describe the clinical management of a young male patient with sciatica symptoms that developed after an avulsion of the ischial tuberosity. This is a rare injury, but complications may occur.

Clinical Feature: A 19-year-old patient developed sciatica 6 months after a football injury. The patient described his symptoms as a shooting pain from the buttock to the lateral part of the foot, along the back of his thigh and calf, sometimes accompanied by paresthesia. Physical examination showed restricted hip range of motion and a positive Bonnet's test. X-ray analysis revealed a bony overgrowth of the right ischial tuberosity.

Intervention and Outcome: A treatment plan was designed to decrease the pain level, increase sacroiliac and lumbar joint mobility, and augment muscular extensibility. The patient received 20 treatments over a period of approximately 3 months. Complete recovery was observed 5 months later.

Conclusion: Although many differential diagnoses were contemplated, it is most likely that changes in muscular tension and gait pattern, resulting from the ischial tuberosity avulsion, contributed to overuse of the piriformis muscle leading to a piriformis syndrome. (J Manipulative Physiol Ther 2006;29:486-491)

Key Indexing Terms: *Pain; Buttocks; Sciatica; Ischium; Fractures, Bone*

Avulsion fracture of the ischial tuberosity is a rare condition that generally occurs in 15- to 17-year-old athletes.[1,2] This type of avulsion takes place by forceful and rapid contraction of the hamstring muscles or adductor magnus through an open apophysis. The most common mechanism is contraction accompanied by sudden hip flexion while the knee is extended. Because growth plates are weaker than tendons and because the hamstrings are powerful muscles, an avulsion of the ischial tuberosity is more likely during hip flexion trauma.[3] Typically, a patient who sustains an ischial tuberosity avulsion will complain of local pain with tenderness accompanied by swelling, antalgic gait, standing and sitting pain, and difficulty while squatting after having experienced a sharp, tearing pain in the affected buttock.[4] Because the symptoms are similar to hamstring muscle tear, the visualization of a bony fragment on radiographs can help confirm the diagnosis.

The patient's age can also be a differentiating factor between avulsion and muscle tear; the ischial growth plate is the last one in the region to unite[5] and usually fuses around the age of 18 to 25 years.[6] Avulsion is less likely to occur after 25 years of age.[3] Although this condition can be treated successfully with a conservative approach, many complications can develop. After the injury, the avulsed fragment can impinge or pierce the sciatic nerve. Excessive bone or fibrous tissue can form on the ischial tuberosity during the healing process, mimicking a tumor. Such an excessive bony or fibrous mass, usually called "rider's bone," can eventually cause persistent symptoms, such as pain in the thigh and difficulties while sitting.[2] The insertion of the hamstring muscles on the ischial tuberosity may enlarge, secondary to the trauma. This phenomenon, also known as "hamstring syndrome," could be another source of sciatic nerve irritation.[7] Furthermore, the fragment may not unite, and surgical reattachment may be considered in more serious cases.[1] Finally, the thigh muscle may atrophy due to tension

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Table 1. *Range of motion*

Trunk		
Flexion	90°	
Extension	30°	
Rotation	30°	
Lateral flexion	35°	
Hip	**Right**	**Left**
Flexion	125°	125°
Extension	10°	10°
Internal rotation	45°	45°
External rotation	45°	45°
Abduction	45°	45°
Adduction	10°	10°

Table 2. *Orthopedic testing performed and results*

Test	Result
Valsalva maneuver	Negative
Straight leg rising	Negative, limited at 70°
Gaenslen's	Negative
Yeoman's	Negative
Laguerre's	Negative
Fabere-Patrick	Negative
Bonnet's	Positive

changes.[8] The following case report describes a piriformis syndrome secondary to ischial tuberosity avulsion.

Case Report

A 19-year-old male patient, who accepted to have his case information published, presented himself at the Clinique Universitaire de Chiropratique, located in Trois-Rivières, with persistent radiating pain in the right leg. The pain appeared gradually over a period of 2 1/2 years. The patient described his symptoms as pain over the gluteal region, shooting from the buttock to the lateral part of the foot, along the back of his thigh and calf. The pain was sometimes accompanied by paresthesia. The patient also reported that after 30 minutes of car driving, the symptoms (pain and paresthesia) were intense (7/10) but could be partially relieved by stepping out of the car for a moment. He noted that prolonged external rotation of the affected hip (driving posture) increased the symptoms. Prolonged sitting and static posture also aggravated the pain and paresthesia. When questioned about past trauma, the patient mentioned that he had had an avulsion of the ischial tuberosity 3 years earlier while playing football. While receiving the ball as a quarterback, he was hit by another player and fell to the ground in an exaggerated split position. No treatment was given for his condition. The patient only used crutches for a 2-week period and stopped physical activity for 4 months. Sciatica symptoms appeared 6 months after the incident and increased in 24 months before his seeking consultation.

Fig 1. *Patient's lumbopelvic anteroposterior radiograph. A bony overgrowth can be seen on the right ischium. There is also a possible posttraumatic ossification of the right sacrospinous ligament.*

On examination, postural analysis revealed his right foot in external rotation. As seen in Table 1, lumbar spine and hip ranges of motion were within normal limits, except as noted. Orthopedic examination revealed a positive Bonnet's test on the same side. Straight leg raising was negative, although hip flexion was limited and painful on the right side because of tight hamstring muscles. Ranges of motion and other common orthopedic tests are reported in Table 2. Tenderness of the piriformis, gluteus medius, and minimus muscles was noted on palpation. Palpation of the piriformis muscle did not only elicite local tenderness but also reproduced sciatic pain. Neurologic examination, including tendon reflexes, sensitivity and motor evaluations, was negative. Chiropractic palpation revealed generalized lumbar stiffness.

Lumbopelvic radiographs were taken after the physical examination. As seen on Figure 1, a bony overgrowth 65 mm long and 25 mm wide was evident on the right ischium. With the exception of slightly increased lumbar lordosis at 65°, anteroposterior and lateral views of the lumbar spine did not reveal any significant changes.