



## Spontaneous healing of an avulsed ischial tuberosity in a young football player A case report

Andrea Emilio SALVI, Giovanni Pietro METELLI, Massimiliano CORONA, Maria Teresa DONINI

*From the Mellino Mellini Hospital Trust, Civil Hospital of Iseo (Brescia), Italy*

**There is a paucity of orthopaedic literature describing avulsion of the ischial tuberosity, but its spontaneous healing does not seem to have been reported to-date. This article describes the case of a young football player who suffered an avulsion fracture of the ischial tuberosity while kicking vigorously next to the ball during a football match. The diagnosis was not made at the time of trauma, and the fracture was found five years later to have healed spontaneously. A review of the literature is provided.**

**Keywords :** ischial tuberosity ; avulsion ; healing.

needed, but some authors suggest this option for athletically active patients (4). Surgical removal of the bony fragment is mandatory when it compresses the ischiatic nerve (6) or when a painful non-union has developed (3) but, on the other hand, this treatment can promote the formation of an osteoma requiring clinical and radiological surveillance (9). We report the case of a patient who presented a traumatic avulsion of the ischial tuberosity, which was found five years later to have healed spontaneously.

### INTRODUCTION

Traumatic detachment of the ischial tuberosity is a rarely reported injury. The diagnosis is often delayed, as the injury is considered trivial by the patient, parents and even by the treating physician (7), and radiographs are therefore not always made. It results in the presence of an osseous fragment inferior and lateral to the ischial tuberosity (10). This injury usually occurs in children and adolescents, at an age when the tuberosity is not yet fused, usually after a strong contraction of the hamstrings or due to chronic repetitive traction without an acute episode. The treatment of avulsion of the ischial tuberosity is not well defined. Most cases can be treated satisfactorily with rest, analgesics and cessation of activity until the symptoms subside (7). Early surgical reattachment is rarely

### CASE REPORT

A young boy reported a violent trauma during a football match in March 1999, when he was

■ Andrea Emilio Salvi, MD, Orthopaedic Surgeon.

■ Giovanni Pietro Metelli, MD, Orthopaedic Surgeon.

*Orthopaedic and Trauma Department, Mellino Mellini Hospital Trust, Civil Hospital of Iseo (Brescia), Italy.*

■ Massimiliano Corona, MD, Orthopaedic Surgeon.

*Orthopaedic and Trauma Department, Ospedale Luigi Sacco, University of Milan, Milan, Italy.*

■ Maria Teresa Donini, MD, Orthopaedic Surgeon.

*Orthopaedic and Trauma Department, Emergency and Urgency Department, University of Modena and Reggio Emilia, A.O. Policlinico Di Modena, Modena, Italy.*

Correspondence : Andrea Salvi, Via Cipro, 30, 25124 Brescia, Italy. E-mail : andrea@orthopaedics.com.

© 2006, Acta Orthopædica Belgica.



*Fig. 1.* — Radiograph of the right hip showing detachment of the ischial tuberosity (arrow), 21 months after injury.

14 years old. He felt a sudden pain in the right buttock while kicking vigorously next to the ball (“tir retourné” according to French authors) (6). Two months later, he underwent a sonography which did not report any muscular lesion, or haematoma.

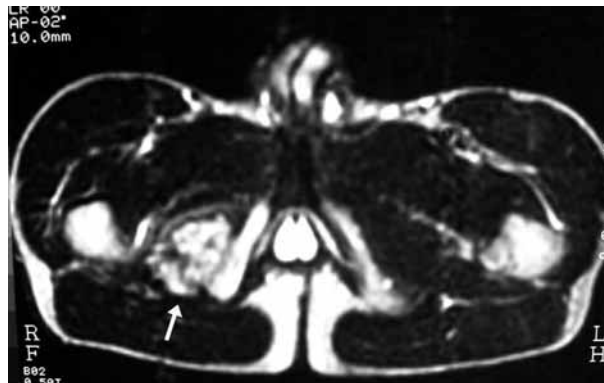
The first time he consulted us was in December 2000, when he was 15 years old.

Because he had persisting pain when sitting – a typical avulsion fracture complaint – a radiograph (fig 1) was taken, 18 months after the sonography, as well as an MRI of the pelvis (fig 2).

The radiograph showed detachment of the ischial tuberosity and the MRI documented the presence of a characteristic crescent-shaped area (2), ruling out the possibility of ischial apophysitis and avascular necrosis (i.e. Kremser’s disease).

We decided on non-surgical intervention, considering that the patient was young and that it is uncertain whether an athlete with this injury diagnosed after a long delay can recover fully after operation (8).

Considering the delay in diagnosis, we also did not suggest conservative treatment (i.e. bed rest with the thigh in extension and with the knee flexed), as it would most likely have been inefficient and useless.



*Fig. 2.* — MRI showing the avulsion (arrow) as a crescent-shaped area.



*Fig. 3.* — Radiograph of the pelvis showing the bony union. There remains a bone overgrowth enlarging the ischial tuberosity.

We preferred to periodically check the evolution with a radiograph every two months, and by advising the patient to avoid any sporting activities.

After three and half years, the radiograph (fig 3) showed union of the avulsion.

The patient did not complain any more, except on sitting and during prolonged walking.

## DISCUSSION

Review of the literature does not provide other cases of ischial tuberosity detachment which healed spontaneously, and therefore we believe that this case is unique in that the avulsion has healed

with no need for bed rest or surgery. Furthermore bed rest with the thigh in extension and with the knee flexed could give rise to potential complications, i.e. non-union and the onset of the “hamstring syndrome”, a painful condition with shortening and fibrosis in the hamstring origin near the ischial tuberosity (5).

It is also demonstrated that muscle weakness, in this case due to a lack of active hamstring training, disturbs the recovery from disuse bone atrophy (1) and therefore atrophy of the ischial tuberosity may result.

The pain reported by the patient when sitting is certainly due to the hypertrophic ischium crushing the gluteal muscles against the seat. In our opinion, this is a complication that can be overcome, because some time is necessary in order to permit remodelling of the ischial tuberosity, which can be promoted by physical activities. The pain reported during prolonged walking probably results from repetitive pull of tight hamstrings at their insertion (2). In our opinion, even this complaint could be relieved by stretching the hamstrings via physical therapy. i.e. with muscle rehabilitation (sub-maximal hamstrings isometric contractions), with single-leg stance balancing, swimming and using a bicycle (5). This case could suggest that when surgical treatment is not possible for some reason, this fracture can be treated with no need for surgery or for a cast.

## REFERENCES

1. **Anderson JE, Lentz DL, Johnson RB.** Recovery from disuse osteopenia coincident to restoration of muscle strength in mdx mice. *Bone* 1993 ; 14 : 625-634.
2. **Bahk WJ, Brien EW, Luck JV Jr, Mirra JM.** Avulsion of the ischial tuberosity simulating neoplasm. A report of 2 cases. *Acta Orthop Scand* 2000 ; 71 : 211-214.
3. **Barigazzi PD.** Unusual traumatic association : detachment of the small trochanter and the ischiatic tuberosity. *Minerva Ortop* 1965 ; 16 : 266-267.
4. **Barnes ST Hinds RB.** Pseudotumor of the ischium. A late manifestation of avulsion of the ischial epiphysis. *J Bone Joint Surg* 1972 ; 54-A : 645-647.
5. **Bolgia LA, Jones DL, Keskula DR, Duncan JB.** Hip pain in a high school football player : A case report. *J Athl Train* 2001 ; 36 : 81-84.
6. **Ferro RM, Bahuaud J, Pau P, Richard M, Dischino M.** A case of bilateral separation of the ischial tuberosity. *Acta Orthop Belg* 1983 ; 49 : 217-224.
7. **Pruner RA, Johnston CE 2nd** Avulsion fracture of the ischial tuberosity. *Orthopedics* 1990 ; 13 : 357-358.
8. **Schlonsky J, Olix ML.** Functional disability following avulsion fracture of the ischial epiphysis. Report of two cases. *J Bone Joint Surg* 1972 ; 54-A : 641-644.
9. **Stulz E, Jenny G.** A propos of a further case of traumatic apophyseal avulsion of the ischiatic tuberosity. *Lyon Chir* 1961 ; 57 : 840-843.
10. **Wooton JR, Cross MJ, Holt KW.** Avulsion of the ischial apophysis. The case for open reduction and internal fixation *J Bone Joint Surg* 1990 ; 72-B : 625-627.