

## Adolescent Female with Severe Thigh Pain after Doing Splits



**A** 13-year-old girl presented with an abrupt onset of severe pain in the proximal part of the right thigh occurring during a gymnastics routine, performing “splits.” On arrival, the girl was not able to sit or stand. On physical examination, palpation of the right buttock and flexion of the right thigh evoked pain, as well as the extra-rotation and abduction of the right hip. A radiograph of the pelvis was performed, showing an inferior displacement of the right ischial tuberosity (**Figure**).

Avulsion fracture of the ischial tuberosity (AFIT) is a rare sports injury, occurring between puberty and late adolescence in athletes, particularly in gymnasts and soccer players.<sup>1</sup> It is caused by the different flexibility and strength between the ischial tuberosity and both tendons and muscles which insert in this anatomic region.<sup>2</sup> Typically, AFIT presents with a sudden onset of pain in the posterior thigh or buttock, and patients can report difficulty in sitting, walking, and squatting after feeling a “pop.” AFIT can be misdiagnosed as muscle strain, particularly if the patient is not explicitly examined for tenderness or palpable gap at the ischial hamstring origin. Although significant displacement can be easily diagnosed with radiographs, computed tomography scans and MRI are required in case of minimal avulsion or occult fracture.<sup>3</sup>

AFIT is treated conservatively usually in case of displacement lower than 15 mm, although early operative intervention should be considered in physically active patients with displacements of greater than 15 mm.<sup>4</sup> ■

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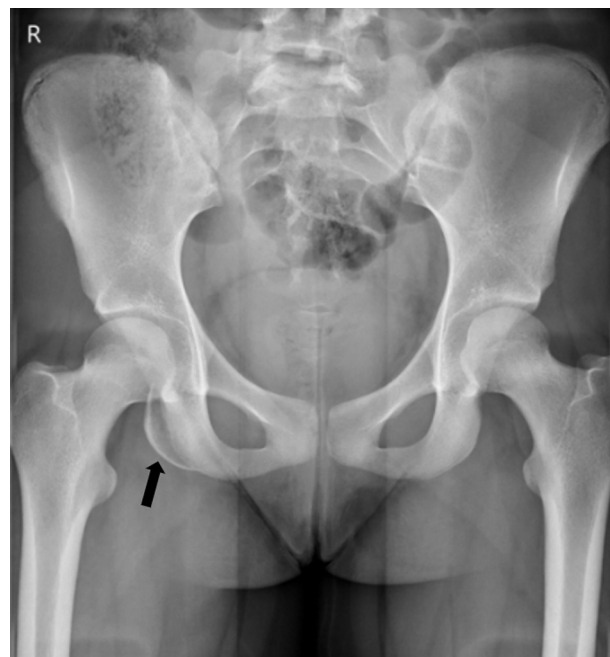
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**Figure.** Inferior displacement from its normal position of the right ischial tuberosity (*arrow*), consistent with an avulsion fracture.

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### References

1. Rossi F, Dragoni S. Acute avulsion fractures of the pelvis in adolescent competitive athletes: prevalence, location and sports distribution of 203 cases collected. *Skeletal Radiol* 2001;30:127-313.
2. Gidwani S, Jagiello J, Bircher M. Avulsion fracture of the ischial tuberosity in adolescents—an easily missed diagnosis. *BMJ* 2004;329:99-100.
3. Liu H, Zhang Y, Rang M, Li Q, Jiang Z, Xia J, et al. Avulsion fractures of the ischial tuberosity: progress of injury, mechanism, clinical manifestations, imaging examination, diagnosis and differential diagnosis and treatment. *Med Sci Monit* 2018;24:9406-12.
4. Ferlic PW, Sadoghi P, Singer G, Kraus T, Eberl R. Treatment for ischial tuberosity avulsion fractures in adolescent athletes. *Knee Surg Sports Traumatol Arthrosc* 2014;22:893-7.