



Trochanter minor avulsion fracture in an amateur football player Amatör futbol oyuncusunda trokanter minör avülsiyon kırığı

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Abstract

Apophysial avulsion fractures of the pelvis in adolescent period occur after sudden and violent contractions of the muscles with insertions in these areas. In this report we present trochanter minor avulsion fracture in a 13-year-old amateur football player. In his history he reported that a sudden pain occurred in his left hip during a ball shot while playing football on a field. On physical examination, movements of the left hip were painful and on the radiologic imagination an avulsed bone fragment of trochanter minor of the left femur was observed. The patient was offered analgesic and anti-inflammatory drug treatment. Pain decreased after 2 weeks and the patient was allowed to mobilise with crutches without weight bearing. After 4 weeks he was allowed walking without support. At the end of the 6 weeks the patient was allowed to start athletic activity.

Keywords: Avulsion Fracture; Adolescent; Trochanter Minor; Treatment; Conservative.

Öz

Adölesan dönemde sporcularda pelvisteki apofizlerde avülsiyon kırıkları, bu bölgelere yapışan kasların ani kasılması sonucu meydana gelen nadir yaralanmalardır. Bu yazıda 13 yaşındaki amatör futbol oyuncusunda meydana gelen trokanter minör avülsiyon kırığını sunuyoruz. Hastanın hikayesinde futbol oynarken şut çekme sırasında sol kasiğında ani ağrı geliştiği öğrenildi. Fizik muayenede hastanın sol kalça hareketlerinde ağrı mevcuttu ve olgunun radyolojik incelemelerinde trokanter minör bölgesinden avulse olmuş kemik fragman tespit edildi. Hastaya analjezik ve antiinflatuar ilaç tedavisi önerildi. Hastanın 2. hafta sonunda ağrıları azalmıştı ve koltuk değnekleri ile yük vermeden yürümesine izin verildi. 4. hafta sonunda ise hasta desteksiz şekilde mobilize edildi. 6. hafta sonunda sportif aktiviteye başlamasına izin verildi.

Anahtar Kelimeler: Avülsiyon Kırığı; Adölesan; Trokanter Minör; Tedavi, Konservatif.

Received/Başvuru: 25.06.2016
Accepted/Kabul: 11.07.2016

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How to cite this article/Atif için
Uzun E. Trochanter minor
avulsion fracture in an amateur
football player. J Turgut Ozal
Med Cent 2016;23(4):462-4.

INTRODUCTION

Avulsion fractures of the pelvis are rarely observed in adolescent athletes (1). Mostly affected adolescents are male athletes between the ages of 13–17 (2). These fractures occur in the growth cartilage of the apophyseal plates as a result of sudden, violent contractions of the muscles with insertions in these areas (3-5). Most apophyseal fractures of the pelvis are mainly observed in the anterior inferior iliac spine (AIIS), the anterior superior iliac spine (ASIS), and the ischial tuberosity; those of the iliac crest and the minor femoral trochanter are rarer (6). In this report we present trochanter minor avulsion fracture in a 13-year-old amateur football player. Consent form was obtained from the patient's family.

CASE REPORT

13-year-old patient presented to orthopedic and traumatology department due to a sudden pain in the left hip occurring during a ball shot while playing football on a field 4 days ago. On physical examination his passive and active hip motions were both painful, and there was extreme pain on his trochanter minor during palpation. Neuromotoric and vascular system examinations were normal. Radiological examinations showed avulsion fracture of the trochanter minor (Figure 1). Magnetic Resonans Imaging (MRI) was taken to identify if there was an additional pathology but we couldn't observe any additional pathology except avulsion fracture (Figure 2). Because of the pediatric age of patient we didn't consider to take computed tomography (CT) to prevent radiation exposure. We started analgesic and anti-inflammatory drug treatment, cold application and bed rest with lying position while hip was in 30 degree flexion in the acute stage. Patients were mobilized after 2 weeks with elbow crutches. Four weeks later, we started active hip motions and allowed walking with weight bearing. At the end of the 6 weeks the patient was allowed to start athletic activity. The patient did not have any problem about his left hip in his daily life.

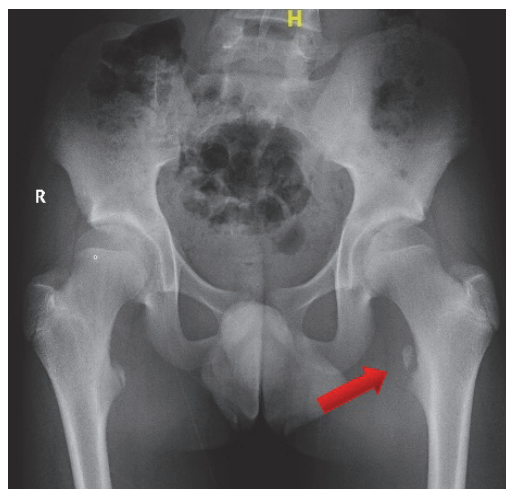


Figure 1. X-Ray Imaging, shows avulsion fracture of left trochanter minor.

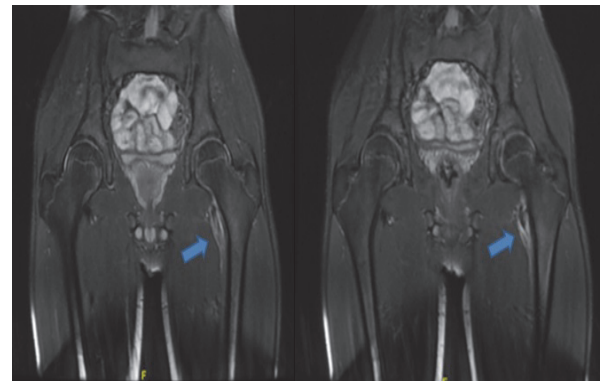


Figure 2. Magnetic Resonans Imaging, shows avulsion fracture of left trochanter minor with mild environmental edema.

DISCUSSIONS

Apophyses are specialised ossification centres that provide peripheral growth of the bones adjacent to joints in immature skeletal systems (2, 3). Sudden, violent or unbalanced contractions of these muscles can cause avulsion fractures (5). Pelvic apophysis ossification is seen during the adolescent period; therefore, avulsion fractures are seen more often during this period and generally occur as a result of these muscles with an insertion in these areas, and less frequently, they may be due to direct contact and repeated stress (4,5). Their incidence has been reported as approximately 4%. Most apophyseal fractures of the pelvis are observed in the AIIS, ASIS and the ischial tuberosity; less frequent are those of the iliac crest and the minor femoral trochanter (Figure 3).

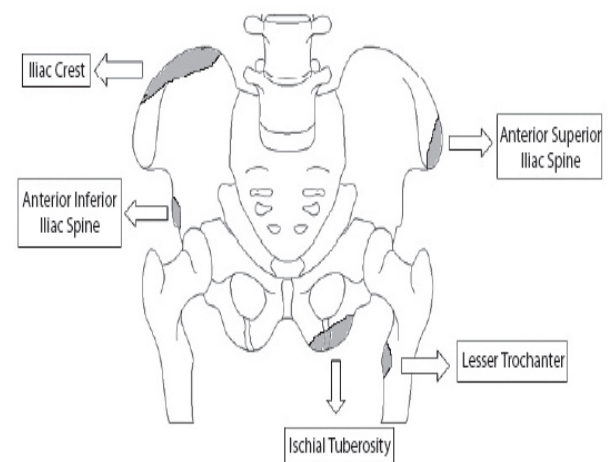


Figure 3. Most apophyseal fractures of the pelvis (1).

(1,6). Hösli and von Laer reported only three trochanter minor avulsion fractures over 20 years (7). Also Jonasch ve Bertel detected only five patients (0.0021%) in 263.166 children with trochanter minor or major avulsion fracture between 1966 and 1976 in Australia (8). The trochanter minor avulsion fracture in the case presented here was a result of a sudden and powerful contraction

of the iliopsoas. In the present case, it occurred during the act of shooting a ball with the foot.

The majority of these fractures result from sports injuries in adolescents where mostly occur because of metastatic tumors in elderly. They are generally seen shortly before the closure of the apophyses, at 11-17 years of age, more frequently in male patients (6). Consistent with this, the case presented here was an adolescent male of 13 years of age who practised sports. Passive movement increases pain due to the increase of tension on the muscles; in the case of an avulsion fracture of the tuberositas ischii, the pain manifests itself during flexion and abduction of the hip, while in those of the AIIS, ASIS and trochanter, minor extension is more painful (6). In most cases, an X-ray assessment of the pelvis in anteroposterior projection is sufficient for the diagnosis. Comparison with the contralateral image is useful in order to confirm the diagnosis and avoid unnecessary additional imaging procedures (6). The diagnosis was established directly by X-ray and MRI assessment in our patient, with no need for other imaging. This protected the patient from unnecessary radiation damage and unnecessary expense due to additional examinations.

In the overwhelming majority of cases, conservative treatment of pelvic avulsion fractures is successful (3,6). Surgical repair is to be considered in patients who need to return soon to their former activities, those with a dislocation of 2 cm or more, and those in whom nonunion or exostosis is observed (4). Conservative treatment consists of analgesic and anti-inflammatory drug treatment and bed rest in the acute stage, followed within a few weeks by exercise and mobilisation with crutches, depending on the pain level (3). Full healing is reported to occur in 3 weeks to 4 months from the date of fracture (4). Many publications indicate that patients fully recover their function. Possible complications are chronic pain, loss of muscular strength, and nonunion. Full healing of the fracture should be ascertained before fully mobilising the patient and exercise to build up muscle strength must be applied.

In conclusion we treated trochanter minor avulsion fracture conservatively and achieved excellent results at the follow up period. The patient did not have any problem about his left hip in his daily life and started his previous athletic activity at the end of the 6 weeks. According to the excellent results of this case and the literature we think conservative therapy is an effective method in the trochanter minor avulsion fractures with satisfactory results. A delay in diagnosis in this kind of rarely observed sport injuries may cause hip pain and lower the performance of sportsmen, so the physicians should be alert at the diagnosis of avulsion fractures in adolescent period. Advanced imaging procedures (CT, MRI, ultrasound, or bone scintigraphy) may be used in uncertain cases.

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