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Case Report

Isolated Epiphyseal Detachment of the Greater Trochanter in a Judoka

Zied Mansi[1], Islem Chniti[1*], Hedi Rbai[1], Mokhtar Romdhani[1]

[1]Department of Orthopedic and Traumatology Surgery, CHU Ibn Al Jazzar Kairouan, Tunisia

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Abstract: Epiphyseal detachment of the greater trochanter is a rare entity. Femoral head necrosis is the most dreaded complication. We report the case of a displaced Salter I epiphyseal detachment in a young high-level athlete who resumed his sports activities after synthesis by bracing.

Keywords: Greater trochanter, epiphyseal detachment, child, necrosis, complication, classification.

INTRODUCTION

Epiphyseal detachment of the greater trochanter is a rare entity [1-3]. It is most often described in the context of acute trauma during sports activities.

The anatomical reduction of the undermining is essential. Evolution towards necrosis of the femoral head is the most formidable complication [4, 5].

We report the case of epiphyseal detachment occurring in a 15-year-old boy treated surgically.

CLINICAL CASE

It was a young 15-year-old judoka, victim of a sports accident during a national competition. The mechanism of trauma was a fall with a direct impact on the right hip. The patient then presented to our emergency room for total functional impotence of the right lower limb.

The examination finds a patient in supine position; the right lower limb is spontaneously in abduction – external rotation. There were no associated skin lesions. Palpation of the greater trochanter was very painful. The mobility sector of the hip is very reduced by pain.

The pelvic X-ray then showed a Salter I type epiphyseal detachment of the displaced greater trochanter (figure 1). A CT scan of the pelvis was performed on him in search of a cervical fracture or an associated fracture of the trochanteric massif. Finally, the scannographic study confirmed the Salter I epiphyseal detachment without any other associated lesions (figure 2).

***Corresponding Author:** Islem Chniti
Department of Orthopedic and Traumatology Surgery, CHU Ibn Al Jazzar Kairouan, Tunisia

Figure 1: Initial appearance of isolated tearing of the greater trochanter

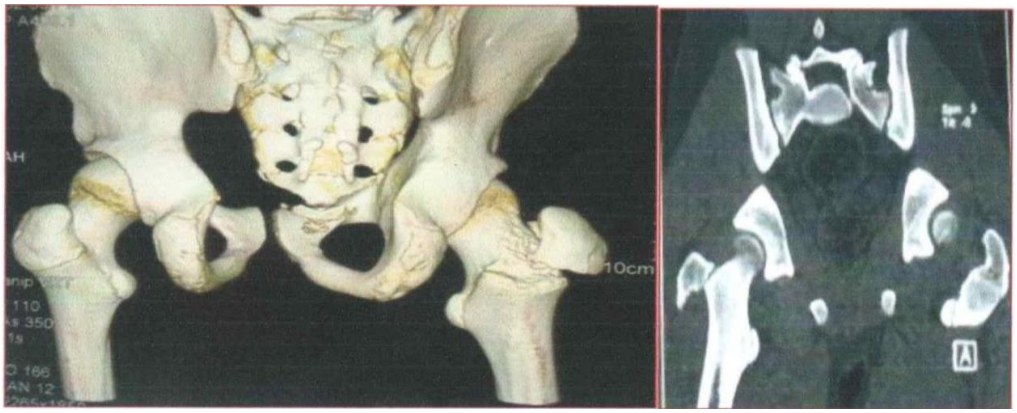

Figure 2: Scannographic section and 3D reconstruction showing tearing of the greater trochanter

The surgery was undertaken the day after the accident. The patient was placed in the left lateral decubitus position. An external crural approach centered on the greater trochanter was used. The abduction of the limb facilitated the reduction.

The fixation was carried out by bracing under scopic control (Figure 3, 4). No traction was installed postoperatively. An early rehabilitation program has been set up. Resumption of support was authorized in the 6th week. Consolidation was obtained at the 3rd postoperative month and material removal took place at the 6th month.

At 18 months follow-up, the patient did not present any functional gene and walked without limping and he gradually resumed his sporting activities. The examination objectified complete and symmetrical amplitudes, and the absence of quadriceps atrophy. Control X-rays ruled out early necrosis of the femoral head.

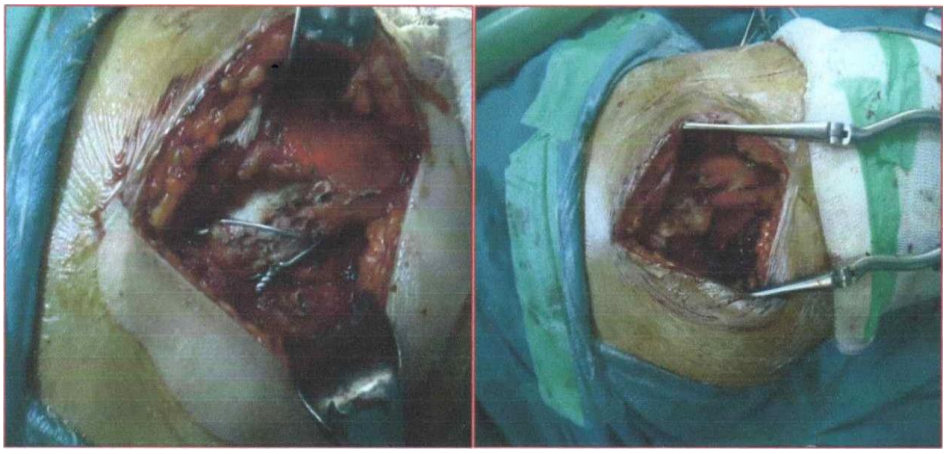

Figure 3: External crural approach centered on the greater trochanter: intraoperative aspect

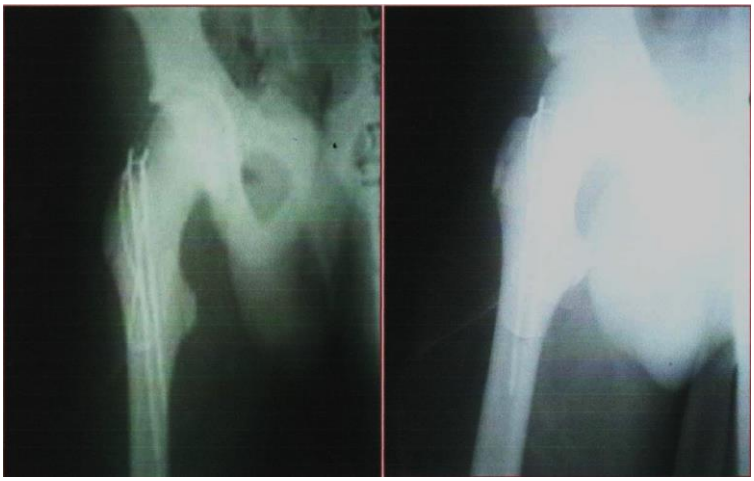

Figure 4: Postoperative X-ray after synthesis by bracing

DISCUSSION

Isolated avulsion fracture of the greater trochanter is a rare entity [6], about 11 cases in total have been published. Most often, it is secondary to violent trauma. The largest series described is that of Wenger [7] who reports a series of 3 cases of epiphyseal detachment, two of which reveal a direct mechanism like the case of our patient. El Hachmi *et al.,* [1] report a case of non-traumatic epiphyseal detachment of the greater trochanter.

A new classification based on the traumatic mechanism was described by Chotel *et al.,* [2] in 2004 (Figure 5): Type I represents avulsion fractures of the greater trochanter by sudden contraction of the gluteal muscles. This contraction causes a vertical displacement of the greater trochanter. No necrosis of the femoral head has been reported after such a mechanism. Type II avulsion fractures are injuries associated with a femoral neck fracture. In this situation, the risk of necrosis of the femoral head seems linked to a neck fracture itself. Type III lesions associate dislocation of the hip and apophyseal detachment of the greater trochanter; analysis of the literature suggests in these cases an almost inevitable necrosis of the femoral head.

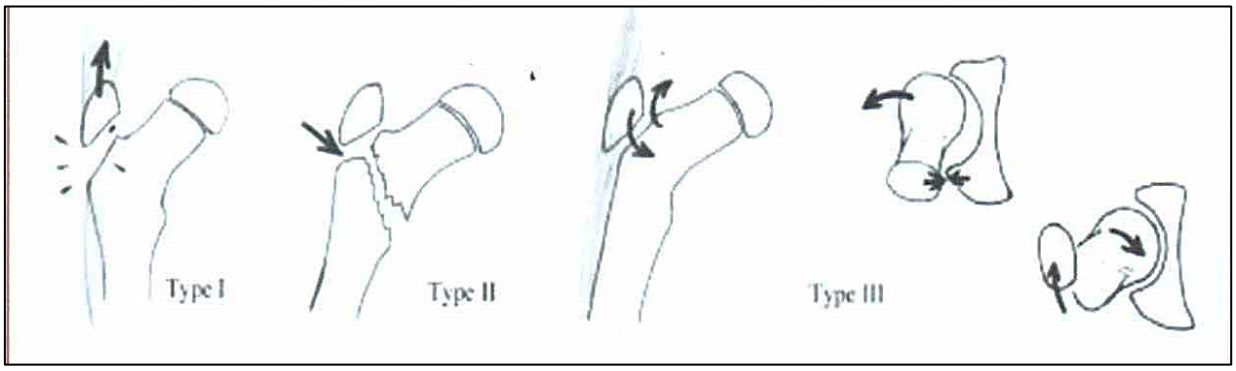

Figure 5: Classification of epiphyseal fractures of the greater trochanter according to Chotel [2]: classification of epiphyseal fractures of the greater trochanter into three types according to the traumatic mechanism. Type I: fractures with vertical displacement by traction of the gluteus muscles. Type II: fractures associated with a basicervical fracture by direct shock to the external face of the hip. Type III: fractures with horizontal displacement by rotary mechanism with or without hip dislocation. The anterior dislocation is accompanied by an acme effect of the greater trochanter in contact with the posterior wall of the acetabulum. Muscle continuity is respected

Whatever the etiology and the mechanism of the detachment, the evolution can be done towards aseptic necrosis of the femoral head, the most dreaded complication which will condition the future of the hip. In Wenger's series [7] two cases out of 3 progressed to necrosis of the femoral head. O'Rourke [8] and Mbubaegbu [9] confirm in their series the existence of such a serious complication which can interfere with the evolution of epiphyseal detachment (Figure 6). The traumatic mechanism seems to be the main risk factor for femoral head necrosis. However, the pathophysiology of necrosis is still poorly understood.

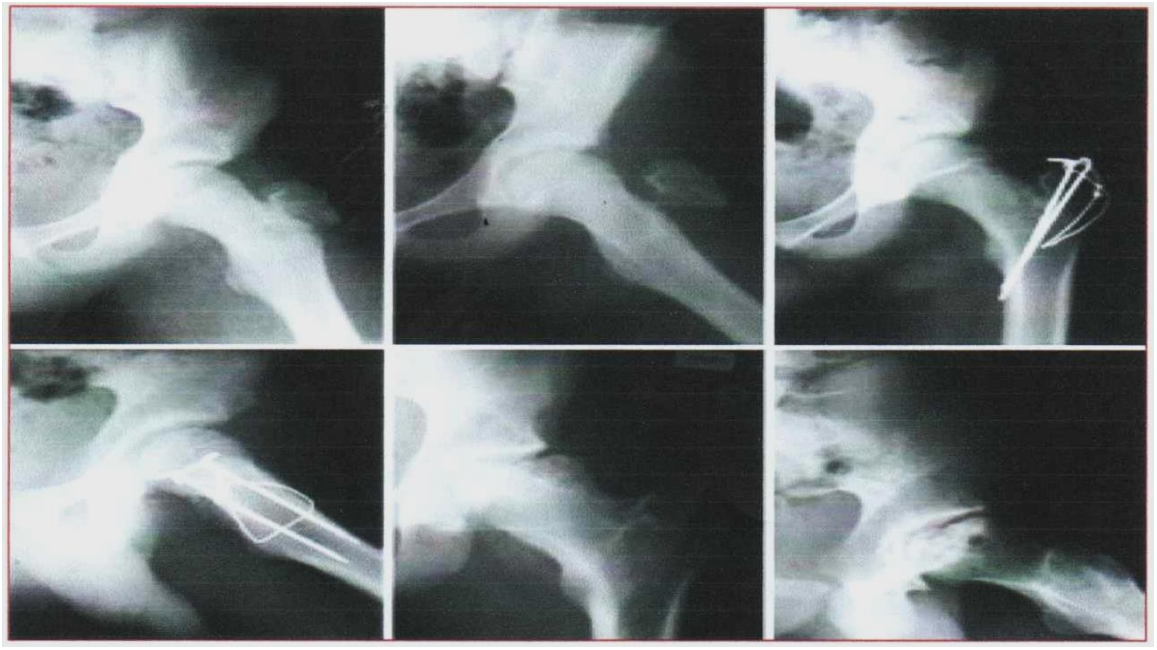

Figure 6: Imaging of a child with a displaced Salter I epiphyseal detachment treated by bracing and whose evolution was marked by necrosis of the femoral head two years later [7]

To date, no consensus has been re-established concerning the management of epiphyseal detachments. Most of the publications are in favor of surgical treatment [10, 11] which should restore the anatomy. The choice of synthesis method depends on the teams. Synthesis by cable-stayed wires and direct screwing [4] of the greater trochanter (figure 7) are the most commonly used.

Figure 7: Postoperative X-ray of a child with a displaced Salter I epiphyseal detachment treated by screwing [4]

Both methods allow compression of the focus after open reduction, the right surgical approach being the minimum possible to reduce the risk of iatrogenic necrosis of the femoral head. Durant *et al.,* [6] report a case of epiphyseal detachment in a 14-year-old young athlete who had conservative treatment, discharge for 45 days; at the end of 18 months, the patient presents no functional impairment.

CONCLUSION

Although it is a rare entity, isolated epiphyseal detachment of the greater trochanter must be seriously managed, given the risk of progression to necrosis of the femoral head. To date, there is no very precise therapeutic consensus; several surgical techniques have been described with the objective of anatomical reduction.

DECLARATION OF INTERESTS

The authors declare that they have no conflicts of interest in relation to this article.

BIBLIOGRAPHY

1. El Hachmi, M., Desmette, D., & Forthomme, J. P. (2010). Non-traumatic avulsion of the greater trochanter: a case report. *Acta Orthop Belg*, *76*(3), 403-6.

2. Chotel, F., Durand, J. M., Sales de Gauzy, J., Pem, R., Garnier, E., & Bérard, J. (2004). Avulsion fractures of the greater trochanter in children: two cases, review of the literature and proposition for a classification. *Revue de Chirurgie Orthopedique et Reparatrice de L'appareil Moteur, 90*(3), 274-279.
3. Kim, S. J., Park, B. M., Yang, K. H., & Kim, D. Y. (1988). Isolated Fractures of the Greater Trochanter Report of 6 Cases. *Yonsei Medical Journal, 29*(4), 379-383.
4. Wood, J. J., Rajput, R., & Ward, A. J. (2005). Avulsion fracture of the greater trochanter of the femur: recommendations for closed reduction of the apophyseal injury. *Injury Extra, 36*(7), 255-258.
5. Linhart, W., Stampfel, O., & Ritter, G. (1984). Post-traumatic femur head necrosis following trochanter fracture. *Zeitschrift fur Orthopadie und Ihre Grenzgebiete, 122*(6), 766-769.
6. Macdonald, D., Mahmood, F., & Allcock, P. (2012). Greater trochanter apophyseal avulsion in the adolescent managed conservatively: a case report of a sporting injury presenting with knee pain. *Injury Extra, 43*(1), 1-3.
7. Wenger, D. (2003, March). The guarded prognosis for greater trochanteric fractures in adolescence. In Orthopaedic Proceedings (Vol. 85, No. SUPP_III, pp. 259-259). *The British Editorial Society of Bone & Joint Surgery*.
8. O'Rourke, M. R., & Weinstein, S. L. (2003). Osteonecrosis following isolated avulsion fracture of the greater trochanter in children: a report of two cases. *JBJS, 85*(10), 2000-2005.
9. Mbubaeghbu, C. E., O'Doherty, D., & Shenolikar, A. (1998). Traumatic apophyseal avulsion of the greater trochanter: case report and review of the literature. *Injury, 29*(8), 647-649.
10. Merlino, A. F., & Nixon, J. E. (1969). Isolated fractures of the greater trochanter. Report of twelve cases. *International Surgery, 52*(2), 117-124.
11. Wood, J. J., Rajput, R., & Ward, A. J. (2005). Avulsion fracture of the greater trochanter of the femur: recommendations for closed reduction of the apophyseal injury. *Injury Extra, 36*(7), 255-258.

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