

TRAUMATIC SEPARATION OF THE UPPER FEMORAL EPIPHYSIS IN A NEONATE

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ABSTRACT

BACKGROUND: Traumatic separation of the upper femoral epiphyses at birth is a rare event. Other terminologies that have been used to describe the injury include traumatic proximal femoral epiphysiolysis and apparent dislocation of the hip. This injury is associated with difficult deliveries.

AIM: To report a case of traumatic separation of the upper femoral epiphysis in a neonate following a caesarean section.

CASE REPORT: A full term infant female was delivered by breech extraction through a caesarean section in 2007. She weighed 4.2kg at birth and her mother was not a known diabetic. Her mother noticed she had reduced movement in her right lower extremity five days after delivery and this necessitated an orthopaedic consultation. After a clinical review a diagnosis of congenital dislocation of the right hip was made. An initial pelvic radiograph was taken and a repeat radiograph taken 3 weeks after delivery showed callus around the neck of the right femur. This indicated a healing traumatic separation of the right upper femoral epiphysis.

CONCLUSION: Traumatic separation of the upper femoral epiphysis in the newborn is an uncommon injury. A high index of suspicion is required as the condition is easily misdiagnosed.

KEYWORDS: Trauma; Epiphysiolysis; Proximal femur; Neonate; Caesarean section

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INTRODUCTION

Traumatic separation of the upper femoral epiphyses at birth is a rare event¹⁻⁴. Other terminologies that have been used to describe the injury include traumatic proximal femoral epiphysiolysis⁵⁻⁹ and apparent dislocation of the hip⁹. This injury is associated with difficult deliveries. It has been associated with breech deliveries, caesarean sections, and internal versions¹⁻⁹. The importance of this injury lies in the fact that it has to be differentiated from dislocation of the hip either traumatic or congenital. In this paper we report a case of traumatic separation of the upper femoral epiphysis in a neonate following a caesarean section.

CASE REPORT

A. E, a full term infant female was delivered by breech extraction through a caesarean section on 24th April 2007 in a private clinic in Port Harcourt. She weighed

4.2kg at birth and was the second child of her parents. Her mother was not a known diabetic.

Her mother noticed she had reduced movement in her right lower extremity five days after delivery and this necessitated an orthopaedic consultation. There was no history of fever nor failure to suck. The child was afebrile, anicteric and not pale. The right lower extremity was abducted, flexed and externally rotated with a shortening of approximately 1.6cm. She had ecchymoses on the lateral aspect of the right leg and foot. The left lower extremity and the rest of the musculoskeletal system were normal. A clinical diagnosis of congenital dislocation of the right hip was made. Radiographs of the pelvis and right leg and foot carried out 6 days after delivery revealed a superolateral displacement of the right proximal femur with normal acetabulum (Figure 1). There was no evidence of fracture in the right leg and foot (Figure 2). A full blood count done was within normal limits. The child was sedated and the right hip manipulated with the thigh in abduction and internal rotation and a hip spica applied. A repeat radiograph taken 3 weeks after

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delivery showed callus around the neck of the right femur. This indicated a healing fracture of the upper femoral epiphysis (Figure 3). Thus a diagnosis of traumatic separation of the right upper femoral epiphysis was made. The cast was afterward removed. However the child was lost to follow up (after one month).

DISCUSSION

Traumatic separation of the upper femoral epiphysis in the neonate as a complication of caesarean section is an uncommon injury. The mechanism of injury is that of hyperextension, abduction and rotation during strong traction as the leg is brought forward^{6,7}. The separation occurs at the growth cartilage⁸. The injury is regarded as a Salter-Harris type 1 injury^{9,10}.

Traumatic separation of the upper femoral epiphysis is not recognized early most times until callus is seen on a radiograph^{1,4,5}. This is mostly due to the fact that it was not considered as a possibility. The more common possibility considered is dislocation of the hip either traumatic or congenital. Although most authors now believe that acute traumatic dislocation does not occur in the newborn^{6-8,11}, some may misdiagnose it as traumatic dislocation if there was difficulty in the course of delivery. Elizalde in his report, indicated that traumatic dislocation of the femur in the neonate is rare but that his two cases were fracture dislocations¹². When considered in totality, the cases were not due to traumatic dislocation of the hip. The more common diagnosis made is congenital dislocation of the hip^{1,6,8}. This was the possibility considered in the index patient until a check radiograph revealed callus in the proximal femur. Another diagnosis that could be considered is septic arthritis of the hip^{2,5,7,9,13}. However there is usually no evidence of infection in traumatic epiphysiolysis as was seen in the index patient.

Even though the condition is easily misdiagnosed, careful consideration may lead to early diagnosis. A history of abnormal presentation, internal version or difficult caesarean delivery or reduced limb movement following delivery is helpful^{1,3,4,6,7}. Additional history of a baby that is large for date is also important⁴. Physical examination finding of a limb that is held still by the child avoiding active movement (pseudoparalysis), thigh which is flexed, abducted and externally rotated with associated shortening of the injured lower extremity should make the clinician consider traumatic separation of the upper femoral epiphysis.^{1,3,4,7,8} A plain pelvic radiograph would show upward and lateral displacement of the proximal femoral shaft with symmetrical development of the acetabulum¹⁻⁴.

Our patient had a difficult delivery (breech extraction through a caesarian section) and was noticed to have reduced movement of the right lower extremity. Her thigh was flexed, abducted and externally rotated with shortening of the right lower extremity. Her plain radiograph showed superolateral displacement of the right proximal femur. Also radiographs of the right leg and foot did not show evidence of fracture although she had ecchymoses on the right leg.

As earlier highlighted, traumatic separation of the upper femoral epiphysis may be easily confused with congenital dislocation of the hip on the first or second day after birth especially if the signs of acute injury are missed^{1,5}. Under such circumstance, other diagnostic measures may be employed. Ultrasound scan, a noninvasive tool would be appropriate^{2,14}. It would reveal a normal position for the femoral head within the acetabulum. However, this was not utilized in this patient. Arthrography especially under fluoroscopic control is useful in confirming the diagnosis.^{1,3,5,7,9}. Arthrography will document the head-acetabular and head-neck relationships^{5,7}. In traumatic epiphysal separation it shows displacement of the epiphysis on the metaphysis⁵. This procedure was not used in the index patient as this was not the initial diagnosis considered for this patient and it was also not available at the moment. Some authors have considered the use of the diagnostic joint aspiration to confirm haemarthrosis especially when it is uncertain^{5,9}. However, this has the risk of introducing infection into the joint.

Various methods of treatment have been recommended. However, it is worthwhile to note that in a number of situations, the diagnosis is made late at which time callus would have formed. The recommended treatments include double nappies⁴, manipulative reduction⁶, traction and cast immobilization^{1,3-6,8,11} and open reduction and pin osteosynthesis especially for severe cases^{5,7}. The rapid healing of fractures and remodelling that occurs in infancy, makes conservative methods of treatment acceptable.

Although the prognosis is generally excellent^{4,5}, some degree of residual coxa vara have been reported^{1,6,8,11}. This is partly due to the delay in diagnosis and treatment had not begun by the time fracture callus appears and the deformity that occurs had become fixed and irreducible¹. Some other workers have reported slight valgus deformity of the neck⁴ rather than varus deformity.

CONCLUSION

Traumatic separation of the upper femoral epiphysis in the newborn is an uncommon injury. The condition can easily be misdiagnosed and therefore a high index of suspicion is required.

Figures



Figure 1. Pelvic radiograph. Shows superolateral displacement of right proximal femur with normal acetabulum



2a

2b

Figure 2 (a and b). Radiograph of right leg and foot. No evidence of fracture in the right leg and foot



3a



3b

Figure 3 (a and b). Repeat pelvic radiograph (a) and a closer view (b). Shows callus around the neck of the right femur.

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