

Unilateral Femoral Fracture in a Low Birth Weight Infant: A Case Report

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Femoral fractures due to birth trauma are an extremely rare but important birth injury.

While vaginal breech delivery, although rare, can cause femur fracture, abdominal breech delivery is not expected to cause fracture.

Here we report on a low birth weight infant who was delivered by cesarean section for breech presentation at 30 1/7 weeks of gestation and sustained a unilateral fracture of the femoral shaft.

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Key words: birth injury, breech presentation, cesarean section, femoral fracture, low birth weight

Introduction

Breech presentation occur in 3% to 5% of all singleton pregnancies¹. The frequency is even higher in singleton preterm deliveries (10% to 15%) and twin pregnancies (25%)¹. Breech presentation is associated with poorer perinatal and neonatal outcomes and is an independent risk factor for a higher neonatal mortality rate².

Birth injuries which occur in fewer than 1% of all live births are more common with breech presentations^{3,4}. Breech fetuses are commonly delivered via cesarean section to prevent trauma and decrease the risk of head entrapment⁵. Femoral fractures due to birth trauma, although extremely rare, can occur during cesarean section⁶.

Here, we report a case of a low birth weight infant who was delivered by cesarean section for breech presentation at 30 1/7 weeks of gestation and sustained a unilateral fracture of femoral shaft.

Case Report

A healthy 33-year-old multiparous woman was admitted to our hospital for preterm labor at 30 1/7 weeks' gestation. She had previously undergone cesarean section and was determined to perform cesarean section because of breech presentation.

A lower segment transverse cesarean section was performed, and a 1,410 g female neonate was delivered with Apgar scores of 4 and 7 at 1 and 5 minutes, respectively.

Because the neonate showed whole-body cyanosis and weak crying, we performed intubation and admitted her to the neonatal intensive care unit. A whole-body radiograph revealed a fracture of the left femoral shaft, of which the proximal portion was anteriorly displaced (**Fig. 1a**).

The department of orthopedic surgery was consulted, and the neonate underwent reduction and splint application.

The fracture had completely healed after 8 weeks (**Fig. 1b**).

Discussion

Breech presentation, which occurs in 3% to 4% of deliveries, is a risk factor for perinatal mortality and morbidity⁵. Large population-based and case-control studies have shown significant reductions in perinatal and infant mortality with planned cesarean section in term breech pregnancy⁵. cesarean section decreases the risk of head entrapment but can still result in long-bone trauma⁷.

The incidence of fetal injury at C/S delivery is 1.1%⁸. The most common injury is skin laceration, which accounts for 64% of injuries⁸. The other types of injury include cephalohematoma, clavicle fracture, facial nerve palsy, brachial plexus injury, intracranial hemorrhage, and long-bone fracture⁸.

Femoral fracture is thought to be induced by several factors: high fetal weight, prematurity, intrauterine

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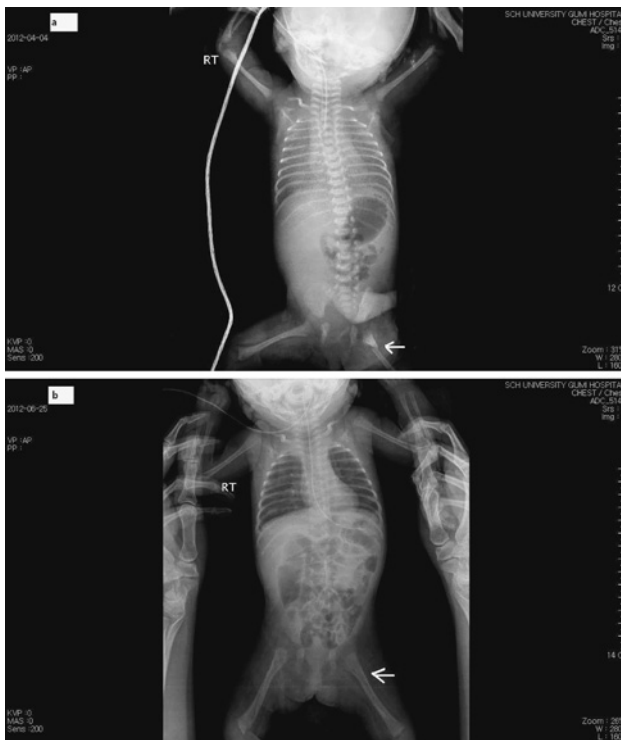


Fig. 1 (a) An X-ray film of the left femur fracture of the newborn (1 day after birth). (b) After 8 weeks later, healing of fracture is observed.

growth retardation, twin pregnancy, breech presentation, leiomyoma of uterus, and inadequate uterine relaxation⁵. Fetal osteoporosis and disease resulting in bone fragility and fracture may cause femoral fracture⁵. In our case, we delivered a 1,410 g female neonate at 30 1/7 weeks' gestation, and prematurity may have caused the femoral fracture.

If none of these possible factors in femoral fracture are present, the obstetrician's technique becomes important and should be examined. In the case of breech presentation, abdominal and vaginal delivery maneuvers are similar. Forced obstetric maneuvers, such as excessive stretching of the legs and bending the femurs during the delivery of the head, may cause trauma and lead to fractures⁵.

During cesarean section, a lower segmental transverse incision of the uterus might be insufficient and necessitate vertical incision⁵. This vertical incision might cause less force to be applied, especially in the delivery of the fetus's head. In a recent report, no difference in the uterine incision to delivery interval or the rate of neonatal complications was seen between vertical and transverse incisions⁹.

We believe, however, that performing an inverted T-incision at the time of C/S is sometimes necessary, al-

though not for breech presentation. Making a vertical uterine incision only to facilitate a more rapid and safe delivery is not justified⁹.

The early detection of a femur fracture is important. However, in the present case we did not detect the femoral injury during the immediate postnatal examination. We found the unilateral femoral fracture unexpectedly on a whole-body radiograph. The sound of a "crack" may be an important clinical sign for the early detection of femur fracture, but hearing such a "crack" is difficult during the surgery¹⁰.

The fracture in the present case was treated through traction and splint application. Femoral fractures typically take 4 weeks to heal. In our case, complete wound healing was confirmed with clinical and radiologic findings 8 weeks after diagnosis.

In conclusion, femoral fractures resulting from breech delivery during cesarean section are rare. We have suggested several ideas for preventing and diagnosing femoral fractures resulting from breech delivery during cesarean section.

First, when performing cesarean section for breech presentation, a larger incision should be made. Second, after neonate is delivered in breech presentation, a whole-body radiograph must be obtained, even in the absence of abnormal signs.

Conflict of Interest: The authors declare that there are no conflicts of interest.

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