

CASE REPORT

Long Bone Fractures in Extreme Low Birth Weight Infants at Birth: Obstetrical Considerations.

INÉS E. GARCÍA GARCÍA, MD*; ALBERTO DE LA VEGA, MD†; LOURDES GARCÍA FRAGOSO, MD*

Background. Cesarean section is a common delivery route for breech fetuses <1000 gm to prevent trauma. However, abdominal and vaginal delivery maneuvers are similar. Cesarean section avoids the risk of head entrapment but long bone trauma can still occur.

Cases. We identified three neonates with femoral fractures during a one year period. All mothers were in active labor. All were premature newborns less than 32 weeks gestation, in breech presentation and delivered by a low vertical cesarean section. Review of all cesarean

sections done due to mal presentation (n=26) during that time showed 11 classic and 15 lower segment vertical incisions (both vertical and transverse).

Conclusions. The interest to reduce maternal morbidity may prompt physicians to perform a low segment vertical incision for delivery of a preterm breech. This decision may increase the chances of trauma by providing less area for the required obstetric maneuvers.

Key words: Preterm, Cesarean section, Breech, Long bone fractures

Fetal fractures of the long bones during obstetrical procedures are uncommon in the absence of bone disease, the reported incidence is less than 0.1% (1). When obstetrical trauma is the etiology, the most common finding is difficult breech vaginal delivery (usually that of a large fetus) or obstetrical maneuvers, such as difficult internal podalic extraction (1-3). Cesarean section of the low birth weight fetus in breech presentation is a common treatment option to reduce the risk of head entrapment (4). Most cesarean sections done due to preterm breech are urgent in nature, since the patient is usually in preterm labor at the time of procedure. Hence to distinguish between emergency and non-emergency cases to decide which should be done a classical or lower segment incision is of no practical value. A classical uterine incision provides ample space for maneuvering the breech. However, the obstetrician often performs a low segment incision in an attempt to reduce potential maternal morbidity.

Case 1.

A 36 year-old multiparous woman with a history of chronic hypertension was admitted for treatment at 31 weeks pregnancy due to uncontrolled high blood pressure. Severe oligohydramnios and breech presentation were identified on sonographic evaluation and repetitive fetal heart rate decelerations were identified on admission. Termination of pregnancy was accomplished by cesarean section (low vertical incision) under general anesthesia. A 925 gm. male newborn with Apgar score of 2/3/8 at one, five and ten minutes respectively, was delivered and admitted to the Neonatal Intensive Care Unit. Upon birth, a left proximal femoral fracture with overriding fragments was identified. Immobilization and later traction were applied with good results. Serum calcium, phosphates and alkaline phosphatase were normal with no evidence of metabolic or skeletal disorders (Figure 1).

Case 2.

A 25 years-old multiparous woman in her 27th week of gestation was admitted in preterm labor and breech presentation. Prior to the onset of tocolytic treatment, repetitive fetal heart rate decelerations and tachycardia were documented. A cesarean section (low vertical incision) was performed and an 850 gm. female with an Apgar score of 2/5/7 at one, five and ten minutes respectively was delivered. Upon birth, an overriding

From the *Department of Pediatrics, Neonatology Section and the †Department of Obstetrics and Gynecology, Medical Sciences Campus, University of Puerto Rico

Address for correspondence: Inés E. García, MD, Department of Pediatrics, Neonatology Section, Medical Sciences Campus, PO Box 365067, San Juan, Puerto Rico 00936-5067. Tel: (787) 777-3225, Fax: (787) 758-5307 e-mail: njcu@coqui.net

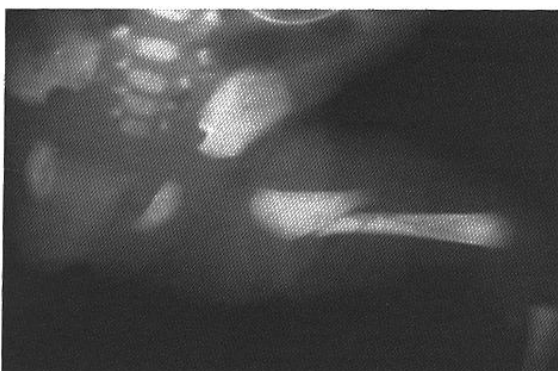


Figure 1. Femoral fracture in a preterm newborn

displaced fracture of the proximal aspect of the femoral shaft was identified. Serum studies showed no evidence of metabolic or skeletal disease. Immobilization of the extremity was performed, but at one month of age x-rays showed a mal-union of the mid femoral fracture with bony callus formation and valgus angulation, requiring further treatment.

Case 3.

An 18 year-old multiparous woman in her 26th week of gestation was admitted in preterm labor and breech presentation was detected upon admission. Persistent fetal bradycardia and vaginal bleeding secondary to placental abruption were documented shortly after admission requiring an emergency cesarean section (low vertical incision). An 875 gm. female with an Apgar score of 4/5/8 at one, five and ten minutes respectively was delivered. Upon birth, a displaced fracture of the proximal femoral shaft was identified and immobilization of the extremity was performed. Serum studies showed no evidence of metabolic or skeletal disorders. X-rays performed at one month of age confirmed a proximal femoral shaft fracture with bony callus formation and periosteal reaction.

We identified three cases of long bone fractures in extreme low birth weight premature newborns. All cases occurred from February 1997 to February 1998 and were delivered by different obstetricians. In none of the cases was the breech beyond 0 station. Although cesarean section was urgent in all cases, none was judged as traumatic by the obstetrician in charge. During the same period of time, we delivered a total of 166 singletons weighing less than 2000 gm. and 26 of them (15.6%) were delivered by cesarean section due to malpresentation. Review of this group showed that in 11 cases a classic uterine incision was performed while in 15 cases a low

vertical incision was used. The reasons for choosing a particular type of incision over the other was an individual, arbitrary decision by the surgeon. There were no long bone fractures among newborns with birth weight less than 2000 gm. delivered vaginally during this period of time.

Discussion

Fetal fractures of the long bones are a rare event and have been mostly associated with delivery of large (macrosomic) fetuses. The finding of three cases of femoral fracture among preterm fetuses is therefore noteworthy. The common factor among these cases is the performance of a lower uterine vertical incision for delivery of a breech fetus of less than 1000 gm. under emergency conditions. Prior studies have shown the benefits of cesarean section delivery of fetuses less than 1000 gm. in breech presentation, specially to reduce trauma and morbidity associated with cephalic entrapment (4). For this reason, cesarean section delivery is frequently selected in these cases. However, the maneuvers necessary for delivery of the breech abdominally are very similar to those required for vaginal delivery; therefore, an ample incision is necessary to facilitate delivery and avoid trauma.

Many obstetricians may initially perform a low vertical incision involving only the lower uterine segment. These incisions bleed less, are easier to repair, provide a lesser risk for uterine rupture and can always be extended into the uterine fundus if more space for maneuvering is needed. However, the lower uterine segment is frequently small or underdeveloped in pregnancies less than 32 weeks providing a very limited space for delivery of the breech. The initial efforts in delivering the preterm breech may be enough to cause trauma to the long bones even if the incision is later extended. Waiting until difficulties in delivery arise, before extension of the incision, may not be a wise decision since trauma may have already occurred at that time.

In order to minimize the potential trauma of breech delivery in pregnancies less than 32 weeks of gestation, a classical cesarean section should be considered the appropriate procedure and not be substituted by lower segment incision. After reviewing these cases, no more traumatic fractures in newborns have been reported in our institution.

Resumen

El nacimiento por cesárea es común en fetos menores de 1,000 gramos de peso con malposición para prevenir el trauma obstétrico. Sin embargo, las maniobras son

similares en los partos abdominales y vaginales. El parto por vía cesárea previene el riesgo de atrapamiento de la cabeza, pero el riesgo de trauma a huesos largos persiste. Se identificaron tres recién nacidos con fracturas femorales durante un periodo de un año, cuyas madres estaban de parto activo. Todos los recién nacidos eran prematuros con edad gestacional menor a las 32 semanas, con malposición y nacidos por cesárea con incisión vertical baja. Una revisión de todos los partos por cesárea debido a la malposición fetal (n=26) durante ese periodo de tiempo demostró 11 incisiones clásicas y 15 incisiones verticales en el segmento inferior. El interés del obstetra en reducir la morbilidad materna promueve el uso de la incisión vertical del segmento inferior uterino para el parto de un prematuro

con malposición fetal. Esta decisión puede aumentar las probabilidades de trauma fetal debido a que provee menos área para las maniobras obstétricas requeridas.

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