



Pennsylvania Patient Safety Reporting System

# Patient Safety Advisory

Produced by ECRI & ISMP under contract to the Pennsylvania Patient Safety Authority

## Fetal Lacerations Associated with Cesarean Section

PA-PSRS has received a number of reports of a complication during delivery that may be prevented or substantially reduced: fetal lacerations associated with Cesarean section (C-section). While approximately half of the reports of this type of occurrence are reported under Event Type F.5.d. (neonatal complication, birth injury or trauma), the remainder are classified under other Event Types.

### Incidence in Reporting

While most of the lacerations reported to date have been superficial, some have required suturing and/or plastic surgery intervention. This occurrence has been reported by at least 20 facilities, ranging from university medical centers to small community hospitals. Consistent with the clinical literature, approximately 70% of the lacerations occurred on the face, head, and ear. Approximately 20% of the lacerations occurred below the waist (buttocks, leg, ankle), while 10% were on the back. Emergency C-sections were documented in 20% of the reports.

### Background

A range of incidence rates for this complication exists in the clinical literature. In studies involving a review of nearly 900 C-sections, the rate of fetal laceration injury ranged from 1.5% to 1.9%.<sup>1,2</sup> However, in one larger study involving over 2,000 C-sections, the incidence of fetal laceration was 0.74%.<sup>3</sup> One study indicated that a non-vertex presentation was associated with a 6% fetal laceration rate.<sup>1</sup> However, this factor was not found to be statistically significant in other studies.<sup>2-4</sup>

Risk factors associated with increased risk for neonatal laceration identified in the literature include:<sup>3-5</sup>

- Ruptured membranes prior to C-section
- Low transverse uterine incision
- Active labor
- Emergent/urgent C-section
- Inexperience of the surgeon or resident

### Prevention Strategies

Several interventions may reduce the risk of this injury, including use of blunt instrumentation, moving the uterine wall away from the fetus prior to incision, and removing abdominal wall retractors prior to delivery.

A common prevention strategy involves blunt entry into the uterine cavity. Blunt entry can be done using fingers or blunt-ended or bandage scissors. For example, scoring the uterus with a scalpel along the length of the proposed incision, the uterine cavity is then entered bluntly by inserting fingers into the central portion of the incision and moving the fingers in both directions laterally.<sup>5</sup>

The use of blunt-ended or bandage scissors is a generally recognized good practice.<sup>1,4</sup> Other forms of instrumentation require greater evaluation before they can be suggested for widespread use. Ishii and Endo<sup>6</sup> describe a serrated, blunt-edged scalpel that splits uterine muscle fibers to open the uterus but does not penetrate the uterine wall. Hulbert<sup>8</sup> claims to have prevented neonatal lacerations by scoring with a scalpel to begin the incision and using a pean clamp to enter the uterus. The incision is continued either bluntly or with blunt-edged scissors.

Another method involves moving the uterine wall away from the fetus prior to incision. For example, forceps or Allis clamps are used to grasp the lateral edges of the uterine incision, to elevate the incision from the fetal presenting part. Then bandage scissors can be used to complete uterine entry.<sup>1,6</sup> In addition, if the direction of the cutting action occurs from within the uterine cavity outward, the fetus may be less likely to be cut.<sup>7</sup>

Removing abdominal wall retractors prior to delivery of the fetus may also reduce laceration risk.<sup>1,5</sup> Frequent, thorough suctioning at the time of entering the uterus increases visibility.<sup>2</sup> Seeing the presenting fetal tissue, such as hair in non-vertex presentations,<sup>1</sup> may help the surgeon to avoid that area

This article is reprinted from the *PA-PSRS Patient Safety Advisory*, Vol. 1, No. 4—December 2004. The Advisory is a publication of the Pennsylvania Patient Safety Authority, produced by ECRI & ISMP under contract to the Authority as part of the Pennsylvania Patient Safety Reporting System (PA-PSRS).

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## Fetal Lacerations Associated with Cesarean Section (Continued)

when using sharp instrumentation.

### Additional Considerations

Timely reporting and documentation of this occurrence may facilitate quality improvement. Several studies reveal an incidental finding during reviews of C-section records: documentation of fetal laceration injuries was poor.<sup>1-3</sup> A minority of obstetric records contained documentation when such lacerations occurred. The exact location and dimension of the injury often was not specified. Treatment was rarely described, and documentation was lacking concerning notification of/discussion with the parents concerning the injury. It is possible that such injuries may not be identified at the time of delivery and, therefore, may not be recognized by obstetricians.

Heightening awareness of staff to this complication may reduce the risk of injury. Interventions such as including prevention strategies in emergency C-section drills and providing blunt instrumentation in all C-section kits may help to mitigate risk. Documenting review of this occurrence prior to leaving the delivery room might be incorporated into an existing standardized checklist. Routine disclosure of this complication can be incorporated into the informed consent process for patients that are about to undergo C-section.<sup>1-3,5</sup> Knowledge of this risk, particularly in situations where risk factors are present or elective C-section is being considered may help patients make more informed decisions concerning the delivery and the well being of the infant.

### Notes

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