

Short communication**Fetal Laceration Injury During Cesarean Delivery***M. Asgharnia MD*, N. Esmailpour MD****ABSTRACT**

Background: The rate of cesarean delivery has increased in last decade, whereas it has some complications. This study was conducted to determine the incidence of fetal laceration injury in cesarean delivery in Al-Zahara teaching maternity hospital (Rasht, June1999-October2000).

Methods: It was a retrospective study using records of all neonates delivered by cesarean section during a 16 months period in Al-Zahara teaching maternity hospital. Maternal and neonatal records were reviewed in those cases with documented fetal laceration injuries. Lacerated and non-lacerated neonates were compared for maternal and neonatal characteristics.

Results: There were 21 lacerated neonates (approximately %0. 4) out of 5289 neonates delivered by cesarean section during the study period. The incidence of laceration appeared to be higher in breech presentation and fetal distress when the indication of cesarean was considered (1.1% and 1%; p=0.045 and p=0.0026, respectively).

Conclusion: Fetal laceration injury is a rare complication of cesarean delivery in cases of breech presentation and fetal distress.

Keywords: cesarean, fetal injury, laceration

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The rate of cesarean delivery has increased in last decade ¹. Cesarean is performed in more than one third of all deliveries in Guilan Province. Cesarean delivery has some complications such as infectious morbidity, transfusion, and prolonged hospitalization ². Fetal laceration injury in cesarean delivery is reported rarely in many textbooks. Incidence of this complication was 1.9% in one report in the United States of America, and non-vertex indication for cesarean is reported as a risk factor ⁴. Rapture of membranes, and level of the operator expertness were reported as risk factors, too ⁵. Also there are some reports about uterus laboring ⁶.

Fetal laceration injury and its associated factors are not reported in Iran. Also there isn't any other report about incidence of this complication in other practices. We studied the frequency of Fetal laceration injury in obstetri-

cians practices in only Teaching Maternity Center in Guilan province in north of Iran.

Subjects and Methods

We carried out a retrospective study on all neonates delivered by cesarean sections between June 1999 and October 2000. The study population consisted of all pregnant women referred for deliveris to the Al-Zahra Teaching Maternity Center, Rasht. Neonatal records were reviewed completely for any document of Fetal laceration injuries: assessment by nurse for laceration after transferring to neonatal ward; admission and discharge notes written by pediatricians; and discharge summaries. If a neonate record indicated that a laceration injury was present, the maternal record was reviewed. The obstetric record, subsequent daily

*Assistant Professor, Guilan University of Medical Sciences, Rasht, Iran.

Correspondence to: Dr. M.Asgharnia, Al-Zahra Teaching Maternity hospital, Rasht, Iran.
E-mail: m_asgharnia@yahoo.com

record, and discharge summaries were reviewed for any document. Other data including indication for cesarean, type of presentation, fetal distress, CPD, thick meconium, and failure to progress were obtained. All of cesareans had been performed by senior residents, under supervision of attending physicians with low midline incisions. For data analysis, we used SPSS software and t-student, chi-square, and Fisher's exact tests were used for analysing the comparisons, supposing $\alpha=0.05$.

Results

5289 neonates were born by cesarean deliveries during the study period. Twenty-one neonates were lacerated. Incidence of laceration was approximately 0.4%. Lacerations were located at

head and face in 16 cases (67%), buttock and thigh in 4 cases (19%) and, foot in 1 case (5%). The laceration were noted in 1 (5%) of operation records, 81 (38%) of operation room nurse notes, 11 (52%) of Apgar score sheets, and 6 (29%) of pediatrician notes. Laceration in 5 neonates were sutured. Other neonates were managed only by dressing.

In breech presentation cases the laceration rate was more than in vertex presentation cases (Fisher's exact test, $p=0.045$). There was a higher proportion of female lacerated neonates than males (Fisher's exact test, $p=0.011$). Breech presentation cases showed statistically difference in affecting laceration, than vertex presentation cases (Mantel Heinsel chi-square test, $p=0.0026$).

Table 1. Major findings of our study.

descriptions	lacerated neonates n=21	non lacerated neonates n=5268
csarean indications		
breech presentation	4(1.1%)	345
Previous cesarean sections	3(0.2%)	1248
fetal distress	8(1.0%)	701
CPD	3(0.5%)	600
thick meconium	2(0.2%)	802
failure to progress	1(0.1%)	632
others	0(0%)	940
vertex presentations	17	4923

Table 2. Some maternal features in study population.

maternal features	lacerated neonates n=21	non-lacerated neonates n=5268	level of significance
cervical dilations Mean (SD)	3.7(1.8) cm.	3.3(2.1)cm.	NS*
cervical effacements Mean (SD)	42(16)%	42(25)%	NS*
maternal age Mean (SD)	24.5(4.2) years	26.1(5.5) years	NS*

* two tailed t-test, $p>0.05$ = Non-significant

Table 3. Some fetal features in studied neonates.

fetal features	lacerated neonates n=21	non-lacerated neonates n=5268	level of significance
gestational age Mean (SD)	39.6(1.6) weeks	35.8(2.3) weeks	NS*
birth weight Mean (SD)	3207(580)grams	3360(568)grams	NS*

* two tailed t-test, $p > 0.05$ = Non-significant

Discussion

In this study we found fetal laceration in cesarean delivery lower than 1%, perhaps because lacerations have not been recognized or recorded by obstetricians. Hass and Ayres (6) have reported fetal laceration during cesarean deliveries about 0.74%, but the cesareans rate in their patients was 16.5%, and this is a different population than our studied one. This is a low rate, but because of iatrogenic causation, it remains an important complication both for mothers and physicians. Fetal laceration isn't a severe or fatal illness¹, however each possible outcome can affect on decision-making procedure by its probability of occurrence, severity, disability, and mortality. It is necessary to get an informed consent from all patients undergoing cesarean in which such complication is mentioned. Fetal laceration during cesarean delivery is more frequent in breech presentation. In our study, we found a significant difference ($p=0.045$) between fetal lacerations in breech and vertex presentations. In cephalic presentation the first organ of fetus which is exposed during cesarean is fetal head, covered by hair and fetal tissue is and so better identified². Knowing high rate of fetal laceration during cesarean delivery in non vertex presentations, is important for judgments in all cesarean sections before performing procedures. In breech presentation, lower part of body are susceptible to laceration by surgeon during the transaction of uterine wall⁴. We found a significant difference ($p=0.0026$) in fetal laceration related distress. Some authors reported distress as a risk factor for fetal laceration during cesarean delivery; perhaps because of differences in studied populations⁶. In our teaching

center there is a high rate of cesareans performed (about 46%), whereas it is reported 16.5%, only in article which has reported fetal lacerations related distress. Also surgeons may perform the cesarean faster when for distressed fetus and this hurry- scurry can predispose the fetus to laceration.

We found a relationship between rate of fetal lacerations and fetal gender (higher in females than males, $P=0.011$) but there was no significant relation of laceration and premature rupture of membranes. Hass et al have reported male gender and premature rupture of membranes as risk factors for fetal lacerations during cesarean deliveries. Our finding are similar to Smith et al results who reported a high percent (6%) of fetal lacerations related to non-vertex presentations⁵. The laceration was assumed to have been made during cesarean delivery since the neonates nurse observation was made immediately after cesarean. It is interesting to note that the laceration was indicated only in one operation note that was written by obstetrician. Most likely the obstetricians did not notice the lacerations at the time of delivery. It also may be due to obstetricians' interest not to record this complication or incomplete examination of neonates after cesarean. Neonatal ward nurses have more time to observe neonates during transferring them. pediatricians only noted lacerations that they have sutured. Fetal laceration at delivery also has been indicated by Smith⁵. There are few published studies about risks of fetal laceration. Incidence of fetal laceration estimated as 1/9% of 90 cesarean deliveries by Smith and coworkers⁵. But they have conducted a retrospective study and underestimation is common in this type of studies, although their es-

timation was greater than ours. This difference can be due to effect of cultural sensitivity on obstetricians practice and indication of laceration or differences in detection accuracy. Relation of breech presentation and high rate of fetal laceration is shown in previous study⁵ but this is not true for fetal distress in two other studies^{4,5} and in our study. These may be due to differences in practice of surgeons when interfacing with fetal distress.

Finally, for reducing fetal injuries we suggest that while entering to abdominal cavity

and exposing uterine peritoneum, suction apparatus should be accessible for suctioning incision area and better observing the procedure. Also it is needed to identify the uterine labor phase and incision area should be decided according uterine labor phase. It is necessary for all cesarean procedures that exact cesarean indications, fetal presentation, fetal distress, and labor phase be established, and the patient relatives must be informed about possible outcomes.

References

1. Phelan Jp, Clark SL. *Cesarean delivery*. 2nd edition. New York: Elsevier; 1988,pp210-8.
2. Clark SL. *Cesarean section*. In: Hankins GDV, Clark SL et al Editors. *Operative obstetrics*. Norwalk: Appleton and Lange; 1995,pp301-32.
3. Abuhamad A, O'Sullivan MJ. *Operative technique for cesarean section*. In: Plauche WC, Morrison JC, O'Sullivan MJ, eds. *Surgical obstetrics*. Philadelphia: W.B. Saunders;1992.
4. Gerber AH. *Accidental incision of the fetus during cesarean section delivery*. *Int J Gynaecol Obstet* 1974;12: 46-8.
5. Smith JF, Hernandez C, Wax JR. *Fetal laceration injury at cesarean delivery*.*Obstet Gynecol* 1997 Sep;90(3):344-6.
6. Haas DM, Ayres AW. *Laceration injury at cesarean section*. *J Matern Fetal Neonatal Med* 2002 Mar;11(3):196-8.