



## Trauma-induced delivery: A case report



Ryan D. Brown\*, Coralee Toal, Sarah Mashburn, Paige Pasquali

University of Oklahoma, College of Medicine, Oklahoma City, OK, United States

### A B S T R A C T

The term “birth trauma” is one that is well ingrained into the lexicon of medical providers. There is ample information of the types of injuries that are incurred during the birth process. However, there is no uniformed term for the process of an unforeseen act that leads to a precipitous birth. We would like to show a case report of such an act. The infant's injuries were sustained while in utero and the trauma induced a medical team to deliver the infant due to non-reassuring heart tones. Also, we would like to introduce the term of “trauma-induced delivery” into the medical literature as a way to describe similar types of deliveries that are influenced by factors related to physical forces applied to the mother's body, either intentional or unintentional.

### 1. Case Report

The mother is a 20-year-old G2P1 who has a past medical history of hypertension, type 2 diabetes, and depression. The mother was involved in a motor vehicle accident when the car that she was a front seat unrestrained passenger struck a wall. At the time of the accident, the mother was at 40 weeks gestation. Upon arrival to the local tertiary trauma center, the mother was noted to have a broken ankle as well as nonreassuring fetal heart tones with no variability on a category II strip. The mother was taken to the operating room for an emergent repeat low transverse C-section. The mother had artificial rupture of membranes with thick meconium present. The fetus was in vertex presentation at the time of delivery. A female infant was delivered with APGARs of 9 and 9 at 1 and 5 min, respectively. No suctioning was performed. Birth weight was 3620 g (61% percentile).

Upon physical examination, the infant was noted to have left sided facial swelling and decerebrate posturing and hypertonia and loss of gag and suck reflex.

The infant was noted to have increasing head circumference, and so a head CT was performed revealing acute diffuse subarachnoid hemorrhage in the left cerebral hemisphere with left parasagittal frontal lobe parenchymal hemorrhage with intraventricular hemorrhage. Also noted was a falcatentorial subdural hemorrhage. There was also loss of gray-white matter differentiation, but no signs of hydrocephalus. Also noted was a left parietal bone fracture extending towards the calvarial vertex and an additional smaller fracture extending anteriorly to the coronal suture. An additional fracture at the vertex involving the right parietal bone opposite of the larger fracture on the left side was found.

The patient was transferred to the neonatal intensive care unit

(NICU) where the patient suffered seizures and hypoxia. The patient was intubated and started on antiepileptic medication. Retinal examination revealed only one small retinal hemorrhage on the right with normal appearing optic nerves bilaterally. The infant spent 15 days in the NICU and was discharge home on room air and oral feeds along with oral antiepileptic medications.

### 2. Discussion

Birth trauma is a term used to denote injury that is incurred by the delivered infant during the birthing process. Trauma at the time of birth is relatively low. It accounts for about 2% of all deliveries [1]. However, in our case report, the trauma that was sustained to the fetus was actually inflicted prior to labor starting, and in fact lead to precipitous labor. The authors would like to introduce the term, “trauma induced birth” into the literature to focus on these types of cases.

Injuries to pregnant women that occur from trauma can be deadly to both mother and fetus. In the United States alone, the leading cause of nonobstetric maternal deaths has been from trauma [2]. Trauma can affect more births than actual birth trauma. Around 7% of all pregnancies may have been affected by a traumatic event [3,4].

The developing fetus is protected while still in utero. The fetus lies in the amniotic sac surrounded by the thick uterine wall, which resides inside the maternal lower abdomen. However, as the pregnancy continues, the amniotic fluid levels begin to drop as the fetus now moves into the pelvis. If the trauma event leads to a fracture of the maternal pelvis, a fetal head injury can occur [5].

Despite the fact that pelvic fractures can lead to fetal demise and injury, the most common cause of fetal mortality secondary to trauma

\* Corresponding author at: University of Oklahoma, College of Medicine, 940 NE 13th Street, 2G-2300, Oklahoma City, OK 73104, United States.  
E-mail address: [Ryan-Brown@ouhsc.edu](mailto:Ryan-Brown@ouhsc.edu) (R.D. Brown).

induced onto the mother is placental abruption. One study calculated the rate of fetal deaths due to abruption was about 2.3 per 100,000 live births [6].

Trauma can come in many different forms. Motor vehicle accidents, domestic violence, falls, and self-inflicted harm have all been shown to be a form of trauma onto the mother [7]. Despite the type of trauma induced, nearly 1 out of every 12 pregnancies is affected in some way by trauma [8].

In closing, birth related trauma could be a result of actual birthing process. The purpose of the case report is to heighten awareness of external trauma on the developing fetus and to bring to light the seriousness of such trauma on the maternal's life as well. It is also to introduce the term “trauma-induced delivery” into the medical vocabulary to describe cases where the external trauma leads to the precipitous delivery of a fetus. Trauma that is received by the pregnant female, whether that trauma is accidental or not, and whether that surviving fetus is affected or not, trauma induced births should and must be taken seriously.

## Conflicts of Interest

None.

## References

- [1] T.F. Baskett, V.M. Allen, C.M. O'Connell, et al., Fetal trauma in term pregnancy, *Am. J. Obstet. Gynecol.* 197 (499) (2007) (e1-499.e7).
- [2] J. Fildes, L. Reed, N. Jones, M. Martin, J. Barrett, Trauma: the leading cause of maternal death, *J. Trauma* 32 (1992) 643–645.
- [3] H.B. Weiss, B. Lawrence, T. Miller, Prevalence and risk of hospitalized pregnant occupants in car crashes, *Annu. Proc. Assoc. Adv. Automot. Med.* 46 (2002) 355–366.
- [4] S.M. Dobo, V.S. Johnson, Evaluation and care of the pregnant patient with minor trauma, *Emergenza* (2000) 1–24.
- [5] L. Breysem, V. Cossey, E. Mussen, P. Demaerel, W. Van de Voorde, M. Smet, Fetal trauma: brain imaging in four neonates, *Eur. Radiol.* 14 (2004) 1609–1614.
- [6] K.H. Shah, R.K. Simons, T. Holbrook, D. Fortlage, R.J. Winchell, D.B. Hoyt, Trauma in pregnancy: maternal and fetal outcomes, *J. Trauma* 45 (1998) 83–86.
- [7] H. Mendez-Figueroa, D. Dahlke, R. Vrees, D. Rouse, Trauma in pregnancy: an updated systematic review, *AJOG* 209 (2013) 1–10.
- [8] C.C. Hill, J. Pickinpaugh, Trauma and surgical emergencies in the obstetric patient, *Surg. Clin. North Am.* 88 (2008) 421–440.