

## Citation

Davies JM : Anesthesia Malpractice Claims for Newborn Brain Injury in the 1990s. *ASA Newsletter* 70(6): 14-16, 2006.

## Full Text

In 1862, William Little, an orthopedic surgeon, perpetuated the concept that peripartum asphyxia and birth trauma were two of the primary causes of cerebral palsy (CP).<sup>1</sup> Despite Sigmund Freud's opposing view that abnormal antenatal development was responsible, for more than 100 years peripartum asphyxia has been thought to be responsible for most cases of cerebral palsy.<sup>2</sup> To date, the cause of most cases of newborn brain injury cannot be determined, and yet this age-old belief continues to make obstetricians and anesthesiologists vulnerable to litigation. Litigation for newborn brain injury, particularly CP, is frequently based on emotional suffering of the patient and family rather than evidence of harm.<sup>3</sup> We analyzed claims for newborn brain injury from the ASA Closed Claims Project database, looking at factors that possibly contributed to the neonatal and liability outcome.

## Claims for Newborn Brain Injury

The ASA Closed Claims Project database contains standardized summary data on closed anesthesia malpractice claims from 35 insurance companies throughout the United States. Obstetric anesthesia claims make up 12 percent (850) of the total 6,894 claims to date, and of these, 18 percent involve newborn brain injury. There has been a significant decrease in the proportion of claims for newborn brain injury from the 1980s (22 percent) to the 1990s (13 percent) ( $p < 0.05$ ). From 1990 to 2000, the diagnosis of CP was documented in 19 of the 48 newborn brain injury claims (40 percent). Cesarean section was the mode of delivery in 80 percent of newborn brain injury claims, with 79 percent of these being urgent or emergent.

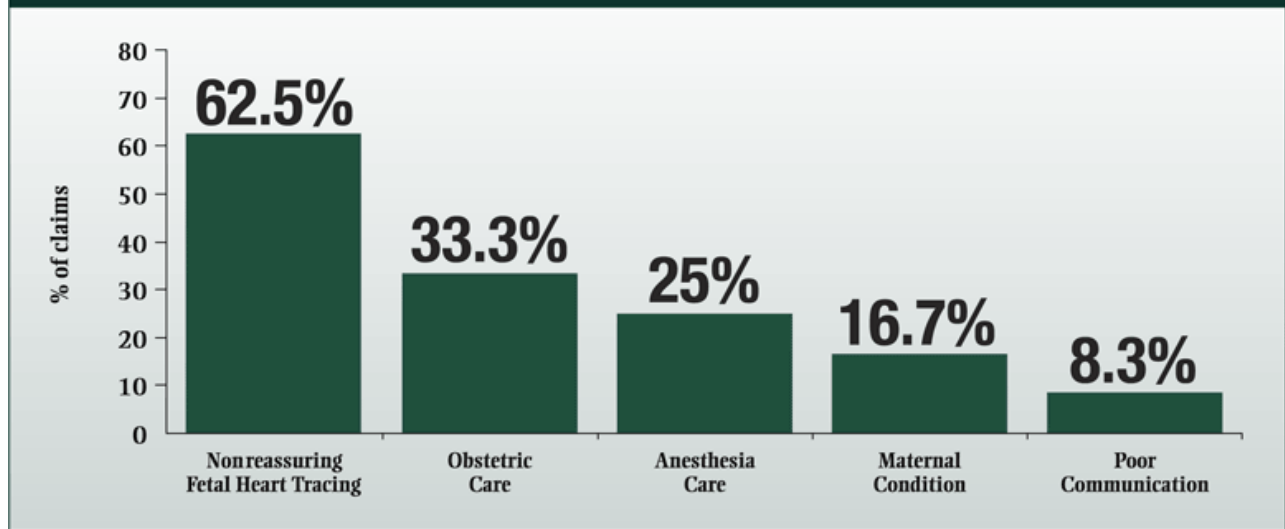
## Possible Causative Factors: Newborn Brain Injury 1990-2000

Claims for newborn brain injury were reassessed to evaluate the possible contribution of anesthesia and obstetric care to the outcome. Claim narratives also were reviewed for the mention of maternal, fetal or delivery factors that might have contributed to poor outcome. The most consistent factor was a nonreassuring fetal heart tracing, which was documented in more than 60 percent of newborn brain injury claims [Figure 1]. In less than one-third of newborn brain injury claims, we determined that anesthesia care may have contributed to fetal outcome, while maternal condition and poor communication were possibly involved in 17 percent and 8 percent of claims, respectively [Figure 1]. In half of the 12 claims in which anesthesia may have contributed to fetal outcome, some delay by anesthesia was alleged. Other factors that occurred in fewer than 10 percent of claims included fetal acidosis, meconium aspiration, chorioamnionitis, fetal congenital problems, uterine rupture, placental and umbilical cord problems, breech and attempted vaginal birth after cesarean section [Table 1].

**Table 1: Other Factors in Newborn Brain Injury Claims, 1990-2000**

	n	% of 48
Umbilical cord problem .....	4	8%
Fetal acidosis .....	4	8%
Breech presentation .....	4	8%
Meconium aspiration .....	3	6%
Fetal congenital problem .....	3	6%
Chorioamnionitis .....	3	6%
Uterine rupture .....	3	6%
Placental problem .....	2	4%
Vaginal birth after cesarean section .....	2	4%

**Figure 1: Possible Contributing Factors in Newborn Brain Injury in the 1990s (n=48)**



## Payment

In 60 percent of claims for newborn brain injury in the 1990s, the anesthesiologist was either dismissed or dropped from the case or no payment was made. Payment was more likely to be made by anesthesia in claims in which we assessed that anesthesia may have contributed to the neonatal outcome (71 percent paid), compared to 13 percent paid when anesthesia did not contribute ( $p < 0.05$ ). In the 1990s, 57 percent of newborn brain injury claims resulted in payment by at least one of the defendants, compared with 78 percent of maternal death and brain injury claims and 29 percent of newborn death claims. Median payment for newborn brain injury was

greater than \$1 million, while median payment for all obstetric anesthesia claims was only \$153,000.

## Discussion

Forty percent of newborn brain injury claims in the 1990s were diagnosed as CP. This may be an underestimate, as CP is often not diagnosed until 3 to 4 years of age. Most other claims did not document a specific neurological diagnosis.

A nonreassuring fetal heart tracing was the most common factor in newborn brain injury claims. Electronic fetal heart monitoring (EFM) was introduced in the late 1960s to help to detect fetal heart rate patterns that might indicate hypoxia and has been associated with a five-fold increase in the cesarean section rate.<sup>4</sup> It has not lived up to expectations, and although multiple late decelerations of fetal heart rate and decreased beat-to-beat variability have been associated with an increased risk of CP, the false positive rate of EFM abnormalities is very high at 99.8 percent.<sup>5</sup> Over the last three decades, the incidence of CP in developed countries has remained very stable at two to three per 1,000 live births.<sup>4</sup>

Alleged anesthesia delay was cited in half of the claims where anesthesia care may have contributed to neonatal outcome. A decision-to-delivery interval for emergency cesarean section within 30 minutes is the international standard for fetal compromise.<sup>6,7</sup> The evidence to support this standard is weak.<sup>8</sup> One particular study showed that decision-to-delivery intervals of more than 75 minutes are associated with poorer maternal and baby outcomes.<sup>8</sup> While this refutes the basis of many of the claims we reviewed, it is recognized that some benchmark is needed to maintain quality of care, and the 30-minute decision-to-delivery interval is prudent but poorly supported by evidence.

The etiology of CP is probably the most researched area of neonatal brain injury. There are many risk factors, including those in Figure 1 and Table 1, but the current literature suggests that 70 percent to 80 percent of cases are due to antenatal factors, most of which are not preventable.<sup>2,9</sup> Only 6 percent to 8 percent were related to birth asphyxia.

The findings of this analysis show that anesthesia care is often not in question, reflected by the proportion of claims resulting in no payment. Payments, however, when made, are generally larger than for other obstetric anesthesia claims because of the length of chronic care for a brain-damaged child.

The etiology of newborn brain injury, particularly CP, has been the focus of much research, primarily as a result of the financial impact of litigation on both obstetricians and anesthesiologists. In 2003 an American College of Obstetricians and Gynecologists task force introduced criteria, modified from a International Cerebral Palsy Task Force consensus statement, to help to define the causal relationship between acute intrapartum events and cerebral palsy.<sup>1</sup> Hopefully these new criteria will be positively reflected in future malpractice claims against both obstetricians and anesthesiologists.

## References

1. Hankins GD, Speer M. Defining the pathogenesis and pathophysiology of neonatal encephalopathy and cerebral palsy. *Obstet Gynecol.* 2003; 102:628-635.
2. Reddihough DS, Collins KJ. The epidemiology and causes of cerebral palsy. *Aust J Physiother.* 2003; 49:7-12.
3. MacLennan A, Nelson KB, Hankins G, Speer M. Who will deliver our grandchildren? Implications of cerebral palsy litigation. *JAMA.* 2005; 294:1688-1690.
4. Clark SL, Hankins GD. Temporal and demographic trends in cerebral palsy? Fact and fiction. *Am J Obstet Gynecol.* 2003; 188:628-633.
5. Nelson KB, Dambrosia JM, Ting TY, Grether JK. Uncertain value of electronic fetal monitoring

in predicting cerebral palsy. *N Engl J Med.* 1996; 334:613-618.

6. Royal College of Obstetricians and Gynaecologists. The use of electronic fetal monitoring: The use and interpretation of cardiotocography in intrapartum fetal monitoring. RCOG. 2001:No. 8.
7. American Academy of Pediatrics, American College of Obstetricians and Gynecologists. Intrapartum and postpartum care care of women. Guidelines for perinatal care. 2002:125-161.
8. Thomas J, Paranjothy S, James D. National cross sectional survey to determine whether the decision to delivery interval is critical in emergency caesarean section. *Brit Med J.* 2004; 328:665-669.
9. Jacobsson B, Hagberg G. Antenatal risk factors for cerebral palsy. *Best Pract Res Clin Obstet Gynaecol.* 2004; 18:425-436.

Davies JM : Anesthesia Malpractice Claims for Newborn Brain Injury in the 1990s. *ASA Newsletter* 70(6): 14-16, 2006 *is reprinted with permission of the American Society of Anesthesiologists, 520 N. Northwest Highway, Park Ridge, Illinois 60068-2573.*