Bob Talaska practices in Texas where for twenty years he has handled exclusively birth injury and birth trauma cases on behalf of children and their families. Bob is currently the National Co-Chair of AAJ's Birth Trauma Litigation Group. He is Board Certified by the Texas Board of Legal Specialization in Personal Injury Trial Law and has served as a Director for both the Texas and Houston Trial Lawyers Association where he is a fellowship member. Bob has successfully tried a variety of birth injury and birth trauma cases including cerebral palsy, shoulder dystocia and wrongful birth cases. He has lectured nationally on obstetrical negligence issues and has worked on obstetrical cases in a number of states.
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BIRTH INJURY AND NEWBORN BRAIN DAMAGE

Childbirth is one of the most anticipated and exciting times for a husband and wife. After taking care of herself and her unborn baby for months, preparing and looking ahead to the joyous occasion, a woman trusts the labor and delivery team to safely deliver her baby. Unfortunately something goes wrong and the eagerly anticipated baby is not healthy. Instead of staying in the room with its parents, the baby has been admitted to the neonatal intensive care unit or has been transferred to the big Children’s Hospital. The baby has complications and is later diagnosed with cerebral palsy. This diagnosis requires a lifetime of supportive care and challenges for the entire family. The family wonders what went wrong and if their baby’s brain injury could have been prevented. The doctors taking care of their child do not have all of the answers so the family sees a medical malpractice specialist attorney. Medical records are ordered and it is determined that the labor and delivery team did not respond quickly enough to signs that the baby was essentially suffocating in the womb. A lawsuit is filed and experts get involved. Many depositions of expert witnesses in many sub-specialties are taken. Obstetrical literature, specifically the American College of Obstetricians and Gynecologists’ literature published for litigation, is cited in the case. The trial begins and the publications of the American College of Obstetricians and Gynecologists, ACOG, are admitted into evidence as an exception to the hearsay rule. This evidence, the ACOG literature, is the subject of this paper.

I. MEDICAL NEGLIGENCE AND ACOG

Medical negligence cases involving mismanaged care of pregnant women and their unborn babies resulting in neurological damage are some of the most emotionally charged, complex and contentious cases fought in Texas and around the country. Beginning in the 1970’s, families have brought claims against obstetrical healthcare providers for their negligence which resulted in their child having brain damage. The brain damage often manifests itself as cerebral palsy in these children. One of the most common areas of litigation involves the failure of the labor and delivery team to timely deliver a baby, with the delay causing a lack of oxygen asphyxial insult and injury to the baby.

The American College of Obstetricians and Gynecologists is the largest of the professional organizations which obstetricians join as members. For years the organization has been involved in medical malpractice issues as obstetricians have often been defendants in professional negligence lawsuits. Their own publications have often been used in court by both the plaintiff and the defense. This organization’s most recent publications on the two critical issues common in the case described above have serious limitations. The publications are ACOG Practice Bulletin: Intrapartum Fetal Rate Monitoring, Number 6, May 2005 and Neonatal Encephalopathy and Cerebral Palsy: Defining the Pathogenesis and Pathophysiology. It is critical for attorneys who are handling these important cases on both sides of the Bar to know the limitations in both of these publications.

II. FETAL HEART RATE AND OXYGEN

A main focus of the field of obstetrics’ research and interest historically and currently involves identifying situations during pregnancy or childbirth which could cause injury to the mother or baby. With the advances in the ability to safely perform an abdominal surgical procedure, a cesarean section, the specialty of obstetrics made significant advances in preventing injuries to babies. Cesarean sections are indicated when there is evidence the baby is not tolerating its environment inside the mother’s womb. The way to assess how the baby is doing in the womb is by recording and interpreting the baby’s heart rate in the womb. For more than a century, doctors, nurses and midwives used a specialized stethoscope to listen for the baby’s heart in the womb. Technology led to the ability to continuously record the baby’s heart rate electronically using ultrasound. All of these efforts were keyed on listening to the baby’s heart rate as a means of assessing problems with the baby’s health, specifically oxygenation. Electronic fetal monitoring is the most common obstetrical procedure in America today. Continuous electronic fetal monitoring is used as the critical piece of information in determining the timing of delivery not only during labor and delivery, but also in pregnancies complicated by diseases, infections, prematurity, intrauterine growth restriction, trauma and pregnancies which go beyond their due date.

To understand these medical issues an understanding of the fetal and maternal circulation and its effect on fetal oxygen reception is primary and essential. Fetuses receive their oxygen through their blood from their mother, not by inhaling oxygen into their lungs. Their circulating blood gets close to the mother’s circulating blood in the placenta but it does not mix together. There is an exchange of gases including oxygen and carbon dioxide between the baby’s system and the mother’s. There are various conditions, problems, and changes which affect the supply of oxygenated blood to the unborn baby. During labor and delivery, there can be problems with the mother’s circulation, problems with the placenta, problems with the umbilical cord and problems with the baby’s ability to properly circulate their blood that can all negatively impact the baby’s oxygen status. It
is the job of the maternity team- labor and delivery nurses and the delivering physician – to look for and detect if there are signs showing a baby may not be receiving all of the oxygen he or she requires for normal metabolism and cell function. The team specifically uses information obtained from continuous electronic fetal monitoring to assess the oxygenation of the baby. There is a generally accepted group of findings, which if present, reassure the team that the baby is adequately oxygenated. There are a number of findings which are generally accepted as being nonreassuring of the baby’s health in the womb. There are also findings which show the baby is being stressed – but it is a question of how stressed.

Babies are injured when their brain, the organ which requires the most oxygen to work, becomes oxygen starved and oxygen depleted. This process leads to brain cells becoming damaged causing irreversible brain injury. This is asphyxia. The brain cannot withstand low oxygen insults and later regenerate like other organs. Because of that, an overriding obstetrical rule is to avoid having the baby become oxygen depleted and asphyxiated by performing a cesarean section when there are signs the baby is not receiving all of the oxygen it requires.

III. ACOG LITERATURE
As previously stated, lawsuits often revolve around the issues of whether or not there were signs indicating the need for a cesarean section and what was the cause of the child’s injury. Evidence presented on these two critical areas includes not only the testimony of physician expert witnesses, but also learned treatise medical literature including ACOG’s. Often this battleground directly determines the outcome of these tragic cases. The two bulletins ACOG published on these areas, ACOG Practice Bulletin: Intrapartum Fetal Rate Monitoring and Neonatal Encephalopathy and Cerebral Palsy: Defining the Pathogenesis and Pathophysiology, question the efficacy of electronic fetal monitoring and the role of labor and delivery asphyxia in causing cerebral palsy.

IV. ACOG AND FETAL MONITORING
To read ACOG Practice Bulletin: Intrapartum Fetal Rate Monitoring, one might consider if fetal monitoring has any usefulness at all. There are questions raised which, without critical review and analysis, would lead one (i.e. a jury) to the conclusion that fetal monitoring has no merit or validity. Yet the ultimate clinical recommendation is to use the electronic fetal monitor. The bases for their questioning the validity of electronic fetal monitoring are: poor inter and intra observer reliability, a lack of reduction in the cerebral palsy rates in America, and high false positive rates. Individually and collectively those factors may raise questions about the validity of electronic fetal monitoring so a critical look at each of them is necessary.

The poor intra and inter observer reliability means that the same and different interpreters read the fetal monitor heart rate information differently. The basis for those statements are articles from over twenty years ago when fetal monitoring was new and the information was being disseminated. In some early 1980 United States and Canadian studies, obstetricians read prenatal heart rate information, not labor and delivery, in an inconsistent manner. The use of prenatal heart rate interpretation was still being studied. Since then there has been vast amounts of education and training for labor and delivery nurses and obstetricians on the interpretation of fetal monitor tracings. There has been a generally accepted standardization of the terms used to characterize findings on the fetal monitor tracing.

There is often agreement on what the terms are used to describe the tracing of the baby’s heart rate, whether it be accelerations, decelerations or the variability. There is agreement of what patterns show a baby in distress. However, in a lawsuit context, what the tracings reflect in terms of fetal health becomes controversial and part of the defense.

The claim that electronic fetal monitoring does not reduce the cerebral palsy rate is not accurate. The cerebral palsy rate in America has remained constant. However, because of vastly improved neonatal intensive care for premature babies, a greater percentage of low birth weight babies survive and live but often with handicaps including cerebral palsy. Studies have shown a reduction in labor and delivery asphyxia caused damage.

The claim that fetal monitoring has a high false positive rate when broken down is not a valid claim. It is based on one retrospective study that said only one in a thousand cases of fetal monitoring where decelerations or slowing of the heart rate is noted ends up with a child having cerebral palsy. This study was based on chart reviews and not the actual heart rate tracings generated in labor and delivery. The fallacy in the argument is no one claims that the mere presence of a deceleration of the heart means the baby is at risk for cerebral palsy. Electronic fetal monitoring has an absolute strong correlation with a baby who is well oxygenated. In other words, fetal monitoring which has all reassuring findings will inevitably reflect a well oxygenated baby. When there are certain nonreassuring characteristic findings on the fetal monitor strip, a majority of the time the baby will demonstrate problems from lack of oxygen. Fetal monitoring clearly shows when a baby is not in trouble and is usually accurate when it shows problems. Given the serious consequences of a baby suffering from lack of oxygen, the bad, nonreassuring findings cannot be ignored.
The use of electronic fetal monitoring is recommended as an important part of obstetrical care. To minimize its clinical usefulness in the lawsuit setting is inconsistent with the actual reliance that obstetrical teams place on the information derived from the baby’s heart rate.

V. ACOG AND CEREBRAL PALSY

Aside from publishing literature on the clinical use of electronic fetal monitoring, ACOG has also published literature in the area of causes of cerebral palsy. Historically, the diagnosis and cause of a child’s cerebral palsy has been the province of pediatric neurologists, sub-specialists who have studied the newborn brain. In the early years of obstetrical negligence cases, only pediatric neurologists would give opinions on the cause of a child’s brain damage. Because their testimony would point to lack of oxygen during the labor and delivery, it implicated the care that was provided or not provided as a cause of the brain injury. To fight back, obstetricians began publishing their own literature on the necessary evidence to link labor and delivery lack of oxygen and subsequent cerebral palsy. Their criteria, first published in 1992, was considered very restrictive and exclusionary in linking birth asphyxia and cerebral palsy. The criteria evolved over time and the obstetrical community was forced to reconsider its rigid criteria. It is worth noting that a British and Australian group of obstetricians published their own litigation document in 1999. It is entitled A Template for Defining a Causal Connection Between Acute Intrapartum Events and Cerebral Palsy: International Consensus Statement. A. MacLennan, BMJ 1999; 319: 1054-9. It was admittedly intended for expert witnesses involved in litigation. While it lessened the criteria proposed by ACOG, it still was aimed to protect health care providers in litigation. The article weakened ACOG’s position and forced them to reevaluate and restate their position. In 2003, ACOG published Neonatal Encephalopathy and Cerebral Palsy: Defining the Pathogenesis and Pathophysiology (the NEACP).

The NEACP included four essential criteria that were required to be met to make an association with labor and delivery asphyxia and cerebral palsy. Two of them were revisions of their previously published criteria and the other two were new.

One of the criteria which was revised was the pH level of the cord blood gas. The cord blood gas is a measure of the acid-base balance of the blood. If it is acidotic, that is the result of decreased oxygenation and resulting building of acids. It is well understood that when a cell is starved of oxygen it produces excessive acids causing there to be too much acid in the system. The normal acid-base balance for newborns is 7.25 and above. The contested point is that ACOG has always included a pH of less than 7.0 in their essential criteria. Their position is if the pH is not below 7.0 at birth there is not severe enough birth asphyxia to cause permanent damage. This rigid criteria is too restrictive and there are two ways to confirm that. First, even the British and Australian article recognized that the pH at birth could be normal but drop after birth. Second, current treatment protocols for children suspected of hypoxic ischemic brain damage include head cooling. Head cooling from the normal 98.6 degrees Fahrenheit down to 92 degrees has been shown to minimize the injurious process the brain endures when starved of oxygen. The National Institutes of Health had a head cooling inclusion criteria which stated patients are eligible if their cord pH was 7.0 or below. If the pH was between 7.0 and 7.15, and any one of the following were also present – nonreassuring heart rate, a 110 minute Apgar score of 5 or less or assisted ventilation was required for ten minutes, the babies would be included in the head cooling program. If a pH below 7.0 was definitive, the inclusion criteria for head cooling therapy would not include the second group noted above, who when all of the factors are included are at risk for asphyxial brain damage.

The second revised criteria dealt with the criteria that there must be a moderately to severely neurologically depressed child for some period of time. While there most often are clinical problems, some children have minimal abnormalities and mild depression. The ACOG criteria does not include brain imaging studies to assess the injury’s effect on the brain. What is essentially visualization of the brain can often show changes that provide major evidence for the type of injury the brain has sustained.

One of the new essential criteria required the exclusion of other identifiable factors that could cause cerebral palsy. It did not state to what degree of certainty the other factors had to be present or suggested.

According to ACOG, if all of the criteria are met, it allows the connection between the birth asphyxia and the cerebral palsy to be made with medical certainty. The complicating factor is the Texas Civil Justice system is based on a reasonable degree of medical probability and not medical certainty. These two different burdens of proof make the interface of the medical concepts and legal concepts difficult to mesh.

Two prior essential criteria put out by ACOG are no longer essential. Apgar scores of 3 or less at 10 minutes of age have been determined to be too restrictive. The prior requirement of injury to other organ systems beside the brain has been removed from the essential criteria.

VI. OTHER LIMITATIONS OF ACOG’S NEACP

Regarding the NEACP book, it is important to remember that is limited to acute labor and delivery
hypoxic ischemic insults as a cause of the baby’s brain damage. There are a number of other ways that baby’s brains can be injured, some of which are preventable with standard obstetrical care.

The leading cause of cerebral palsy in America is complications of prematurity.

Prematurity not only refers to the baby being born early, but also to the fact that some of the organs are not fully developed. The lungs are slow to mature which leads to breathing difficulty after birth. Low oxygen insults can result from inadequate mechanical breathing, ventilation, problems and from lung disease from the long term use of ventilators. Treatments to accelerate the maturity of the lungs are well known and common. Prior to term, the baby’s brain blood vessel system is not fully developed. This leaves it prone to damage from changes in the blood pressure through the brain. Vessels can rupture which disrupts the flow of oxygen carrying blood. An immature immune system increases the susceptibility to damage from infections. Preventable newborn meningitis infections often directly damage the brain.

There are a number of different factors which can cause a pregnancy to end before it reaches its full term. Infections can trigger labor so they must be properly treated. The mouth of the womb can show signs of opening prematurely. A stitch can be placed to keep it from opening. A woman can begin having uterine contractions which can cause the mouth of the womb to open. Certain medications can stop the uterine contractions from continuing.

Newborn brains can be damaged during labor and delivery by traumatic forces. Uterine contractions in a tight pelvis can produce enough force to cause stretching and tearing of blood vessels in the brain. Instruments used to pull the baby out of the birth canal can be misplaced and misused. Forceps and the now more common vacuum extractor are known factors in obstetrical birth trauma. They can also cause stretching and tearing of the blood vessels in the brain.

During pregnancy, there are maternal diseases and complications which can effect the unborn baby’s ability to get the necessary oxygen he or she needs in the womb. Diabetes and high blood pressure both effect the blood supply and thus the oxygen supply to the baby. If these conditions are severe enough, prenatal testing can show problems with the baby which often requires delivery to avoid the deleterious effects of that environment. Prenatal testing involves using both ultrasound and continuous electronic monitoring to assess how the baby is tolerating the stresses in the womb. Ultrasound is used to assess not only the growth of the baby but to also assess its activity level. The fetal monitor is used to assess the baby’s heart rate to see if there are any changes that show the baby is being oxygen deprived in the womb.

Depending on the findings, the pregnancy may be allowed to continue or labor may be induced.

VII. CONCLUSION

Despite ACOG’s ongoing attempts to minimize both the importance of fetal monitoring and the relationship between birth asphyxia and cerebral palsy, juries continue to hold labor and delivery teams legally responsible for causing harm to newborns. The reality is that childbirth has always been a time of peril in a human’s development. Modern obstetrics provides the tools and capability to avoid and prevent many birth injuries. When they fail to do so, the doctors and nurses cause a life time of struggle and hardship for the child and their parents. The only remedy a family has is to participate in the tort system with all of the challenges that brings. It is up to the attorney to be fully educated on the limitations of all of the evidence, especially the American College of Obstetrician and Gynecologists’ self serving publications.