

Briefly Legal: OB Case with Possible Lazarus Syndrome Snags Neonatologist in a Lawsuit

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Introduction:

A defendant Obstetrician diagnosed an intrauterine fetal demise at full term. One hour and fifteen minutes later, the baby was born alive and developed a severe and chronic hypoxic-ischemic encephalopathy with an adverse long-term outcome. The case resulted in an award in excess of \$50 million. (Some details have been changed to maintain the anonymity of the case.)

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A. The Facts of the Case

An obese (BMI = 43 kg/m²), primigravid patient presented to the suburban community hospital complaining of severe (10/10) abdominal pain for the past 4 hours. The mother’s blood pressure was 155/95 mm Hg upon admission. An interpretable fetal heart rate could not be detected on the fetal monitor or with a Doppler device.

The OB was immediately available and used the portable ultrasound scanner on the unit. The heart was well visualized with a 3.5 MHz probe, and there was no detectable heartbeat over a minimum of 10 minutes of observation, at least 5 minutes of which was spent specifically focused on the heart. An abruptio placenta was suspected but was not evident on the ultrasound. (Authors note Abruptio placentae is diagnosed clinically; ultrasonography is not reliable for this purpose.) The OB ordered a STAT second ultrasound to be done in the radiology department. The on-call ultrasound technician came in from home about an hour later and found that the fetal heart rate was approximately 75 bpm. The OB saw the study and promptly delivered the infant by emergency C-section. A complete abruptio placenta was found at the time of delivery.

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The female infant weighed 2750 grams and had Apgar scores of 0, 5, and 7 at 1, 5, and 10 minutes of age, respectively. Umbilical cord blood gases were not obtained. The infant was immediately resuscitated with endotracheal intubation, positive pressure ventilation, and chest compressions with a good response. An Attending Neonatologist from a community hospital-based NICU was called for assistance and arrived at about 1 hour of age. A central UVC could not be placed, and the catheter was retracted to a low position. Attempts to place a UAC were unsuccessful. A radial arterial catheter was placed, and at 1.5 hours of age, the arterial pH was 6.90, pCO₂ 30 mm Hg (4.0 kPa), pO₂ 85 mm Hg (11.3 kPa), and BE -29.0 mEq/L. Saline and bicarbonate were given with improvement in the blood gas. The transport team from the community hospital-based NICU, mobilized shortly after the initial call, arrived, and it was decided to transfer the infant to a metropolitan hospital for therapeutic hypothermia (which was not available at the time in the community hospital-based NICU). The baby was passively cooled to 33-34° C and the infant was transferred by ambulance under direct supervision and monitoring by the Neonatologist and Transport Nurse. The baby was stable during transport on ventilatory support with a low FiO₂.

After the staff at the receiving hospital transferred the baby from the transport incubator to a radiant warmer, the baby’s endotracheal tube became obstructed by bloody mucus and was replaced by a NICU physician without difficulty.

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B. The Lawsuit

The parents sued the birth hospital and the Obstetrician and

Neonatologist, who consulted and attended to the infant during transport. The allegations included:

- Negligent provision of an inadequate ultrasound device.
- Negligence in performing/interpreting the ultrasound examination
- Negligent delay in delivering the fetus.
- Negligent infliction of emotional distress on the mother as a result of being wrongfully told that the baby she had carried was dead.
- Negligent management of the airway and monitoring during transport by the Neonatologist and the Nurse allowed the airway to become plugged.

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C. The Venue

In this case, the case’s venue was an important issue because it was well-known that jury awards were substantially higher in the county of the metropolitan hospital than awards in the county of the community hospital. The court noted that a correct venue for one of the defendants applied to all defendants, so by including the Neonatologist in the lawsuit and alleging negligent care in the county of the metropolitan hospital, the plaintiffs were able to file the case in the county of the metropolitan hospital.

D. Availability of Medical Records

The fetal monitor tracings were only produced long after the discovery phase of the trial, well after the experts’ reports had been produced.

Notes related to the transport were not included in the medical records from the referring or receiving hospitals. There was testimony that the Transport Note from the Neonatologist and Nurse’s records were given to the staff in the NICU of the metropolitan hospital and faxed to the community hospital, and the Nurse’s notes were brought to the Nurse’s community hospital-based NICU. None of these records were found, but a copy of the Neonatologist’s Transport Note, retained by the Neonatologist, was produced during discovery.

E. The Trial

At trial, the hospital’s attorney opened with arguments that the community hospital only had a Level 1 Nursery and did not have maternal-fetal medicine physicians and neonatologists immediately available, so the standard of care applicable to major referral hospitals was not applicable to them. Additionally, he proposed that the fetus had died but had miraculously been “resurrected,” as had been described by a phenomenon known as “Lazarus Syndrome.”

In his defense, the OB testified that he was convinced that the fetus had no signs of life when the initial ultrasound was done.

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To the contrary, the mother testified that when she was told that the fetus had died, she said, “You’re wrong. I can feel the baby kicking. I want a C-section.” The OB agreed that had there been any signs of life; an immediate C-section would have been indicated. He found no problems with the ultrasound device and said the same machine continued to be used. He did not agree that there was insufficient sensitivity or resolution to detect a slow fetal heartbeat in an obese patient. He ordered the confirmatory ultrasound in the radiology department for documentation of the fetal demise. The technologist had to come in from home, and the study was done approximately 1 hour later. When the bradycardic heartbeat was seen, a STAT C-section was done.

A second ultrasound scan was not medically necessary, and clear documentation of the findings from the first study should have been sufficient for the medical record. The OB testified that there was hysteria among the family and the mother, and he thought that ordering the study would give them some time to process the situation and discuss the next steps.

The Ultrasound Machine: A maternal-fetal medicine physician for the defense testified that the use of the ultrasound machine with a 3.5 MHz transducer was within the standard of care but was inadequate to detect a very low heart rate, particularly in an obese patient. A radiology expert for the plaintiffs said that a lower frequency transducer (2.0 MHz) was required for satisfactory penetration in an obese patient and that it was below the standard of care not to have an in-house ultrasound technologist. Experts for the defense disagreed.

The hospital’s risk manager testified that the ultrasound machine required annual maintenance but had never been inspected since it was purchased ten years earlier. The machine was serviced after the case occurred (and before the lawsuit), and no adjustments were found to be necessary.

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Fetal Monitor Tracings: The fetal monitor recording was discussed extensively over several days. A maternal pulse rate (by pulse oximeter) of 90-110 bpm was recorded for about 15 minutes. During that time, four recordings of 5-30 seconds duration of the fetal heart rate (by ultrasound) were similar but distinct from the maternal trace. In addition, there were two 10-second recordings on the fetal channel at a heart rate of 160-170 bpm. The plaintiff's MFM expert pointed to the pulse oximeter and ultrasound signals and testified that the distinction in the maternal and fetal signals showed that the fetus was alive; the defense MFM and obstetric experts dismissed the short ultrasound signals as artifacts.

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(Authors note when the fetal heart rate is detected by ultrasound, and the maternal heart rate is detected by pulse oximetry, it should be expected that the traces will be similar but not overlapping because the signals are detected and averaged according to different technologies and algorithms.) These differences can be easily demonstrated by applying the fetal monitor ultrasound probe over a non-pregnant subject's abdomen, adjusting the probe to pick up the aortic pulse, and comparing the ultrasound trace to the pulse oximeter trace.

Causation: A plaintiff's expert testified that the baby could not die and come back to life. He blamed the misdiagnosis of fetal death on the OB's negligence in performing the ultrasound scan. A defense expert thought there was a massive fetal insult before the mother's admission and that the heart rate may have been as low as 1 bpm. He admitted that the delay in C-section may have increased the baby's injury. The plaintiff's neonatology expert opined that the fetal heart rate in the 70s shortly before delivery was the evidence of fetal decompensation that had occurred in the hospital and that had decompensation occurred earlier, the fetus would have been dead by the time the radiology ultrasound was done. The fact that the baby's Apgar scores rapidly improved was evidence of recent deterioration. A normal hematocrit was cited as evidence that the abruptio placentae was recent.

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Damages: A plaintiff's expert testified that the child would have an 82-year lifespan and an economics expert presented data that the cost of caring for the child would be approximately \$450

million; a defense expert estimated that the child would live for approximately 20 years.

Qualification of Previous Testimony: The OB testified again at the end of the trial and allowed the fetal heart could have been beating but was undetectable with the machine he was using.

“The expert's opinion was refuted by the Neonatologist's contemporaneous note and the Neonatologist's and Nurse's testimony. In addition, the judge and jury were provided with a tour of the ambulance, including the transport incubator and a baby mannequin with simulated audible EKG and pulse oximeter signals.”

F. The Case Against the Neonatologist

The plaintiff's neonatology expert testified that the absence of documentation of the baby's condition during transport indicated a lack of attention to the baby. Furthermore, the Admitting Note at the metropolitan hospital's NICU noted respiratory distress, poor breath sounds, deep retractions, and a plugged ETT on admission, which the plaintiff's expert interpreted as evidence that the ETT had become obstructed during the transport. The expert's opinion was refuted by the Neonatologist's contemporaneous note and the Neonatologist's and Nurse's testimony. In addition, the judge and jury were provided with a tour of the ambulance, including the transport incubator and a baby mannequin with simulated audible EKG and pulse oximeter signals.

With respect to the missing records, the judge gave the jury an “adverse inference” instruction, essentially saying that they could infer that the missing records had information that would be unfavorable to the Neonatologist. (There was no evidence of spoliation, i.e., the intentional destruction of evidence. Spoliation can result in varying sanctions up to and including a directed verdict.)

G. The Award

The OB and Neonatologist were found not negligent; the community hospital was 100% liable for the baby's injuries. The total damages were well over \$50 million, with approximately 80% for future medical expenses (based on a lifespan of 50 years, i.e., halfway between the plaintiff's and defense experts' estimates), 15% for the infant's pain, and suffering, 2% for the mother's pain and suffering, and 3% delay damages. The amount of the award was confirmed on appeal.

Comment:

Along the pathway to fetal death, there may be an interim stage where there is severe bradycardia — maybe a heart rate of 1 or 2 with an interval of 30-60 seconds between beats — with an ejection fraction of a few percent. At some point, the situation would be indistinguishable from a truly still heart, even to the best observer with the best technology. While this situation almost invariably progresses to death, the medically reported

Lazarus Syndrome described below and historic cases teach us that an asystolic heart can start beating again after a substantial period.

Lazarus Syndrome: The spontaneous return of circulation after the termination of resuscitation has been described in adults, and a small number of pediatric cases are called Lazarus Syndrome. A 2020 review found 53 articles that described 65 patients who had signs of life that returned following an unsuccessful resuscitation in which there were no detectable vital signs. In many cases, a heart rate was detected a few minutes after the resuscitation was stopped, but there were 5 cases in which the interval was 20-60 minutes, 1 case in which the interval was 3 hours, and 1 case in which the interval was nearly 4 hours. Three of the cases occurred in pediatric patients aged 1.5-10. Mechanisms proposed to explain Lazarus Syndrome have included hyperinflation of the lungs and hyperventilation during resuscitation, delayed drug effects, myocardial reperfusion after spontaneous dislodging of an endovascular plaque from a coronary artery, premature termination of resuscitation, or unobserved minimal vital signs due to oversight. (1) While the frequency of the phenomenon is unknown, 37-45% of Canadian, French, and Dutch intensive care or pre-hospital emergency physicians surveyed have encountered auto-resuscitation in clinical practice. (2-4)

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Death, by definition, is an irreversible state, so if there are signs of life after a declaration of death, the diagnosis of death was incorrect at the time it was made. “Resurrection” in this context is a religious concept with no medical meaning. While published cases of Lazarus Syndrome describe a misdiagnosis of death for a relatively brief period in a medical setting, it does not capture the full range of misdiagnoses of death. The problem of unintentional burial of a live person has a long history (5) that the technically innovative “Safety Coffin” of the 18th and 19th centuries was designed to prevent. (6) In the modern day, there are lay press reports of a misdiagnosis of death every few years (7-10), and the book *The Lazarus Syndrome* describes scores of misdiagnoses of death over hundreds of years. (11) The definition of Lazarus Syndrome should be understood to describe the spontaneous return of signs of life following the clinical misdiagnosis of death, irrespective of whether resuscitation was performed.

Does Neonatal Lazarus Syndrome exist? A single publication describes such a case:

- A mother was hospitalized at 23 weeks gestation for preterm labor. She was treated with tocolytics and betamethasone. The baby was in a breech position. The membranes ruptured, and the baby was delivered by emergency C-section. The baby had a heart rate >100 bpm and a weak respiratory effort. The infant was intubated, ventilated, and given chest compressions and ETT epinephrine, but the heart rate continued to fall and was 40 bpm at 11 minutes. The resus-

citation was terminated, and the infant was declared dead at 1 hour. Shortly after arrival in the morgue, the infant was noted to have a weak respiratory effort with grunting and a heart rate of 150 bpm. The infant survived numerous complications during the NICU course and profound long-term impairment. (12)

In addition, we know of other cases from our practices, experiences of colleagues, and medical-legal reviews that might fall into this category. (Some details may have been changed in these summaries to protect the anonymity of the case.)

“The baby was moved to a utility room, and at approximately one hour after birth, a nurse noted respirations and a heart rate. The baby was transferred to a NICU and subsequently died. After the baby was found alive, the OB inexplicably changed the 5-minute Apgar score to 1 even though he testified that the infant had no detectable vital sign”

- In the 1980s, a fetus was aborted at what the OB thought was approximately 20 weeks. The baby was subsequently found to be 1500 grams and 32 weeks gestation. The OB found no signs of life and gave the baby 1 and 5-minute Apgar scores of 0. He said that there were never any signs of life while the baby was within his proximity. The baby was moved to a utility room, and at approximately one hour after birth, a nurse noted respirations and a heart rate. The baby was transferred to a NICU and subsequently died. After the baby was found alive, the OB inexplicably changed the 5-minute Apgar score to 1 even though he testified that the infant had no detectable vital signs. (The physician was convicted of the crime of infanticide under the state’s Abortion Control Act.)
- A mother delivered a premature 550-gram infant at 22 weeks at home, and paramedics arrived 15 minutes after birth. The infant was found to have a dark gray color with no movement, response to stimulation, breath sounds, or heartbeat on auscultation. The fetus was considered to be stillborn and was placed in a biohazard bag. The mother and baby arrived at an Emergency Room about 45 minutes after birth, and the baby was removed from the biohazard bag. No movement was initially present, but a short time later, the baby gasped and had a detectable heart rate. The baby was transferred to the NICU and died within a few days.
- A 24-week gestation infant was delivered and had no detectable vital signs. A Neonatologist resuscitated the infant for approximately 20 minutes without a response. The resuscitation was terminated, and about 10 minutes later, the infant started to gasp and had a detectable heartbeat. The infant was treated in the NICU and died within a few days.
- A full-term infant delivered vaginally and unexpectedly had no detectable vital signs at birth. The baby was resuscitated initially by an NNP, and a Neonatologist joined the efforts

at 20 minutes of age. The infant never had any detectable vital signs, and the resuscitation was stopped at 30 minutes. About 2 minutes later, the infant gasped and had a heart rate. Resuscitative efforts were resumed, and the infant was transferred to the NICU. The baby had congenital heart disease and severe hypoxic-ischemic encephalopathy, and support was withdrawn at two weeks.

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The degree of monitoring and observations in these cases are variable and lack the technology (e.g., EKG, echocardiography, EEG) that would confirm the diagnosis of death with a high level of certainty at the time the diagnosis was made. Of course, such technologies are rarely used and far from the standard of care in this setting. In the NICU, with parents in abundance, such testing would likely be perceived as a “science experiment.”

Does Fetal Lazarus Syndrome exist? In addition to the case that is the subject of this article, we know of a case with remarkable similarities to the case under discussion:

- At approximately 28 weeks gestation, the mother had cramping with a gush of fluid and vaginal bleeding. In the hospital, there was continued vaginal bleeding with the passage of large clots. Ultrasound by a senior resident showed a breech presentation, low fluid, and no fetal movement. There was no fetal heart rate by direct ultrasound observation and no blood flow by color Doppler ultrasound. The resident repeated the study with the same findings, and an Attending physician independently confirmed the findings. An abruptio placentae with fetal demise was diagnosed, Pitocin was given, and the fetus was delivered vaginally. Shortly after birth, the baby gasped and had a heart rate of approximately 140 bpm. The infant was resuscitated and transferred to the NICU. The baby survived with neurologic injuries.

“Barriers to publication may include issues involving individual and institutional reputation, HIPAA, and litigation. We hope this article will stimulate more discussion and a deeper examination of cases in which fetal or neonatal death may have been misdiagnosed.”

Denouement:

Was this malpractice case due to fetal Lazarus Syndrome? Yes... no... maybe. It is difficult to invoke Lazarus Syndrome as the explanation when that phenomenon has such little support in the perinatal literature, but that does not make the explanation wrong. Barriers to publication may include issues involving individual and institutional reputation, HIPAA, and litigation. We hope this article will stimulate more discussion and a deeper examination of cases in which fetal or neonatal death may have been misdiagnosed.

Do you know of such cases? Please e-mail us.

Lessons for Neonatologists:

1. **Medical records:** If, for whatever reason, you are transporting a patient to a hospital other than your home base, keep copies of notes that you create and any notes created by others on the transport team to assure the ultimate availability of these records. There may be issues in the retention of these records by the referring and receiving hospitals and the hospital providing the transport service.
2. **Venue:** The venue rules differ in federal cases and vary from state to state. The rules are controlled by legislation and courts and may be subject to change. Changing a venue seeks to obtain an advantage in litigation as certain jurisdictions are defense-oriented and tend toward smaller awards, while others are more plaintiff-friendly and tend toward larger awards. Moving a patient between jurisdictions may have an impact on the outcome if there is a lawsuit.

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