

DEFENDING THE BRACHIAL PLEXUS INJURY

INTRODUCTION

In the world of medical malpractice defense, the brachial plexus injury is a defensible case. All available statistics indicate that even with today's advanced technology and state of the art medicine, it is not reasonable to expect a physician to know, prior to the actual birth, a shoulder dystocia will occur, much less a brachial plexus injury.

If you do not know, or even reasonably anticipate that it will occur, how can a physician reasonably prevent it from happening? Nevertheless, obstetricians and hospitals do get sued on this injury with some frequency, and there are significant jury verdicts against defendants in this matter. So, how do we best approach this type of case, and give the client the best opportunity to win?

In labor and delivery litigation we see numerous injuries to newborns. Many times these injuries cause cerebral palsy and/or mental deprivation, both of which are often illusory in nature. The shoulder dystocia, however, is clearly identifiable, with a brachial plexus injury often diagnosed later.

HISTORY AND ANATOMY

Brachial plexus injuries were first recognized, diagnosed and studied by William Erb in 1877. These injuries were studied and the “Erb’s point” was developed and defined as a sensory nerve point, C-5 through C-6. In Erb’s studies, he determined that these injuries resulted from traction to the spinal nerves in the cervical area. The Erb injury was the most common, and injury to the nerves (C-7 through T-1) less common.¹⁵ Today we have developed guidelines in defining the range of these injuries to an infant. Although the Erb’s Palsy is commonly referred to as a brachial plexus injury involving C-5 through C-6, the brachial plexus area, as a whole, is now considered to be from C-5 through T-1. If the injury is in the T-1 area you have a lower arm palsy, and if it involves C-5 through T-1, you have paralysis of the whole arm. Note these other documented observations:

1. Typically the upper arm palsy (Erb’s palsy) is C-5 through C-6, some contend through C-7.
2. The lower arm palsy (Klumpke) is C-8 through T-1.
3. All palsy or paralysis of the whole arm is C-5 through T-1.

(Note the finger grip usually still functions in these situations)

4. If severe enough, the diaphragmatic nerve may be injured and may cause lack of function and breathing difficulties. ¹⁸

THE INJURY

The injury may be located anywhere from the origin of the nerve root to the terminal nerve branch, and is believed to be caused by traumatic stretching. This traumatic stretching can be simple stretching of the nerve roots, or total nerve avulsion. The impact to avulsion is a lack of motor function of the extremity, as well as sensory losses. The motor deficits are normally unilateral and are found to be bilateral in only about 10% of the shoulder dystocia cases. ¹⁸

The injury of the nerve roots usually has the following involvements:

1. Weakness of shoulder abduction of the deltoid muscle, C-5.
2. External rotations of the shoulder, C-5.
3. Elbow flexion, C-5 to C-6.
4. Absence of biceps reflex, C-5, C-6.
5. Wrist and finger enervation problems, C-6, C-7.

It should be noted that most of the Erb's palsies do have finger flexion, with a grip of varying degrees. The Erb's palsies, compared to total upper and lower root involvement, is a paralysis of the intrinsic muscles of the hand, as well as the other muscles mentioned above. ¹⁸

DIAPHRAGMATIC INJURY

As indicated earlier there is sometimes an isolated problem with the brachial plexus nerve root injury, causing diaphragmatic paralysis. This incident occurs in about 5% of the cases with brachial plexus injury where the diaphragm has been paralyzed. ¹⁸ Often times there is a partial paralysis and respiratory effort is compromised, but not completely seized. Usually this occurs within the first few hours after birth, and the infant may experience respiratory difficulty, often associated with tachypnea, but with blood gases suggestive of hypoventilation and acidosis. Oxygen therapy over the following few days will probably stabilize the patient and/or it may require varying degrees of ventilatory support. Radiographic exams of the chest are vital to accurate diagnosis. Without them the diaphragmatic paralysis is often missed. Often times the infant may go five or six weeks before someone is able to make the diagnosis because of other ultrasonic studies. Most of the lesions are right side and only 10% are bilateral. ¹⁸

Once again, the prognosis is dependent upon the severity of the injury, but the majority of infants, after six to twelve months, have recovered completely. Numerous different respiratory therapies, on a temporary basis, are appropriate, and after some careful watching, it may or may not be necessary to have surgical intervention

THE FRACTURED CLAVICLE:

Another common injury alleged to have resulted from a shoulder dystocia is the fractured clavicle. In fact, one of the procedures for effectuating the delivery with a shoulder dystocia may be the intentional fracturing of the clavicle to loosen the posturing of the fetus.⁵ Without a fractured clavicle, however, significant neurologic injuries have and can be seen as a result of shoulder dystocia. Also, a fractured clavicle may occur without any impending nerve injuries or, in fact, even without a reported or diagnosed shoulder dystocia.^{5,15}

PROLONGED LABOR AND OTHER ISSUES:

Other obstetrical issues often creep into the shoulder dystocia/brachial plexus injury lawsuits – issues such as prolonged labor and the use of

fundal pressure and/or suprapubic pressure. Suprapubic pressure is absolutely required and is a recognized application, while fundal pressure is considered to be inappropriate, particularly while the shoulder is still engaged.^{2,3} Once the shoulder has been dislodged, it may become appropriate to effectuate delivery with fundal pressure.

DIAGNOSIS

Most of the injuries of a brachial plexus nature are diagnosed following a shoulder dystocia presentation in the labor and delivery suite, usually hours or days later. They can sometimes be diagnosed as a result of a CT scan or an MRI showing the avulsions of the nerve roots, if that is in fact what has occurred. This, of course, always depends on the severity, and the severity may require further surgical intervention, and/or exploration. There are brachial plexus injuries also reported without shoulder dystocia, and/or a traumatic delivery.

PROGNOSIS

The severity of the injury, whether stretching or a complete avulsion, is going to impact the final prognosis. 90% of brachial plexus injuries resolve within 0 to 4 months, the other 9% to 10% will be permanent in nature. ^{2,13,14}

As with any injury, treatment has evolved over time. Normally the treatment was or is an immobilization of the limb with some passive range of motion. Early in medicine it was determined that splinting of the arm would be important. If within 3 months there has not been a significant recovery, then micro-surgery could be considered, and has, in fact, been proven to be very effective, particularly when completed by about age 6. ¹³

These injuries require intricate plastic surgery to repair the avulsion or the nerve neuroma produced from the injury. Currently, there are approximately four brachial plexus clinics in the world that specialize in these newborn injuries. Surgical intervention will ascertain whether, as a result of the injury, you have a neuroma, or an avulsion of the nerve. Quite a number of surgical improvements have been made in these approaches to repair, allowing significant restoration of otherwise permanently injured nerve roots. ^{13,14,15}

CAUSE OF BRACHIAL PLEXUS INJURY

When do we then see this injury, and what is the cause of it? It probably goes without saying that, more often than not, the brachial plexus injury is a

result of the shoulder dystocia. There are some minor exceptions. There is some medical literature that suggests the brachial plexus injury is a result of the normal forces of labor and delivery, without the presence of any shoulder dystocia.^{9,12} This may certainly be true in a minimal number of cases, but usually the brachial plexus injury is part of the picture following a shoulder dystocia.

Most commonly associated with a brachial plexus injury is a shoulder dystocia after the head has been delivered. Statistical information covering this situation shows that 90%+/- of these children continue life without any difficulties whatsoever, while 9% will have continued impairment of function.^{2,13,14} The proposition has already been advanced, of course, that this condition is not diagnosable, but the obstetrical community has recognized some risk factors for shoulder dystocia. These are:

1. Macrosomia
2. Prolonged labor
3. Gestational Diabetes
4. Breech delivery
5. Cephalopelvic disproportion.^{2,3,5,12}

LET'S DISCUSS THE RISK FACTORS:

It needs to be realized there are risks, not factors, which plaintiffs will claim diagnose the condition or allow reasonable prediction it will occur. There is a divergence of opinion within the literature and within the medical community as to what constitutes macrosomia in terms of fetal size. Some literature indicates 4,000 grams or more is macrosomic, while ACOG Bulletins, along with other literature including textbooks, indicate 4,500 grams or more.^{1,4} The prevailing problem is that regardless of the weight of the child, the actual weight is never known before delivery, and there is no accurate way in which to distinguish between a 3,500 gram, 4,000 gram, and 4,500 gram infant prior to birth. Ultrasound, which is often used, is wholly inadequate and inaccurate for this determination.^{2,4} You should be aware, however, that in plaintiff cases you will hear a great deal about ultrasounds: either a) they should have been done and weren't, or b) they were done and indicate a macrosomic infant; therefore you should have done something about it.

While macrosomia, whether 4,000 or 4,500 grams, is a risk factor, it still does not make it diagnosable. The ability to diagnose the exact weight of an unborn child is essentially non-existent. You can diagnose normal growth;

you can diagnose large bone size; and you can determine the growth pattern, but to ascertain whether a child is 3,700 grams or 4,500 grams is not a reasonable diagnostic opportunity. Ultrasounds, late in the pregnancy, are clearly inaccurate in determining weight. ^{16,19}

Further, the statistics indicate that shoulder dystocias occur in about 0.15% of the babies weighing more than 2,500 grams; 1.7% of babies more than 4,000 grams; 4.6% of babies with attempted mid-forceps deliveries or prolonged second stages of labor; and approximately 18% to 23% of babies weighing more than 4,500 grams.³ While we are discussing statistics then, more than 50% of the shoulder dystocia cases occur in babies that weigh 4,000 grams or less.^{2,3,5,12} Even if you could actually diagnose a baby as macrosomic, you would still have to justify a cesarean section. Medical literature relates studies that have done much to evaluate this particular concern. Frankly, the literature supports the argument that if you were to perform a cesarean section for every baby you considered to be macrosomic, on the premise of preventing a brachial plexus injury, you would do thousands of unnecessary cesarean sections to prevent one brachial plexus injury. ² You might prevent more shoulder dystocias, but you have to remember that not every shoulder dystocia results in a brachial plexus

injury. The estimated ratio of cesarean sections to prevent shoulder dystocia is estimated to be 150/1.^{11,19} Further, not only do cesarean sections put the mothers and babies at increased risk for injury, they are economically unfeasible as well.

There is some line of thought that a cesarean section is a solution, but that has never proven to be correct, and that line of thought normally is offered in the opening statements and closing arguments of the plaintiffs.

Some other risk factors for shoulder dystocia include maternal obesity, maternal gestational diabetes, prolonged labor, and even breech deliveries.²

It should be remembered that risk factors are just that -- risk factors. They are not diagnostic factors; they are not factors that dictate a cesarean section; and, in the worse case scenario, the risk factors might heighten your anticipation of having a shoulder dystocia problem so that preparations can be made to deal with it in the most efficient and effective way.³

It is also significant to note that these types of cases are usually multifactorial; i.e., you may have a macrosomic baby and/or gestational diabetes,

and you should suspect a macrosomic baby; or you may have a macrosomic baby in a prolonged labor; or you may have a prolonged labor with a mid-level (+2 station) vacuum extract attempt, or even forceps being used.

In the multi-factorial circumstance, the decision as to whether or not to perform a cesarean section is not simply if the child is large, and not simply if there might be a shoulder dystocia and/or some potential resultant brachial plexus injury, but rather whether there is some other significant factors affecting the decision-making process to have a vaginal delivery and requires cesarean section intervention.

Because the obstetrician's case needs significant statistical information to justify his/her decisions **not** to perform a cesarean section, it is important to note the previous facts with regard to cesarean sections, and following cesarean section risks that may be passed along in discussion and testimony:

1. The statistical information concerning cesarean sections is that 25% of the cesarean sections result in some type of injury to the mother or child. ¹⁷
2. The maternal risks from cesarean section, supported by medical literature, are as follows:

- A. Death.
 - 1. The risk of death from a cesarean section is 1 per 2,500 births. ²⁰
 - 2. The risk of death from a vaginal birth is 1 per 10,000 births. ²⁰
- B. Fever
- C. Endometriosis
- D. Wound infection
- E. Hemorrhage
- F. Aspiration
- G. Atelectasis
- H. Urinary tract infection
- I. Thrombophlebitis
- J. Pulmonary embolism
- K. Infection
- L. Increased blood loss
- M. Decreased bowel function
- N. Respiratory complications
- O. Longer stays and recovery time
- P. Adverse reaction to anesthesia

- Q. Risk of Additional surgeries ^{7,8}
- 3. The risks to the fetus or newborn as a result of cesarean section are as follows:
 - A. Premature birth
 - B. Breathing difficulties
 - C. Lower Apgar scores
 - D. Fetal injuries ²⁰

Emphasis has to be placed on the fact that a cesarean section is not a risk-free, minor intervention that allows everyone to go home with no possibility of injury. That simply is not the truth.

DEALING WITH THE SHOULDER DYSTOCIA IN THE LABOR AND DELIVERY SUITE

A shoulder dystocia is considered a medical emergency. The factual situation is the head is delivered with the umbilical cord still attached to the placenta and to the fetus, but positioned in the birth canal in such a way that it could be compressed with contractions and/or with tension, causing intermittent oxygen deprivation to the fetus.

There are recognized obstetric procedures, such as the McRoberts procedure, the Woods maneuver, an enlarged episiotomy, and even the Zavanelli procedure, as well as other means of delivery. These also require assistance, usually of additional personnel, to effect better positioning of the mother in an attempt to deliver the fetus. However, most babies are successfully delivered with a shoulder dystocia. ⁵ While there may be a sense of panic or haste, this can normally be done in a 0 to 5 or 6 minute time-frame.

HOW DO WE DEFEND THE BRACHIAL PLEXUS INJURY?

Of course, in these matters you do have an injury, so the issue of causation is not a readily available method of defense. Pretty clearly and pretty easily there will be testimony that the traction, the shoulder dystocia, or a combination thereof produced the brachial plexus injury. There are reported incidents of brachial plexus injuries without any shoulder dystocia. While, as a practical matter, you may not be able to prove it. The logical approach and/or acceptance by a jury will be that it is caused as a result of shoulder dystocia.

The key point has to be that it is not a diagnosable event and, therefore, since you can't diagnose it, there is no way for you to prevent it. The standard of care then becomes the primary defense.

1. All of the key facts and information about the history of the labor and delivery have to be carefully scrutinized to make sure that some other reason for a cesarean section did not exist.
2. The character of the labor and the fetal heart rate patterns also should be carefully scrutinized looking for other reasons for intervention besides shoulder dystocia.

Assuming that the above two areas are clear and defensible, it then becomes a process of educating the jury of the statistical analysis by reliable literature that you cannot pre-diagnose this issue. *The bottom line is that while there may be an increased risk, it is not a diagnosable problem.* Likewise, the irrational approach of doing a cesarean section every time you might have some particular set of risk factors would be enormously costly as well as excessively risky for both mother and fetus. Finally, of course, it is important to quote statistics that show clearly that the brachial plexus injury

carries a much smaller risk factor than the alleged comparatively safe cesarean section.

Most of these facts have to be explained to the jury by the appropriate expert witness, as well as the obstetrician who has engaged in the normal operating and decision making process.

At trial the correct expert and the well-prepared defendant are critical to success. The lack of a causation defense, as well as the presentation of carefully gathered statistics and published studies on this topic, tend to show that cesarean sections are not the answer. Separation of risk factors from decision making is also important.

Another topic to anticipate involves questions as to the amount of traction used in the delivery procedure. Invariably, there will be testimony or argument that excessive traction was used. As a practical matter, this has not been proven to be a difficult problem to address, but it does have a certain amount of jury appeal. It is advisable to introduce the subject early on by explaining that a number of procedures must be considered, and used, in a medical emergency and that, among those, significant traction may be

necessary in order to effect the delivery. Such an emergency often requires split-second decisions regarding which efforts to employ to extricate the fetus from this particular position. Of course, there is no justification for yanking, jerking or applying excessive traction, but the traction procedure may certainly be rational in order to effectuate a quick and safe delivery.

CONCLUSION

It is important to keep a focus on the underlying case and the issue of whether you can diagnose if there will be a shoulder dystocia. You must be able to convince the jury that the medical literature clearly concludes you cannot make the diagnosis and you cannot do a cesarean section every time a risk of shoulder dystocia exists. Also, that even if you think there might be a shoulder dystocia you will probably be wrong and everything will be fine. As a note of caution, there are a number of physicians, due to the legal climate, that will do a cesarean section on the premise there is a risk of shoulder dystocia because of possible macrosomia, gestational diabetes, or even a previous shoulder dystocia. There is ample literature and expert testimony to support the trial of labor for a vaginal delivery. The plaintiffs do not get to say “bad outcome, therefore negligence by the physician”.

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