

**Affirmed and Majority and Dissenting Opinions filed April 20, 2010.**



**In The**

**Fourteenth Court of Appeals**

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**NO. 14-08-00089-CV**

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**LAUREN TABER, INDIVIDUALLY AND AS NEXT FRIEND TO JORDAN  
ROBINSON, A MINOR, Appellant**

**V.**

**CATHERINE NGUYEN ROUSH, M.D. AND PLAZA OB-GYN ASSOCIATES,  
P.A., Appellees**

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**On Appeal from the 334th District Court  
Harris County, Texas  
Trial Court Cause No. 2003-45357**

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**DISSENTING OPINION**

This appeal presents the question: can a medical malpractice plaintiff receive a fair hearing when the case involves a battle of the experts where the most commonly accepted cause of a brachial plexus avulsion such as that suffered by Jordan Robinson, supports the plaintiff's case, while the defendant doctor relies on a defense based on a hypothesis that is (1) anecdotal, (2) speculative, (3) has no established use outside the area of litigation, and (4) is not generally accepted in the medical community as a legitimate explanation for the

cause of brachial plexus avulsions. Because the majority uncritically glosses over the actual content of appellees' medical literature, and then relies on emanations from the penumbra<sup>1</sup> of that literature to hold that a medical hypothesis manufactured by a small number of doctors laboring to create a defense to lawsuits of this type is reliable and therefore admissible, I respectfully dissent.

### **FACTUAL AND PROCEDURAL BACKGROUND**

Appellant was admitted to Park Plaza Hospital on the evening of October 27, 2002. Dr. Roush was consulted by telephone and she ordered that appellant's labor be induced due to pregnancy-induced hypertension. At 5:54 p.m. on October 28, 2002, Dr. Roush was notified by telephone that appellant's second stage of labor had begun as she was fully dilated. Dr. Roush instructed the nurses to have appellant begin pushing. At 7:34 p.m., Dr. Roush was called to the hospital for the delivery as appellant had started involuntarily pushing.

While not certain of the exact time of her arrival in the delivery room, Dr. Roush denied she arrived at the last minute, but instead testified she arrived about fifteen minutes before Jordan's head delivered at approximately 8:07 p.m.<sup>2</sup> At 8:06 p.m. there is an entry in the nurse's notes that the crown of Jordan's head was first observed. At approximately 8:07 p.m., Jordan's head delivered and there was a "turtle sign," which indicates that a shoulder dystocia has occurred.

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<sup>1</sup> In 1873, Justice Oliver Wendell Holmes defined the term penumbra as describing the "gray area where logic and principle falter."

<sup>2</sup> During this approximate 33 minute period of time between the telephone call and Jordan's head delivering, Dr. Roush had to (1) travel from her residence to the hospital, which she testified took anywhere from ten to twenty minutes depending on traffic, (2) make her way to the delivery room, (3) scrub in, and (4) place the various drapes which she testified she uses in every delivery and which could only be placed by her as they are sterile.

The occurrence of a shoulder dystocia greatly increases the chance that the newborn will suffer a brachial plexus injury.<sup>3</sup> Shoulder dystocia is an obstetric emergency because of the potential serious consequences that may result if it is not successfully addressed. According to *Operative Obstetrics*, because shoulder dystocia is a rare occurrence, “very few graduating residents have seen or handled more than a few cases. Therefore, when presented with cases regarding shoulder dystocia, the inexperienced obstetrician may panic and become confused, exerting unacceptable and mal-directed forces upon the infant’s head and thus producing permanent brachial plexus injury.” *Operative Obstetrics* also reports that “the majority of brachial plexus injuries involve extraction of the child’s body within 3 minutes of the delivery of the head, that is, before the end of the next uterine contraction.” In addition, it has been reported in the medical literature that “a clinician’s first reaction to a difficult delivery is to exert considerably larger forces than he normally would.”<sup>4</sup>

Dr. Roush, a young obstetrician less than a year out of residency, testified she diagnosed the shoulder dystocia within ten seconds of the “turtle sign.” According to an entry in the nurse’s notes, Jordan’s delivery was complete at 8:08 p.m., about one minute after the “turtle sign.” During this short period of time between the “turtle sign” and Jordan’s birth, Dr. Roush testified that she kept appellant pushing and then successfully resolved the shoulder dystocia through the application of two different maneuvers involving the use of two nurses.<sup>5</sup> While Dr. Roush admitted applying traction to Jordan’s

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<sup>3</sup> The brachial plexus is a series of nerves that come out of the neck and form a network, or a mesh, that supplies the shoulder, arm, and the hand with movement, feeling, and in children, growth.

<sup>4</sup> Allen, PhD, “Risk factors for shoulder dystocia: An Engineering Study of Clinician Applied Forces” *Obstetrics & Gynecology* (1991).

<sup>5</sup> Over time, obstetricians have developed maneuvers to address a shoulder dystocia. While there is no required order in which these maneuvers must be performed, it is generally accepted that the McRoberts maneuver, which consists of two nurses removing the mother’s legs from the stirrups and sharply flexing them upon the mother’s abdomen, and suprapubic pressure, should be the first maneuver attempted. Dr. Roush testified she first applied McRoberts and then suprapubic pressure. There is no record that these maneuvers were performed in the nurse’s notes. However, Dr. Roush, after the delivery, and already

head after the shoulder dystocia was relieved, she denied applying excessive force to Jordan's head and neck during the delivery. However, Jordan's grandmothers, both of whom observed the birth from behind Dr. Roush, testified Dr. Roush twisted, and turned, and pulled on Jordan with such force, they thought she was going to break his neck.

It was undisputed at trial that the most commonly accepted cause of brachial plexus injuries is a physician, when presented with a shoulder dystocia, pulls excessively on the head and neck of the newborn thus stretching out and injuring the nerves.<sup>6</sup> According to Dr. Rahul Nath, one of Jordan's treating surgeons, the more severe the brachial plexus injury, the more likely the injury was caused by pulling. Dr. Nath also testified that Jordan had a quite severe brachial plexus injury.

Eventually, appellant filed suit alleging Dr. Roush breached the standard of care during her delivery of Jordan by applying excessive force to Jordan's head and neck in response to the shoulder dystocia situation. In her defense against appellant's accusations, Dr. Roush designated experts<sup>7</sup> who opined that brachial plexus injuries can be caused not only by excessive force applied by the delivering physician, but also in utero by the natural forces of labor. Appellant filed a *Daubert* motion challenging the scientific reliability of these experts' opinions.<sup>8</sup> Appellant asserted "there is no scientific or medical evidence to support a permanent brachial plexus injury, and in particular an avulsion, in utero from the maternal forces of labor where you have an otherwise healthy baby." According to appellant, "this is an unsupportable scientific hypothesis created by

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aware that Jordan had a brachial plexus injury, wrote a delivery note stating: "moderate shoulder dystocia resolved with McRoberts and suprapubic pressure."

<sup>6</sup> Even Dr. Roush admitted physician applied force is a known cause of this type of injury.

<sup>7</sup> Dr. Roush designated two experts in addition to herself: Dr. Jack Graham, a maternal fetal subspecialist, and Dr. Andrew Vadasz, a pediatric neurologist.

<sup>8</sup> *Daubert v. Merrell Dow Pharm., Inc.*, 509 U.S. 579, 113 S.Ct. 2786, 125 L.Ed.2d 469 (1993).

[appellees] in an effort to avoid responsibility in malpractice actions.” The trial court denied appellant’s motion and allowed Dr. Roush and her retained experts to testify regarding the maternal forces of labor theory. Ultimately the case was submitted to the jury and they returned a verdict that Dr. Roush was not negligent in her handling of Jordan’s delivery. The trial court eventually entered a take nothing judgment based on that verdict. Appellant filed a motion for new trial, which the trial court denied. This appeal followed.

## **DISCUSSION**

On appeal, appellant contends appellees’ expert opinions are unreliable and inadmissible because they are based on controversial literature which suggests the maternal forces of labor may cause some form of brachial plexus injury. More specifically, appellant argues the opinions are unreliable because (1) the literature consists primarily of anecdotal case reports and speculative hypotheses; and (2) there is an analytical gap between the type of injury described in the literature, some form of brachial plexus injury, and the specific injury at issue in this appeal, an avulsion. According to appellant, because of these flaws, the only support to be found in the record for appellees’ theory that the maternal forces of labor can cause an avulsion, is the experts’ *ipse dixit* that it is so. I agree.

### **I. Expert Opinion Testimony and the Standard of Review**

“If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact issue, a witness qualified as an expert by knowledge, skill, experience, training, or education may testify thereto in the form of an opinion or otherwise.” *Cooper Tire & Rubber Co. v. Mendez*, 204 S.W.3d 797, 800 (Tex. 2006) (quoting Tex. R. Evid. 702). Expert testimony is admissible if (1) the expert is qualified, and (2) the testimony is relevant and based on a reliable foundation. *Id.* If the expert’s scientific evidence is not reliable, it is not evidence. *Id.* Courts must make a

determination of reliability from all the evidence. *Merrell Dow Pharm., Inc. v. Havner*, 953 S.W.2d 706, 720 (Tex. 1997).

Expert testimony must be based on a reliable foundation of scientific or professional technique or principle. *Wiggs v. All Saints Health Sys.*, 124 S.W.3d 407, 410 (Tex. App.—Fort Worth 2003, pet. denied) (citing *E. I. du Pont de Nemours & Co. v. Robinson*, 923 S.W.2d 549, 557 (Tex. 1995)). In addition, each material part of an expert’s theory must be reliable. *Whirlpool Corp. v. Camacho*, 298 S.W.3d 631, 637 (Tex. 2009). The trial court’s determination that these requirements are met is reviewed for abuse of discretion. *Mendez*, 204 S.W.3d at 800. The test for abuse of discretion is whether the trial court acted without reference to any guiding rules or principles. *Id.* Admission of expert testimony that does not meet the reliability requirement is an abuse of discretion. *Id.* When the expert’s underlying scientific technique or principle is unreliable, the expert’s opinion is no more than subjective belief or unsupported speculation and is inadmissible. *Wiggs*, 124 S.W.3d at 410. Causation opinions based on possibility, speculation, and surmise are no evidence. *Havner*, 953 S.W.2d at 711–12.

Far from the relaxed gatekeeper function suggested by the majority, the Texas Supreme Court has determined that when expert testimony is involved, courts are to “*rigorously examine the validity of facts and assumptions on which the testimony is based*, as well as the principles, research, and methodology underlying the expert’s conclusions and the manner in which the principles and methodologies are applied by the expert to reach the conclusions.”<sup>9</sup> *Whirlpool Corp.*, 298 S.W.3d at 637 (emphasis added). According to the Texas Supreme Court, an expert’s opinion might be unreliable, for example, if it is based on assumed facts that vary from the actual facts, or it might be

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<sup>9</sup> It is for this reason that I do not find the out of state cases cited by the majority persuasive. Unlike the majority, I do not believe the cited opinions make it clear that Colorado and Louisiana impose the same strenuous gatekeeper function on the trial judge that the Texas Supreme Court has imposed on Texas trial judges.

conclusory because it is based on tests or data that do not support the conclusions reached. *Id.*

A reviewing court is not required to ignore gaps in an expert's analysis or assertions that are simply incorrect. *Mendez*, 204 S.W.3d at 801. Further, the Supreme Court made it clear that a trial court is not required to admit evidence which is connected to existing data only by the *ipse dixit* of the expert. *Id.* Indeed, an expert's bald assurance of validity is not enough. *Havner*, 953 S.W.2d at 712. Instead, the underlying data should be independently evaluated in determining if the opinion itself is reliable. *Id.* at 713.

## **II. Were the Challenged Expert Opinions Reliable?**

It was undisputed at trial that the most commonly accepted cause of brachial plexus injuries is excessive traction by the delivering physician on the head and neck of the newborn. Despite this, citing a series of articles, case reports, summaries of medical literature, and excerpts from medical textbooks, written by a small number of obstetricians, appellees' experts each opined they believed Jordan's avulsion was the result of either an in utero event or was caused by the natural forces of labor.<sup>10</sup> Therefore, I begin with an examination of the literature appellees' experts relied on in the formation of their opinions.

### **A. Appellees' medical literature.**

#### **1. Gary Cunningham et al., *Williams Obstetrics* 460 (21<sup>st</sup> ed. 2001).**

All testifying experts, including Dr. Roush, agreed the medical textbook, *Williams Obstetrics*, is a reliable source and is widely used in obstetrics and medical schools. It concludes, "brachial plexus injury usually results from downward traction on the brachial plexus during delivery of the anterior shoulder."

Appellees attached Chapter 19 *Dystocia* as an exhibit to their *Daubert* motion

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<sup>10</sup> The primary authors of the literature appellees' experts relied on include: (1) Dr. Robert B. Gherman, (2) Dr. Joseph G. Ouzounian, (3) Dr. Bernard Gonik, (4) Dr. Raymond J. Jennet, (5) Dr. Herbert F. Sandmire, and (6) Dr. Robert K. DeMott.

response:

*BRACHIAL PLEXUS INJURY.* Injury to the brachial plexus may be localized to the upper or lower part of the plexus. It usually results from downward traction on the brachial plexus during delivery of the anterior shoulder. *Erb palsy* results from injury to the spinal nerves C5-6 and sometimes C7. It consists of a paralysis of shoulder and arm muscles resulting in a hanging upper arm that may be extended at the elbow. Involvement of the lower spinal nerves ... always includes injury of the upper nerves and results in a palsy including the hand, which can cause a clawhand deformity. Hardy (1981) studied the prognosis of 36 infants with brachial plexus injuries. Interestingly, shoulder dystocia had been reported in only 10 of these, and two had been delivered abdominally. Nearly 80 percent of these children had complete recovery by 13 months, and none with residual defects had severe sensory or motor deficits in the hand. Jennet and associates (1992) and Gherman and colleagues (1999) have presented evidence that brachial plexus injuries may precede the delivery itself and may occur even prior to labor.

2. Robert B. Gherman et al., *Brachial Plexus Associated with Caesarian Section & In Utero Injury*, Am. J. Obstetrics & Gynecology (1999).

During trial, experts for both sides were questioned about this article, however, the article itself is not found in the appellate record. The majority places great emphasis on this article in reaching the conclusion that appellees' experts' opinions were reliable. However, according to Dr. Bloom, appellant's obstetrician expert, the article reports six cases of permanent brachial plexus injury following caesarian section; the unique features of which make them distinguishable and therefore inapposite to Jordan Robinson's case. *See Whirlpool Corp.*, 298 S.W.3d at 637.

3. Robert G. Gherman et al., *Spontaneous Vaginal Delivery: A Risk Factor for Erb's Palsy?*, 178 Am. J. Obstetrics & Gynecology, 423 (1998).

This article, a retrospective study of hospital records, again with Dr. Gherman as the primary author, was attached to appellees' *Daubert* Response. In the article, Dr. Gherman noted that even though permanent brachial plexus injuries represent only one to five



percent of total brachial plexus injuries, they “are the source of almost all litigation related to shoulder dystocia.”

According to Dr. Gherman, “recent literature supports the hypothesis that some cases of brachial plexus palsy may have an intrauterine origin.” In the comment section, the authors wrote: “our data, taken together with the preceding reports, provide several lines of evidence to show that not all Erb’s palsies<sup>11</sup> are traction related. Rather, an in utero insult perhaps combined with a susceptibility to pressure to traction may be etiologic.” The authors went on to “acknowledge that among the cases of Erb’s palsy occurring without shoulder dystocia, there may have been instances of nonrecognition or incomplete documentation of a difficult delivery. Concern over medicolegal implications, however, would probably have led to an overdocumentation [sic] of maneuvers.” They went on to conclude:

Brachial plexus injury occurring without shoulder dystocia is a distinct, real entity worthy of further study. Many permanent brachial plexus injuries may be due to in utero forces that precede the actual delivery. Before the recognition of the shoulder dystocia, a significant degree of stretch or pressure may have already been applied to the brachial plexus. Moreover, even when a brachial plexus injury is associated with shoulder dystocia, it may have occurred independent of traction applied by the obstetrician. In addition, attempts to predict those babies at risk for permanent brachial plexus injury appear to be medically and economically unsound.

According to Dr. Graham, one of appellees’ retained experts, this is an article hypothesizing that the propulsive nature of delivery is a possible cause of brachial plexus injuries.

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<sup>11</sup> Injury to the brachial plexus can result in paralysis of the muscles of the upper extremity. Its incidence is approximately 1.6 per 1,000 births. Three forms of injury have been recognized: Duchenne-Erb’s palsy, involving the upper arm, due to trauma to the fifth through the seventh cervical nerve roots; Klumpke’s palsy, involving the lower arm, due to injury of the eighth cervical and first thoracic roots; and complete paralysis of the upper extremity.

Emphasizing a problem Dr. Gherman himself recognized within the article, a Dr. Spellacy, in a letter to the journal editor, challenged the reliability of Dr. Gherman's conclusions:

Another explanation for their results is very possible. What if the operator experienced a shoulder dystocia and managed it by hard traction on the infant's neck to achieve delivery? In a retrospective review of hospital charts that type of case would not be classified as "shoulder dystocia" in this study because no other maneuvers were performed. The excessive neck traction could result in more fractures and permanent Erb's palsy than occurs in infants who were managed by applying classic shoulder dystocia maneuvers.

Dr. Spellacy concluded by writing "although the authors have attempted to further understand the etiology of Erb's palsy, these retrospective data do not do that."

4. Robert B. Gherman et al., *Brachial Plexus Palsy: An in Utero Injury?*, 180 Am. J. Obstetrics & Gynecology 1303 (1999).

In an article similar to the one discussed above, Dr. Gherman wrote:

The incidence of permanent brachial plexus injury after shoulder dystocia is 1.6%. However, it accounts for almost all the shoulder dystocia-related litigation. Historic obstetric teachings have stated that brachial plexus injuries result from excessive traction and flexion exerted on the infant's neck during delivery, thereby tearing or avulsing the cervical nerve roots from the spinal cord. In *contrast, many recent reports* have suggested that a significant proportion of brachial plexus injuries may be in utero phenomena. Our purpose is to review the literature supporting the concept that many cases of permanent brachial plexus palsy may be unavoidable, unpredictable in utero injuries that occur without relation to traction and in the absence of historic risk factors."

By the author's own admission, this article examined only the literature that supported the hypothesis that permanent brachial plexus injuries "may be unavoidable, unpredictable in utero injuries that occur without relation to traction and in the absence of historic risk factors." In addition, in the comment portion of the article, Dr. Gherman admitted "we acknowledge that almost all the information concerning the relationship

between delivery, shoulder dystocia, and brachial plexus injury has been collected retrospectively and therefore has inherent ascertainment bias.” Dr. Gherman concluded the article with this plea: “because there is no currently accepted method to objectively quantify ‘excessive’ lateral traction, the mere occurrence of brachial plexus injury should not therefore be taken as prima facie evidence of medical negligence.”

Robert H. Allen, Ph.D., wrote a letter to the editor of the journal criticizing Dr. Gherman’s conclusions. Allen wrote: “because underreporting of difficult deliveries is an acknowledged problem in labor management, reappraisal should focus more on objectively defining, properly managing, and fully documenting shoulder dystocia. This would do more to mitigate preventable brachial plexus injuries than any study of intrauterine force effects.”

In response to Allen’s letter, Dr. Gherman wrote: “The goal of our review article was to suggest that some cases of brachial plexus injury may be of intrauterine origin.” In that same response, Dr. Gherman agreed “that a ‘stretch’ injury is the most likely mechanism of brachial plexus injury, compression of the brachial plexus by the symphysis pubis or uterine anomalies may also be euologic.” Curiously, in that same response, Dr. Gherman attacked Allen’s own research and conclusions regarding the level of force applied during delivery: “we therefore question the scientific validity of making wide-ranging inferences from this single case of brachial plexus injury.” The same could be said about Dr. Gherman’s own writings on this subject.

**5.** Robert B. Gherman et al., *Shoulder Dystocia: The Unpreventable Obstetric Emergency with Empiric Management Guidelines*, 195 Am. J. Obstetrics & Gynecology 657 (2006).

In this article the authors sought to “answer, in an evidence-based format, the following questions: (1) Is shoulder dystocia predictable?; (2) Can shoulder dystocia be prevented?; (3) When shoulder dystocia does occur, what maneuvers should be performed?; and (4) What are the sequelae of shoulder dystocia?”

They concluded that “further research into the correlation between fetal acidemia in shoulder dystocia is required with a larger number of patients so that an evidence-based time frame for shoulder dystocia alleviation can be developed.” They also called for “the commercial development of a shoulder dystocia simulator that will not only allow healthcare providers to practice the obstetric maneuvers but will also enable the generation of a set of nonempiric guidelines.”

6. Joseph G. Ouzounian et al., *Permanent Erb’s Palsy: A Lack of a Relationship with Obstetrical Risk Factors*, 15 Am. J. Perinatology 221 (1998).

The purpose of this retrospective study was to describe the antepartum and intrapartum characteristics of a group of children with permanent brachial plexus injuries in an effort to determine whether the historic obstetric risk factors associated with permanent brachial plexus injuries were present. The authors concluded that the results of prior studies, in conjunction with the results of the present study, “suggest that the brachial plexus injury may result from in utero events or the normal delivery process and not from traction applied at delivery.”

7. Bernard Gonik et al., *Mathematic Modeling of Forces Associated with Shoulder Dystocia: A Comparison of Endogenous and Exogenous Sources*, 182 Am. J. Obstetrics & Gynecology 689 (2000).

Beginning with the premise that the forces associated with the birth process had been studied in only a limited fashion, the authors of this article attempted to develop a simple mathematical model to predict the contact “between the symphysis pubis and the base of the fetal neck.”

The authors then generated a large number of mathematical formulas based on speculative conclusions and suppositions.<sup>12</sup> Following this, they then admitted:

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<sup>12</sup> A representative sampling of the development of the authors’ formulas:

“obviously, the mathematic exercise presented here can only crudely examine this complex issue of forces and pressures related to the shoulder dystocia event.” Finally, the authors suggested that “more scientific studies are needed to examine detailed aspects of the mechanics of brachial plexus trauma in this specific setting to better define the factors leading to injury.”

8. Bernard Gonik et al., *Prediction of Brachial Plexus Stretching During Shoulder Dystocia Using a Computer Simulation Model*, 189 Am. J. Obstetrics & Gynecology 1168 (2003).

Citing his own previous articles as the supporting research, Dr. Gonik designed another study to test the hypothesis that both endogenously (maternal expulsion) and exogenously (clinician traction) applied forces can result in brachial plexus stretching in the anterior presenting fetal shoulder. In this study, the “fetal model was developed by using a 9 month-old child crash test dummy model, downscaled to estimate 90th percentile parameters for a newborn infant.” Then, “the left-sided (anterior facing) brachial plexus was simulated by using a spring element.” “The mechanical properties of the nerve element were based on experimental data performed on rabbit tibial nerves and were represented with a bilinear function.” Finally, “the maternal pelvis was built according to

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The endogenous force was estimated according to the model of a piston (infant) within a thin-walled pressure vessel (uterus). The expulsive force on the piston ( $F_{\text{piston}}$ ) was then defined as follows:  $F_{\text{piston}} = P_{\text{chamber}} [x] A_{\text{piston}}$  where  $P_{\text{chamber}}$  is the pressure developed within the vessel and  $A_{\text{piston}}$  is the cross-sectional area of the moving structure. For the case of childbirth  $P_{\text{chamber}}$  can be assumed to be the intrauterine pressure generated by uterine contraction and maternal bearing down and  $A_{\text{piston}}$  represents the cross-sectional area of the infant’s body within the uterus. Because of the difficulty of determining this area as a result of the unknown arrangement of the torso and limbs within the uterus and the variable and complex geometry, the piston area was estimated as the mid-transverse cross-sectional area as an ellipsoid and the cross-sectional area in the mid-transverse plane was calculated from the following equation:  $A_{\text{uterus}} = \pi D [x] d/4$  where  $D$  and  $d$  are the lengths of the major and minor axes of the elliptic cross-section, respectively.

the 50th percentile dimensions of a female bony pelvic model. This multibody model consisted of 14 ellipsoids.”

Having gone through this exercise, the authors concluded with this caveat: “because there are no currently established thresholds for brachial plexus nerve disruption in the fetus, *the results of our experiments cannot be directly applied to the clinical arena.*” (emphasis added).

**9.** Herbert F. Sandmire & Robert K. DeMott, *Erb’s Palsy Causation Iatrogenic or Resulting from Labor Forces?*, 50 J. Reprod. Med. 563 (2005).

This article is a review of the literature addressing the causes of brachial plexus injuries. In the conclusion section, the authors wrote: “The research by Allen and coauthors has the potential for producing significant information that could be useful to obstetricians.” The article calls for more research and ends with the hope that the “myth that brachial plexus palsy results from clinician-applied excess traction will hopefully be dispelled.”

**10.** Herbert F. Sandmire & Robert K. DeMott, *Erb’s Palsy: Concepts of Causation*, 95 Am. C. Obstetrics & Gynecology 941 (2000).

In a brief article that appellees’ own expert Dr. Graham called an editorial, the authors wrote:

What is the basis for the belief that Erb’s palsy is caused by the birth attendant pulling too hard on the baby’s head? Does it explain all cases or even some of the cases? How do those who assert that excessive lateral traction is the cause know that excessive lateral traction actually occurred? Is it not time to stop blaming the birth attendant for most of the Erb’s palsy cases? The indirect evidence presented here supports the propulsive nature of the stretching of the nerves involved.

**11.** H. F. Sandmire & R. K. DeMott, *Erb’s Palsy Without Shoulder Dystocia*, Int’l J. Gynecology & Obstetrics 253 (2002).

This article was a review of “certain articles which have provided evidence that Erb’s palsy can occur without associated shoulder dystocia.” Most prominent of these studies were those published by Gherman. In the results section, Sandmire and DeMott wrote that “the most probable cause of Erb’s palsy, both with and without shoulder dystocia is the maternal propulsive forces.”

**12.** Herbert F. Sandmire & Robert K. DeMott, *Erb’s Palsy Causation: A Historical Perspective*, 29 *Birth* 52 (2002).

This study, consists of a review of certain historical literature in the field, particularly studies with an ultrashort second stage of labor (less than fifteen minutes), which reported brachial plexus injuries.<sup>13</sup> While admitting it is still commonly accepted in the medical literature that brachial plexus injuries are caused by clinician-applied excessive lateral traction on the fetal head and neck, the authors hypothesize that “it is now time to suggest that all of the preceding indirect evidence establishes the maternal propulsive forces as the most likely cause of Erb’s palsy.”

**13.** Israel Alfonso et al., *Intrauterine Shoulder Weakness and Obstetric Brachial Plexus Palsy*, 31 *Pediatric Neurology* 225 (2004).

This case report described a 3-day-old male delivered by uncomplicated caesarian section with right obstetrical brachial plexus palsy and congenital arm atrophy. The patient had a history of decreased right arm movement that had been detected by fetal ultrasound at 18 to 20 weeks of gestation. According to the authors, the purpose of the case report was to suggest that stretching of brachial plexus at birth sufficient to produce plexus injury may occur in a patient with a vulnerable plexus even in the absence of traction during delivery.

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<sup>13</sup> Appellant’s second stage of labor was approximately two hours.

14. Robert H. Allen & Edith D. Gurewitsch, *Temporary Erb-Duchenne Palsy Without Shoulder Dystocia or Traction to the Fetal Head*, 105 Am. J. Obstetrics & Gynecology 1210 (2005).

In this case report, the baby's birth was videotaped by the father. After a thirty minute second stage of labor, the birth was unattended (i.e., it was induced and then the doctor had minimal involvement with the actual delivery). The baby suffered a temporary brachial plexus injury to the posterior shoulder/arm that had completely resolved four days after birth.

In the Comment portion of the case report, Dr. Allen wrote:

Controversy exists as to the frequency and degree of brachial plexus impairment with neither strong traction nor in utero abnormality. This debate is largely based on interpretation of findings from retrospective studies, where neonatal records coded for brachial plexus palsy are matched to corresponding maternal records coded for shoulder dystocia. When injuries occur without evidence of shoulder dystocia, one view is that the maternal complication must not have been recognized or coded; the other view is that the injury must have occurred naturally. A confounding issue in these types of studies is how strictly shoulder dystocia or Erb-Duchenne palsy or both are diagnosed and coded. Both are subjective diagnoses and rates vary widely; for example, shoulder dystocia incidences vary from less than 0.2% to more than 4%. Some studies find that, among vaginal cephalic births, all injured neonates are associated with shoulder dystocia deliveries. Others find brachial plexus impairments in average –weight or even small for gestational age neonates, whose deliveries are unlikely to have been complicated by shoulder dystocia.

...

Although precise causation cannot be determined, the most biologically plausible explanations for temporary injury unrelated to clinician traction must consider the physical properties of the brachial plexus and its surrounding tissue, in utero positioning, and the mechanical forces of labor. ... The nerves and surrounding tissue of the brachial plexus have considerable biologic variation, and muscle tone can vary with fetal well-being. Therefore, some fetuses may be more predisposed to brachial plexus injury than others. These phenomena may have contributed to



temporary impairment in this case. ... Additional prospective study and research is certainly warranted to answer this question more specifically.

**15.** Ernest M. Graham et al., *A Retrospective Analysis of Erb's Palsy Cases and Their Relation to Birth Weight and Trauma at Delivery*, 6 J. Maternal-Fetal Med. 1 (1997).

This article is a retrospective examination of all live births at the Hospital of the University of Pennsylvania from January 1, 1987 to June 20, 1991. The authors recognized that conventional medical wisdom in obstetrics has held that the great majority of brachial plexus injuries are due to recognizable birth trauma occurring in macrosomic fetuses. They also recognized that shoulder dystocia may be underreported in the obstetric literature, and unrecognized shoulder dystocia may be associated with an increased risk of neonatal injury. They went on to state that some investigators have noted cases of brachial plexus impairment occurring in normal-sized infants delivered by cesarean section without any reported birth trauma. The authors then stated that the appearance of Erb's palsy in the newborn may not be as closely linked to birth weight and recognizable birth trauma as has previously been thought. The authors concluded the article by stating "this has significant medical and medicolegal implications."

**16.** David Peleg et al., *Fractured Clavicle and Erb's Palsy Unrelated to Birth Trauma*, 177 Am. J. Obstetrics & Gynecology 1038 (1997).

In yet another retrospective study, the authors began with the premise that "strong downward traction of the head in an attempt to deliver the anterior shoulder is thought to be the etiology of Erb's palsy and some clavicular fractures." They also recognized that shoulder dystocia is underreported in the hospital records. Despite this, they went on to speculate that "even allowing for underreporting and differences in delivery technique, at least some of these fractures and Erb's palsies were completely idiopathic." They conclude "it may be that the forces of labor, maternal pelvic anatomy, and fetal position interact in such a way to make certain fetuses more susceptible to spontaneous birth trauma." Finally, the authors conclude the article with a plea: "the question remains

whether anyone can be held responsible for those birth injuries that occur in seemingly normal labor and deliveries.”

**17.** Gary D. V. Hankins et al., *Brachial Plexus Palsy Involving the Posterior Shoulder at Spontaneous Vaginal Delivery*, 12 Am. J. Perinatology 55 (1995).

This is a case report in which “the infant was discharged at approximately 48 hours of life, having some minor movement of the fingers noted prior to discharge.”

Based entirely on the information found in the hospital record, the authors suggested that “some brachial plexus injuries may be completely unrelated to manipulations performed at the time of delivery. In these cases it is most likely that maternal expulsive forces of delivery may be partly or totally responsible for posterior or anterior arm injuries.” The authors reported that “the degree of shoulder dystocia was described as minimal and delivery was effected with the use of the McRobert’s maneuver combined with tractive forces that were described as equivalent to those exerted on the head with any vaginal delivery.”

**18.** Malcolm I. Levene et al., *Fetal and Neonatal Neurology and Neurosurgery*, (3rd ed. 2001).

The authors recognized there is a hypothesis that brachial plexus injury can occur in the absence of shoulder dystocia and that there may be an intrapartum cause, possibly pressure of the shoulder against the sacral promontory, or symphysis pubis.

**19.** Raymond J. Jennett et al., *Erb’s Palsy Contrasted with Klumpke’s and Total Palsy: Different Mechanisms are Involved*, 186 Am. J. Obstetrics & Gynecology 1216 (2002).

This article consists of a review of some of the literature examining brachial plexus injuries with a special emphasis on articles written by Dr. Gherman and Dr. Ouzounian. It also examined six case reports detailing brachial plexus injuries to the posterior arm of the newborn. Dr. Jennett postulated that the brachial plexus injuries were not the product of

excessive traction by the physician, but instead that “the irregular contour of the posterior pelvis compared with the usual regular and smooth plane of the anterior uterine wall could make it more likely that the posterior arm might assume or be forced into an abnormal position.”

In a response to a letter to the editor asking a question about their article, the authors wrote: “... these conditions are caused by tears in the dura, with the incomplete or complete avulsion of the nerves and therefore, if our conjectures or hypotheses are correct, had to have occurred at the time that the anterior arm was backward rotated, abducted, or placed in other abnormal positions.”

**20.** Adam Romoff, *Shoulder Dystocia: Lessons From the Past and Emerging Concepts*, 43 *Clinical Obstetrics & Gynecology* 226 (2000).

Because of increasing obstetric concern over the perceived increase in the number of shoulder dystocias in the face of increasing birth weights, in this article, Dr. Romoff sought to introduce a new, more objective definition of when a shoulder dystocia occurs.

In the process of developing this new definition, Dr. Romoff noted that “nature itself may apply inappropriate force, such as may occur in precipitous labor, wholly unaided by the unfortunate obstetrician in attendance. Jennett et al. reported that 54% of brachial plexus injuries were not associated with clinically detectable shoulder dystocia. They postulated that uterine maladaptation and inappropriate intrauterine forces may have played an intrapartum or even antepartum role.”<sup>14</sup>

**21.** Pamela D. Berens, Richard L. Berkowitz & Brian C. Brost, *Precis: An Update In Obstetrics & Gynecology*, Am. C. Obstetricians & Gynecologists (2<sup>nd</sup> ed. 2000).

This update for practitioners contains a section on shoulder dystocia, which it defines “as the inability to deliver an infant using routine obstetric maneuvers, after

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<sup>14</sup> Ultimately, Dr. Romoff concluded that the best definition would be a neck-to-completion interval of more than 60 seconds or the use of ancillary maneuvers to effect delivery.

delivery of the fetal head, due to an arrest of the forecoming shoulder behind the maternal symphysis pubis.”

The guide then instructed practitioners that “when shoulder dystocia is diagnosed, the patient should be instructed to cease pushing while attempts are made to relieve the obstruction. A deliberate and planned sequence of events should follow, including the recruitment of obstetric assistance and the notification of anesthesia and pediatric support services.”

While recognizing that brachial plexus injuries have been reported to occur with breech deliveries and during otherwise uncomplicated cephalic-presenting vaginal and cesarean deliveries, the update recognized that as for the cause of those injuries, “the pathophysiologic mechanism by which brachial plexus injury occurs has been greatly debated.”

**22.** Gary D.V. Hankins et al., *Operative Obstetrics*, (1995).

Appellees attached a small excerpt from *Operative Obstetrics* to their *Daubert* response. The textbook excerpt mentioned that “not all cases of brachial plexus palsy occur during the intrapartum period, but may be secondary to antepartum intrauterine events.” It then quoted from the American College of Obstetricians and Gynecologists Technical Bulletin No. 159 (1991b):

It is not always possible to deliver an undamaged infant after shoulder dystocia has been encountered. Even when shoulder dystocia is managed optimally, brachial plexus injuries may occur. Some of these injuries may be associated with the process of impaction at the symphysis or during descent of the shoulders into the pelvis.

**B. The expert opinions are not based on a reliable foundation.**

I turn now to whether appellees’ experts’ opinions that natural forces of labor may have caused Jordan Robinson’s avulsion were based on a reliable foundation.

If a medical expert seeks to support his or her opinion on causation with medical literature, that opinion must be based on a “broad reading of the medical literature.” *Wiggs*, 124 S.W.3d at 410 (quoting *Minn. Min. & Mfg. Co. v. Atterbury*, 978 S.W.2d 183, 193 (Tex. App.—Texarkana 1998, pet. denied)). “Broad reading of the medical literature” means that the expert must “point to specific passages in varied and different sources that are generally accepted as support for his conclusion.” *Id.* Here, appellees failed to meet this requirement.

Initially, appellees’ experts did not base their opinion that the natural forces of labor can be a possible cause of brachial plexus injuries on a broad reading of the medical literature. Instead, the experts relied on a relatively small number of articles written by a few authors, each of whom based their conclusions, in part, on the writings of the other members of that small group. In addition, an examination of the literature cited by appellees reveals exactly how limited it is. Much of the literature consists of reviews and summaries of a limited number of articles advocating the natural forces of labor hypothesis. In addition, while appellees have attempted to broaden the basis of their natural forces of labor opinion by arguing medical textbooks have adopted it, I disagree. Instead, the textbooks have, at best, mentioned the existence of the natural forces of labor concept. None of the textbooks found in the appellate record have endorsed the natural forces of labor hypothesis as a generally accepted method explaining how brachial plexus injuries, much less avulsions, are caused. This lack of adoption by medical textbooks was confirmed by Dr. DeMott, one of the chief proponents of the natural forces of labor hypothesis, when he testified in a 2004 deposition only that medical textbooks “recognize our writings in this field.”

There are also limitations to the cited articles because many of them involve retrospective studies. Dr. Graham testified about the problems associated with retrospective studies of hospital records. According to Dr. Graham, the most scientific type of medical research is Level 1 Research, which is a prospective, randomized clinical

trial. Dr. Graham also testified that retrospective studies of hospital records are considered a lower category of medical research. According to Dr. Graham, a retrospective study is placed in this lower category because, when looking at hospital records, the researcher is at the mercy of whoever was writing the record and therefore the study is subject to an inherent ascertainment bias. This is a particular problem when conducting research in the area of shoulder dystocias and brachial plexus injuries because it is widely believed the incidence of shoulder dystocia, because of the subjective nature of the diagnosis, is underreported in the medical records. Dr. Allen addressed how this underreporting impacts medical research. According to Dr. Allen, the lack of a shoulder dystocia notation in a medical record can lead one researcher to conclude it is just another example of underreporting, while another concludes it is evidence of an intrauterine cause of brachial plexus injuries.

The majority cavalierly discounts the retrospective nature of the studies by noting the absence of the preferred prospective studies can be explained away by the potential ethical issues involved in carrying out a prospective study. It then concludes that reliance on retrospective studies and the potential for ascertainment bias do not alone warrant exclusion of the disputed expert testimony but instead should be addressed through cross-examination. In reaching this conclusion, the majority overlooks the fact that the Texas Supreme Court has called for courts to examine the entire record and to “*rigorously examine the validity of facts and assumptions on which the testimony is based*, as well as the principles, research, and methodology underlying the expert’s conclusions and the manner in which the principles and methodologies are applied by the expert to reach the conclusions.” *Whirlpool Corp.*, 298 S.W.3d at 637 (emphasis added). The majority also ignores the Texas Supreme Court’s fiat that each material part of an expert’s theory must be reliable. *Id.*

Another problem with appellees’ defense theory is, as Dr. DeMott’s deposition testimony revealed, there is no way to prove or disprove the natural forces of labor

hypothesis because it would be unethical to conduct that kind of study. In addition, Dr. DeMott admitted there is a potential for error rate but there is no medical literature testing that rate. Finally, Dr. Graham testified during trial, and Dr. Sandmire testified during a deposition, that they did not consider any of the literature behind appellees' natural forces of labor defense to be reliable in a legal sense.

As touched on above, appellees also failed to demonstrate that the medical community has generally accepted the natural forces of labor concept. Dr. Graham, appellees' own expert, testified that, under the scientific method, researchers begin with a hypothesis, then develop a theory, and once the researchers establish the theory, that theory is tested and only then do you get to where you have an accepted scientific fact. Basic to the scientific method is the premise that the conclusions reached are the result of analysis. *Quiroz v. Covenant Health Sys.*, 234 S.W.3d 74, 89 (Tex. App.—El Paso 2007, pet. denied). Coming to a firm conclusion first and then doing research to support that conclusion is the antithesis of the scientific method. *Id.* Here, appellees' experts relied on numerous articles that began with the conclusion that the maternal forces of labor can cause a brachial plexus injury and then did research, usually by simply excluding contrary studies, which supported the desired conclusion. By failing to critically examine the medical literature underpinning appellees' experts' opinions, the majority glosses over this fact.

According to Dr. Graham, the idea that the maternal forces of labor can cause a brachial plexus injury remains a scientific hypothesis. In addition, many of the sources and authors cited by appellees in support of their causation opinion confirm that the idea that the natural forces of labor can cause brachial plexus injuries remains a hypothesis. These include the textbook *Operative Obstetrics* ("This concept had to be discarded when a pertinent study showed that neuromuscular deficits develop much faster in fetal than in adult pigs. An alternative hypothesis, namely that brachial plexus injury is frequently caused during the labor process by uterine forces, still prevails. However, since the

maternal forces mobilized during labor and delivery are expulsive in nature, it is difficult to perceive a natural mechanism which could imitate the effect of traction injuries.”), Dr. Gherman (“recent literature supports the hypothesis that some cases of brachial plexus palsy may have an intrauterine origin”), Dr. Jennett (“...these conditions are caused by tears in the dura, with the incomplete or complete avulsion of the nerves and therefore, if our conjectures or hypotheses are correct, had to have occurred at the time that the anterior arm was backward rotated, abducted, or placed in other abnormal positions.”), and Dr. Gonik (“The study was designed to test the hypothesis that both [the natural forces of labor and clinician extraction] can result in brachial plexus stretching in the anteriorly presenting fetal shoulder.”). The majority explains away this problem by stating the decision on whether to admit or exclude an expert’s opinion should not be resolved simply on the author’s choice of words. However, word choice, particularly in the realm of medical literature, is important. Here, the authors and witnesses are doctors familiar with the scientific method and the significant difference between a hypothesis and an accepted scientific fact. In addition, deciding the experts’ opinions are unreliable would not be based simply on semantics because an examination of the content of the articles and the witnesses’ testimony reveals their use of the word hypothesis was not mere literary license but instead was based on the inescapable conclusion that the substance of the challenged experts’ opinions, that the maternal forces of labor may cause a brachial plexus injury, has not gained widespread acceptance in the medical community and remains only a hypothesis. *See Marvelli v. Alston*, 100 S.W.3d 460, 470 (Tex. App.—Fort Worth 2003, pet. denied) (“Whether expert testimony on causal connection rests upon reasonable medical probability must be determined by the substance and context of the testimony rather than semantics or use of a particular term or phrase”).

The controversial nature of the natural forces of labor hypothesis was also confirmed by Dr. Nath, one of Jordan Robinson’s treating physicians. Dr. Nath testified that the idea that the natural forces of labor could potentially cause a brachial plexus injury had only recently appeared in the medical literature and it is not commonly accepted at all.



The foundation of the challenged expert opinions is also unreliable because there is a significant analytical gap between the natural forces of labor hypothesis and the injury actually suffered by Jordan Robinson, an avulsion. While there may be medical literature suggesting that the natural forces of labor may be a potential cause of brachial plexus injuries, none of appellees' experts could point to a single article in the medical literature reporting that an avulsion can be an in utero injury or the result of the spontaneous forces of labor. The absence of such an article was further confirmed by deposition testimony of both Dr. DeMott and Dr. Gherman who testified they were not aware of any articles in the medical literature that shows an avulsion was caused by the natural forces of labor. Both Dr. Roush and Dr. Graham testified there is no medical literature that proves anything other than excessive lateral traction by the clinician causes a brachial plexus avulsion. Finally, the articles cited by appellees' experts are distinguishable because they address labor and other issues not present in the birth of Jordan Robinson. These include an ultrashort second stage of labor, caesarian section, maternal fibroids or other uterine abnormalities, facial palsy, and problems with the long term positioning of the fetus within the womb.

Finally, an additional factor to consider is that, after reviewing appellees' literature, I believe that much of it was motivated in no small part by concerns over the amount of litigation involving brachial plexus injuries and the lack of a viable defensive theory in the face of the only generally accepted cause of those injuries: excessive traction by the delivering physician. Many of the articles cited by appellees' experts mention litigation. In addition, Dr. Graham admitted that one of the goals of the American College of Obstetricians and Gynecologists, a leading publisher of literature in this area, is the development of literature to defend lawsuits.

Because the law does not lead science, it should not be hasty to impose liability when scientifically reliable evidence is unavailable. *Havner*, 953 S.W.2d at 728. The same principle must hold true when a defendant seeks to use scientifically unreliable

evidence to avoid liability. Accordingly, after examining the entire record, I would hold that appellees' experts' opinion, that the natural forces of labor can cause a brachial plexus avulsion, is unreliable and inadmissible, and the trial court abused its discretion in allowing the admission of this opinion testimony. *Whirlpool Corp.*, 298 S.W.3d at 637; *Mendez*, 204 S.W.3d at 800. To hold otherwise under the facts of this case, as I mentioned at the beginning of this dissenting opinion, calls into question whether the rules on the admissibility of expert opinions are applied fairly and equitably to both medical malpractice plaintiffs and defendants.

**C. The admission of the natural forces of labor opinion testimony was harmful.**

Because I would exclude the challenged expert testimony, I examine whether the trial court's decision to allow the testimony was harmful. Tex. R. App. P. 44.1(a). Once again, one must look to the whole record to determine whether the error probably caused the rendition of an improper judgment. *City of Brownsville v. Alvarado*, 897 S.W.2d 750, 753–54 (Tex. 1995).

Initially, appellees contend appellant waived consideration of the harm by failing to adequately brief the harm issue. I believe appellant adequately briefed the harm issue. In her initial brief, appellant asserted: “the *Daubert* challenge on this issue should have been sustained and the testimony from the Defendants should not have been allowed. Without the testimony regarding the maternal forces of labor, all of the evidence pointed to the avulsion being caused by Dr. Roush's pulling on the child's head.” Then, in her reply brief, appellant expanded on that argument.

It was undisputed that Jordan Robinson suffered an avulsion, the most serious type of brachial plexus injury. It was also undisputed that excessive traction by the delivering physician is the most common cause of brachial plexus injuries. While hotly contested, Dr. Roush denied applying excessive force to Jordan during the delivery. However, her testimony would only be credible if there was a medically plausible explanation for how

Jordan suffered an avulsion if the delivering physician did not apply excessive force. Therefore, we conclude the challenged expert testimony was crucial to appellees' defense. Appellees' trial counsel admitted as much when he told the trial court: "Let me suggest, Judge, if you grant either one of these [*Daubert*] motions, then the case is over on liability. There is no fact issue to go to the jury."<sup>15</sup> Having examined the entire record, I would hold that the trial court's decision to admit the challenged expert testimony was harmful.

### CONCLUSION

I would sustain appellant's first issue on appeal, reverse the judgment of the trial court, and remand this case to the trial court for further proceedings consistent with this dissenting opinion.<sup>16</sup>

/s/ John S. Anderson  
Justice

Panel consists of Chief Justice Hedges and Justices Anderson and Boyce.

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<sup>15</sup> Appellees also filed a *Daubert* motion seeking to exclude appellant's expert testimony on causation. That motion is not at issue in this appeal.

<sup>16</sup> Because I would sustain appellant's first issue on appeal, I do not address her remaining issues. Tex. R. App. P. 47.1.