

## Citation

Cheney FW: Perioperative Ulnar Nerve Injury - A Continuing Medical and Liability Problem. *ASA Newsletter* 62(6):10-11, 1998.

## Full Text

Data from the ASA Closed Claims Project continues to indicate that severe anesthesia-related injuries such as death and brain damage are becoming less frequent.<sup>1</sup> This is not the case, however, with anesthesia-related perioperative nerve injury.

In 1990, we first reported an analysis of anesthesia-related nerve injury claims from the ASA Closed Claims Project, which is a standardized collection of adverse anesthesia-related outcomes collected from the closed malpractice claims of 35 insurance organizations.<sup>2</sup> Of 1,541 total anesthesia claims in the database in 1990, 15 percent were for nerve injury with 34 percent of the total nerve injuries being of the ulnar nerve.<sup>2</sup> Of the 2,642 claims added to the database since that time, 17 percent (n = 445) were for nerve injury. The most common nerves involved are shown in Table 1.

**Table 1**

<b>Most Frequent Claims for Nerve Injury by Gender</b>				
<b>Nerve</b>	<b># Claims</b>	<b>% of 445</b>	<b>% Female</b>	<b>% Male</b>
<b>All nerve damage claims</b>	445	100%	49%	51%
Ulnar Nerve	113	25%	21%	79%
Brachial Plexus	83	19%	57%	43%
Spinal Cord	73	16%	49%	51%
<b><i>Lumbosacral</i></b>				
Nerve Root	67	15%	70%	30%
Sciatic Nerve	23	5%	61%	39%

Ulnar nerve injury accounted for 25 percent (n = 113) of the total nerve injuries with a heavy male predominance as compared with injuries to other commonly affected nerves (Table 1). General anesthesia was used in 86 percent (n = 97) of the claims for ulnar nerve injury while in the remainder of the ulnar nerve claims, regional or local anesthesia was utilized.

The mechanism of ulnar nerve injury was rarely explicitly stated in the claim file, as was the case in our earlier report. This occurred in spite of the fact that the closed claims reviewed after 1990 contained much more information than those in the original report. The mechanism was apparent in 12.3 percent (n = 14 of 113) of claims for ulnar nerve injury. Of these 14 claims, the injury was clearly pre-existing in nine, one was related to the surgical procedure, another due to the use of crutches and three were associated with the performance of an axillary block. Paresthesias were not present during performance of the block in any case.

It is remarkable that the mechanisms of anesthesia-related ulnar nerve injury usually cited in the literature were never explicitly stated in any claim file in spite of intensive medicolegal investigation.<sup>3,4</sup> Anesthesia-related perioperative ulnar nerve injury is often ascribed to malposition of the elbow with the ulnar nerve being compressed during surgery on a hard surface, or stretched in some fashion. It is notable that in 28 of the 113 claims (25 percent), extra padding over the elbows was explicitly noted in the file. This casts some doubt on the commonly cited nerve compression mechanisms of intraoperative anesthesia-related ulnar nerve injury.

Further evidence against an all-inclusive malposition nerve compression theory of causation is the fact that eight claims for perioperative ulnar nerve injury were from patients who had spinal, epidural or local anesthesia for lower body surgical procedures. All were awake or sedated during the surgical procedure, with signs and symptoms of the ulnar neuropathy usually becoming apparent one to four days after surgery. It would seem reasonable that an awake or lightly sedated patient would be aware of compression or stretch of the ulnar nerve extreme enough to cause injury.

It is instructive to consider some of the key factors that influence the way in which claims for ulnar nerve injury are often resolved. Because the mechanism of ulnar nerve injury is not usually apparent, plaintiff's attorneys sometimes try to invoke the legal doctrine of "res ipsa loquitur" (the thing speaks for itself). Strictly speaking, the doctrine of res ipsa loquitur applies to situations in which four criterion are satisfied: 1) the injury is not expected to arise except from negligence, 2) the mechanism of injury is under the exclusive control of the physician, 3) the patient does not contribute to the mechanism of injury, and 4) the explanation for the injury is more accessible to the physician than the patient. Without the doctrine of res ipsa loquitur, the plaintiff bears the burden of proof to show that negligence was the cause of injury. When the doctrine of res ipsa loquitur is invoked, the situation is reversed and the defendant must show that care was not negligent.

Ulnar nerve injury cases are often "custom made" for the doctrine of res ipsa loquitur because it is easy for the plaintiff to find medical experts who will testify that 1) those injuries only arise if the patient is positioned or monitored in an incorrect or negligent manner and 2) the cause of the injury is most likely related to some aspect of medical care. Although judges rarely permit the res ipsa doctrine in nerve injury cases, the plaintiff's attorneys and plaintiff's experts usually present similar arguments, thus accomplishing the same result. Most cases are settled short of the courtroom, but this is the background against which many of these claims are resolved.

The combination of lack of apparent mechanism of injury and the willingness of experts to attribute ulnar neuropathy to improper positioning and padding leads to an interesting relationship between standard of care and payment for the injury. In 76 percent of the claims, the closed claims reviewers judged the care as having met the appropriate standard, while the care was judged as inappropriate or substandard in only 6 percent of the cases [Table 2]. One would expect that, with the care being judged as appropriate in most cases, payment to the plaintiff would rarely be made. This was not the case, however, as payment was made in about half of the claims where care was judged appropriate. Payment was even made in 50 percent of the claims where the patient was awake or sedated during regional anesthesia and surgery performed on the lower body.

**Table 2**

<b>Incidence of Payments for Ulnar Nerve Injuries</b>					
		<b>Incidence of Payment(a)</b>			
<b>Standard of Care</b>	<b>n</b>	<b>% Total</b>	<b>n</b>	<b>%(b)</b>	<b>Median Payment</b>
Standard	86	76.1%	35	40.7%	\$29,500
Substandard	7	6.2%	5	71.4%	\$75,000
Unable to Judge	20	17.7%	10	50.0%	\$55,000
a. payment data missing in 14 claims					
b. % based on number of ulnar nerve injury claims in care group					

On the other hand, payment was made in five of the seven claims where care was judged inappropriate. Inappropriate care did seem to command a higher median payment although the number of paid claims (n = 5) in the group is too small for statistical comparison. While median payment for all ulnar nerve injuries was \$34,375, when care was judged inappropriate it was \$75,000 [Table 2].

Clearly, factors other than appropriateness of care influence whether or not payment is made. These include the persistence and skill of the plaintiff's attorney, the willingness of the insurance company to pay for the nuisance value of a claim and the economic effect of the injury on the claimant's employment and lifestyle.

In conclusion, anesthesia-related perioperative nerve injury presents a perplexing problem for the anesthesiologist because the mechanism of the injury is unclear and preventive strategies are not apparent. Because the injury has a relatively low overall incidence (1 in 2,729 patients in a general surgical population),<sup>5</sup> prospective studies of any preventative measures would be exceedingly difficult to do. In our 1990 report, we made the statement that: "In certain susceptible patients nerve injury may occur in spite of conventionally

accepted methods of positioning and padding."<sup>2</sup> Unfortunately, that statement is still true today.

## References

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