Dental Professional Liability | Managing Adverse Events

Nerve Injury

Please Note

A number of sample risk management forms and letters are available electronically in association with this manual, including written informed consent templates, patient termination letters, records release authorization forms and others. Dentist's Advantage-insured dentists may access these sample documents on the Dentist's Advantage website.

Each PDF sample permits customization: copy and paste the sample text from the PDF template document to a text editing file (MS Word, Apple Pages, etc.); edit text and add your dental practice information where appropriate; save the file to create a blank form for ongoing use. If necessary, customize the text of the form template for specific patient needs. You may wish to include components from various sources if the templates provided do not meet the needs of your practice.

While a number of form templates are available, documents are not available for every dental procedure. We encourage you to create consent forms for those dental procedures you perform frequently. You may wish to use the sample consent forms as an outline and review the manual section on informed consent. Consider consulting your attorney to ensure that your forms comply with state informed consent statutes.

Risk management content and resources are provided for illustrative purposes only. The information is intended to provide only a general overview of the matters discussed and is not intended to establish any standards of care.

Nerve Injury

Nerve injuries can result in outcomes diagnosed as paresthesia, anesthesia, and dysesthesia. (The CNA claim data included in your workbook compiles these injuries collectively under the term "paresthesia.") Although nerve injuries can be temporary and reversible, they also can be permanent. Claim demands and costs associated with nerve injuries have increased significantly in recent years. This increase may be due to a number of factors, including heightened awareness of this outcome on the part of both patients and plaintiff attorneys. Unfortunately, it may not be possible to accurately predict injuries that will resolve and those that will not. Moreover, nerve injuries can and sometimes occur following proper and meticulous treatment.

Juries often look sympathetically upon patients with nerve injuries, drawing the frequently erroneous conclusion that an otherwise healthy patient must have suffered a negligent act. Allegations of lack of informed consent regarding the risk of nerve injury associated with surgery often becomes the focus of nerve injury claims.

A common allegation in nerve injury cases is that the dentist failed to refer the patient to an appropriate specialist in a timely manner, and that the referral delay resulted in the loss of any opportunity to pursue the microsurgical repair of the injury. Referral after a period of evaluation/observation may be necessary if the patient is not improving. However, immediate referral to a specialist may be required, depending upon the type of injury, the patient's symptoms, and/or the dentist's ability to effectively manage the patient (see "Controlling the risks" in this section). Although each patient injury is unique, it is clear that early intervention is a key factor related to successful outcomes for both surgical and non-surgical nerve injury treatments. From both a patient safety and risk management perspective, prompt referral to a nerve injury specialist is strongly recommended if there is any question about the course and treatment of the patient's recovery.

Managing the Risks of Nerve Injuries

Proper training, good clinical skills, and timely follow-up are invaluable for quality patient care and to reduce the risk of a professional liability allegation.

Recognizing risk factors

Nerve injury claims are most commonly associated with the following procedures:

- Extractions
- Implant placement
- Periodontal surgery
- Local anesthetic injections

Once a nerve injury has occurred, critical liability risk factors include: the timeliness and quality of the post-injury patient assessment; effective doctor-patient communications; and the timeliness of the referral, if necessary.

Controlling the risks

Dentists can control the exposure presented by nerve injury claims through implementation of the following strategies.

- Avoid performing procedures that lead to nerve injuries.
- Improve knowledge and clinical skills in the procedures that lead to nerve injuries.
- Perform a thorough preoperative clinical and radiographic evaluation of the proposed treatment area. Assess the risks and the advisability of referral for the planned treatment. Note that patient age is a significant risk factor. Patients over 25 years of age are at an increased risk for non-resolving injuries. Some data indicates that the female gender is overrepresented overall and specifically for non-resolving injuries.
- Take appropriate steps once a nerve injury is known.

One system of nerve injury classification describes five degrees based on the extent of the injury. First and second degree injuries are the least severe and can completely resolve or show signs of improvements by one to three months. Complete recovery of second degree injuries may take up to 12 months. Third, fourth and fifth degree nerve injuries are characterized by a three to six month delay in improvement and permanent damage. Neurosurgical repairs of third, fourth and fifth degree injuries have been attempted, often with some level of success. A "successful" repair leads to sensory improvement, rather than a full restoration of sensory function.

A dentist would not be expected to know all five nerve injury classifications. However, a dentist would be expected to know the following regarding nerve injuries that may require surgical or other interventions:

- The recommended window for surgical repair is from one to three months for the lingual nerve and from three to six months after the injury for the inferior alveolar nerve. Because of the location and anatomy of the inferior alveolar nerve, it spontaneously heals more often than the lingual nerve and a longer observation period is appropriate.
- The success rate for surgical repair decreases substantially after six months. If the referral specialist suggests waiting more than six months before evaluating the injury, find another professional to follow the case.
- Surgery is rarely contemplated after one year.
- Surgical repair is not possible for some injuries such as for injuries associated with local anesthetic injection or a known chemical insult (e.g., sodium hypochlorite). Prompt and thorough assessment is recommended and appropriate since the timely implementation of pharmacological and/or behavioral therapy may be indicated.

Microneurosurgeons and/or neurologists are the practitioners who possess the knowledge and skill necessary to definitively treat patients with nerve injuries that do not spontaneously resolve. However, all dentists can perform initial evaluations and ongoing assessments while symptoms continue to improve.

As noted, the potential for improvement via microsurgery diminishes with time. Based upon our experience in managing nerve injury claims, the patient should be promptly evaluated for any opportunity to assess and potentially seek repair of the nerve injury. Recent work on non-invasive therapies show that other treatments also may prove helpful when surgery is not an option or to enhance surgical outcomes. Consider consultation with the patient's physician regarding corticosteroid therapy, which may decrease perineural edema and help in long-term recovery. Sensory retraining may improve patients' perception of altered sensations and administration of vitamin B12 may accelerate functional recovery. More research is needed in these areas specific to trigeminal nerve injuries.

A prudent course of action when a patient reports a nerve injury is presented. Remember to inform your malpractice insurer and check on the availability of new information on the management of nerve injuries.

1. **Examine the patient immediately, if possible, or within one to two days.** Document the patient's description of the nerve deficit as well as all clinical findings of your examination. If the injury is due to extractions, implant placement or other surgical procedures, radiographically assess the area to rule out root tips, foreign bodies or the position of the implant or endodontic filling material as a source of nerve pressure or compression.
   - For patients with an open surgical injury (the treating dentist witnesses the nerve injury), refer the patient immediately to a healthcare professional knowledgeable in treating nerve injuries of the head and neck, such as an oral and maxillofacial surgeon, a neurologist, or an ear, nose and throat physician. If reparative microsurgery is warranted, the rate of success is higher when attempted within the time frames noted previously.
   - For a closed surgical injury (injury not witnessed) or patients whose injury is not related to surgery (local anesthetic injection or a chemical insult (e.g., sodium hypochlorite)), the patient's signs and symptoms should be evaluated as noted above and followed closely for 4 weeks (see below for neurosensory test suggestions).
   - If the symptoms have not resolved or improved significantly in 4 weeks, referral to a nerve injury specialist is recommended.
   - While microsurgery is not an option for nerve injuries due to local anesthetic injection or chemical insult, non-surgical treatments may help as previously described.
   - Note that if symptoms arise after implant placement, the implant could be compressing a nerve (also a type of closed injury). Immediately backing out or removing the implant is appropriate, followed by prompt referral to a nerve injury specialist.
   - Similarly, pressure from an endodontic overfill may cause nerve injury symptoms. Prompt removal of the filling material is indicated to relieve the pressure and prevent long-term damage to the nerve.

2. During the initial evaluation and at follow-up assessments, **map the extent of the sensory deficit and describe or sketch it in the patient healthcare information record.** A neurosensory examination may include a number of tests such as static light touch, two point discrimination, brush directional discrimination, and pin pressure discrimination. These and other tests are discussed in oral surgery textbooks and other sources. Several tests are relatively simple to conduct and provide useful subjective and objective information related to nerve recovery. The tests are repeated at each patient visit to monitor for improvements. They are indicative of the overall injury status and aid in determining the recovery prognosis.
   - Subjective test: ask the patient to rate the sensation in the involved area from zero to ten, with zero being no sensation and ten being fully normal sensation. This test may be conducted using a visual analog scale (VAS), if available, where the patient makes an "X" on a line to indicate the level of sensation.
   - Objective test 1: two-point discrimination. With the patient's eyes closed, the bare wooden end of two standard cotton-tip applicators are held a few millimeters apart and then touched to the skin or mucosa in the affected area. The two applicators are moved progressively closer together until the patient is not able to discern that there are two rather than just one point. This test is performed bilaterally for comparison.
   - Objective test 2: brush directional discrimination. With the patient's eyes closed, use the cotton tip side of a cotton-tip applicator to brush the skin or mucosa in one direction. Move the applicator from right-to-left and then left-to-right (or back-to-front and front-to-back). The patient is asked to determine the direction of the motion. This test is performed bilaterally for comparison.
3. If the patient is referred to a nerve injury specialist, maintain regular contact to follow his or her progress. Document your discussions in the patient's record. After the initial assessment, contact the patient at least every other week during the first month and then re-assess the condition at one month, as noted. Contact the patient at least monthly during the second and third post-injury months, and monthly for the fourth through sixth months if symptoms persist.
4. If the patient refuses to follow through on your referral, advise of the need for early evaluation for both surgical and non-surgical treatments. Also, emphasize the diminished opportunity for surgical intervention, if the patient is deemed to be a candidate. Advise that certain non-invasive treatments may be beneficial as well, depending on the condition.
5. Document all consultant conversations and follow up with written correspondence confirming the information discussed. Retain copies of all patient and consultant correspondence in the patient record.

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For more information call Dentist’s Advantage at 888-778-3981, or navigate to the Dentist’s Advantage website Risk Management section.

In addition to this publication, CNA and Dentist’s Advantage have produced additional risk control resources on topics relevant to dental professionals, including: newsletters; articles; forms; letters; and claim scenarios.

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