CASE OVERVIEW

This case involves a 72-year-old female undergoing treatment for a facial lesion. After initial conservative treatment proved unsuccessful, she agreed to an elective procedure for lesion removal. During the procedure, her face sustained burns due to an “accidental fire.”

The patient received oxygen via nasal cannula and had a bovie grounding pad placed on her thigh. The site was prepped with adhesive paper towel drapes, including a large paper sheet draped over the length of the claimant’s body. The electrocautery bovie was placed onto the wound and was allegedly activated without warning to the surgical team. Sparks ignited the drapes, which were immediately removed, along with the oxygen source. She was dowsed with saline, extinguishing the fire, and sterile, saline-soaked dressings were applied to the first- and second-degree burns to her face.

Following the incident, the awake and responsive claimant was transported to PACU with oxygen applied via face tent. She was immediately evaluated by an ENT specialist and plastic surgeon. A nasal endoscopy showed left nostril singed hair. Cool compresses and localized wound care were applied to the affected areas.

The claimant had significant facial scarring involving the left cheek and nasal area and a contracture of the left nasal opening and upper lip. There was decreased airflow through the left nostril and obvious left facial deformities. Ten months after the injury, she had plastic surgery, including reconstruction and skin grafting. She was later fitted with a prosthetic device for the left naris to prevent it from becoming stenotic or restricted. She would require future scar revision procedures.

The patient claimed that for a long time her burns were extremely painful and that they forced her to sleep upright in a chair. She alleged many sleepless nights due to pain, itchiness, difficulty breathing, and inability to kiss her husband or sleep in bed with him for over a year. She contended that she has permanent disfigurement and uncomfortable scarring.

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Fire in the Surgical Suite
A PPIC® Closed Claim Case Review by Heidi McCoy, MSN, RN, CPHRM, Director, Risk Services

Burn injuries in healthcare settings continue to be a concern, ranging from minor to catastrophic injuries. They can occur in any setting, and result from fire in a surgical setting or from chemical or thermal sources. PPIC has investigated nearly 60 burn injury-related claims. The most prevalent underlying malpractice theories include negligence and improper performance of procedure.

An overview of several PPIC claims related to burn injuries follows:

<table>
<thead>
<tr>
<th>Malpractice Theory</th>
<th>Paid Indemnity</th>
<th>Severity</th>
<th>Specialty</th>
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<tr>
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</table>

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INJURY
Facial burns, scarring, breathing difficulties.

NEGLIGENCE ALLEGATIONS
- Improper performance of surgery
- Improper use of bovie without announcing properly to Anesthesia

EXPERT OPINION
The plaintiff experts opined that this was a preventable fire caused by surgical team negligence. A spark was discharged by the bovie being used in close proximity to the oxygen tubing and oxygen-enriched drapes at the same time the patient was receiving enriched oxygen supply via the nasal cannula. The fire could have been prevented had the surgeon notified the CRNA of his intention to use the bovie, had they allowed ample time to allow the oxygen-enriched atmosphere to dissipate, and had the cautery area been surrounded with moist, wet gauzes and/or water-based skin gels to prevent ignition of any bovie spark.

It was also noted that the surgeon “molded” the drapes to the plaintiff’s face, which would make it difficult to allow oxygen to escape. The CRNA used higher-than-needed oxygen flow for a patient who had an excellent oxygen saturation, was inattentive to acceptable draping to decrease the accumulation of oxygen under the drapes, and was inattentive to the surgical field and the defendant’s actions with respect to his cautery usage. Had the CRNA been able to see the surgical field and had he known that the defendant was going to be using a bovie, he could have stopped the oxygen.

The defense experts noted that per the American Society of Anesthesiologists, before activating an ignition source around the face, head, or neck, the surgeon should give the anesthesiologist adequate notice that the ignition source is about to be activated. After such warning, the anesthesiologist should then stop the delivery of supplemental oxygen or reduce the delivered oxygen concentration to the minimum required to avoid hypoxia, and wait a few minutes after reducing the oxidizer-enriched atmosphere before approving the activation of the ignition.

In this case, the CRNA would know that a bovie could be used during this surgery and some planning or discussion generally would be conducted. The CRNA could have positioned the drapes so as to have direct visual observation of the operative field. Instead, the surgeon tented the drapes in a way that obscured the operative field from the CRNA’s view. There is no documented evidence that a discussion took place between the surgeon and CRNA. The defense experts concluded that the bovie ignited the fire, which likely would have been prevented had the surgeon notified the CRNA of his intent to use the bovie.

CAUSATION
The fire and resulting burns caused painful injuries with permanent scarring and structural and functional damage.

DISCUSSION
Anesthesiologists and CRNAs are aware of the risks presented by the surgical use of electrocautery in an oxygen-rich environment and that supplemental oxygen was indicated in this case until the use of the electrocautery on the face. In this case, the anesthesiologist pointed blame onto the surgeon (defendant), explaining that the fire occurred because the surgeon did not warn the anesthesia care team of the imminent bovie ignition.

The organization’s policy stated that the oxygen concentration should be reduced to 30% or below if a bovie or laser device is being used for a patient with an open oxygen source during a procedure of the neck or above, and anesthesia staff is to be informed when a bovie is used. The inspection report revealed that the bovie was operating according to manufacturer specifications. The root cause analysis indicated the fire was caused by the use of the bovie in an oxygen-enriched environment.

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STANDARD OF CARE

It was determined the defendant did not meet the standard of care and was negligent for failure to notify the surgical team of his intent to ignite the bovie. There was no supporting documentation indicating that a discussion occurred between the surgeon and anesthesiologist.

RISK REDUCTION STRATEGIES

- Communicate. This includes the surgeon communicating with the anesthesiologist and surgical team. Inform them prior to utilization of the heat source (bovie / laser).

- Identify the anatomical location. The highest risk procedures are those above the xiphoid process and oropharynx area.

- Perform a time-out that includes a fire risk assessment prior to beginning the procedure. This allows the surgical team to formally acknowledge the situation and their defined roles.

- Assess for “pockets” where the supplemental oxygen may have pooled and configure the drapes to allow for venting of any excess oxygen.

- Tailor oxygen delivery to the patient’s needs determined by a careful preoperative assessment.

- Acknowledge and minimize fuel sources.

- Document!

Quarter 2, 2016