Adverse Events During Cosmetic Surgery: A Thematic Analysis of Closed Claims

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According to the American Society of Plastic Surgeons, there were approximately 1.8 million cosmetic and reconstructive surgeries performed in the United States in 2012. Very few anesthesia-related mortality statistics and detailed descriptions of adverse events during cosmetic/plastic surgery are found in existing literature. This article describes the use of thematic analysis, and subsequent findings, of a cosmetic closed-claim database generated by the American Association of Nurse Anesthetists (AANA) Foundation Closed Claim Research Team. From the most current dataset of 245 claim files provided by the insurance company (CNA), we isolated 25 claims regarding patients undergoing cosmetic and/or related plastic surgery procedures performed from 2003 to 2012. Three major themes emerged from the claims data: (1) normalization of deviance, (2) ineffective communication patterns, and (3) nonadherence to the AANA Standards for Nurse Anesthesia Practice. Detailed descriptions of the adverse events as they relate to the major themes are provided, and suggestions are offered for actions that may mitigate future adverse events in this subset of the population.

Keywords: Adverse outcomes, Certified Registered Nurse Anesthetist, cosmetic surgery, malpractice closed claims.
why and provide a more elaborate understanding of the phenomenon of interest. Advantages and disadvantages of closed claim analyses have been previously described.3 The purpose of this research is 3-fold: identify themes that emerged from the cosmetic surgery closed claim dataset; describe a rich clinical picture of what transpired leading to the outcome; and provide insight that may change practice to improve anesthesia care.

The data analyzed for this study represent cosmetic procedures performed between 2003 and 2012, which accounts for 10.2% (n = 25) of the surgical categories in the most recent cohort of claims (N = 245).3 According to the American Board of Cosmetic Surgery,8 cosmetic surgery and plastic surgery are closely related specialties, but not identical. The overall goals and focus of cosmetic surgery procedures are enhancing appearance and improving aesthetic appeal, symmetry, and proportions. Cosmetic surgery is elective and includes breast enhancement procedures, facial contouring and rejuvenation procedures, body contouring, and skin rejuvenation.8 Plastic surgery focuses on repairing defects to reconstruct normal function and appearance. It is a surgical specialty dedicated to the reconstruction of facial and body defects due to birth disorders, trauma, burns, and disease and is reconstructive in nature.8

Claims involving patients undergoing either cosmetic or plastic surgery were included and placed under a single category identified as cosmetic. The research questions were:

1. What themes emerged related to anesthetic technique that appeared to contribute to adverse events?
2. What themes emerged related to human behaviors that appeared to contribute to adverse events?
3. Did themes emerge that demonstrated deviations from the AANA Standards for Nurse Anesthesia Practice?

The purpose of this article is to report the answers to these questions framed within the clinical context of care provided by Certified Registered Nurse Anesthetists (CRNAs) during cosmetic surgical procedures.

Methods

The insurer, CNA, made available to the AANA Foundation Closed Claim Research Team 245 closed-claim files for this most recent inquiry. With use of keywords as filters, data were extracted from the 245 files, resulting in 25 files identified as cosmetic and/or plastic surgery. The authors reviewed the 25 claims and validated the type of surgery as the inclusion variable. The method to conduct the research, inclusive of analytic processes, followed the Thematic Framework Approach9 described elsewhere.10 Modifications of the thematic framework were slight and only due to the uniqueness of the dataset and documents in each closed-claim file. A data collection instrument, previously developed and

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### Table 1. Characteristics of Cosmetic Claims Sample (N = 25)

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>No. (%) of cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>23 (92)</td>
</tr>
<tr>
<td>Male</td>
<td>2 (8)</td>
</tr>
<tr>
<td>ASA class</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>5 (20)</td>
</tr>
<tr>
<td>2</td>
<td>14 (56)</td>
</tr>
<tr>
<td>3</td>
<td>6 (24)</td>
</tr>
<tr>
<td>Body mass index</td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>27.2</td>
</tr>
<tr>
<td>Age</td>
<td>50.4</td>
</tr>
</tbody>
</table>

### Table 2. Outcomes of Cosmetic Claims

<table>
<thead>
<tr>
<th>Clinical outcome</th>
<th>No. (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nerve injury</td>
<td>3 (12)</td>
</tr>
<tr>
<td>Brain injury</td>
<td>3 (12)</td>
</tr>
<tr>
<td>Burns</td>
<td>3 (12)</td>
</tr>
<tr>
<td>Cauda equina syndrome</td>
<td>2 (8)</td>
</tr>
<tr>
<td>Chronic pain</td>
<td>1 (4)</td>
</tr>
<tr>
<td>Death</td>
<td>12 (48)</td>
</tr>
<tr>
<td>Necrosis/amputation</td>
<td>1 (4)</td>
</tr>
</tbody>
</table>

### Table 3. Type of Cosmetic Procedures

1. Bilateral breast reduction
2. Excision of facial lesion
3. Abdominoplasty and mammoplasty
4. Lipectomy and breast augmentation
5. Release of burn contracture
6. Face-lift including rhinoplasty
7. Placement of IV catheter postoperatively
8. Multiple facial procedures
9. Abdominoplasty
10. Liposuction and face-lift
11. Excision of multiple facial lesions
12. Liposuction
13. Liposuction and abdominoplasty
14. Abdominoplasty and breast augmentation
15. Breast augmentation and face-lift procedures
16. Liposuction and fat transfer
17. Face-lift
18. Liposuction
19. Breast augmentation
20. Face-lift
21. Endoscopic face-lift
22. Breast augmentation
23. Multiple facial procedures
24. Liposuction
25. Face/neck/brow-lift
tested for interrater reliability, allowed for the capturing of detail from each claim file. The instrument has 4 distinct sections that prompt the researchers to document, in free form, events that lead to the claim, and include the reviewer’s narrative, reviewer’s assessment, listing of accusations, and a description of key lessons learned. These 4 written narratives provided the major contribution of words for thematic analysis. Adopting the Thematic Framework Approach easily allowed for maintaining qualitative trustworthiness, the equivalent to quantitative validity and reliability. Additionally, comparisons of the anesthetic technique and specialized and behavioral actions of the CRNA were made to the AANA Standards for Nurse Anesthesia Practice.

Results
Adhering to the previously described approach, completion of analysis of the 25 cosmetic claims ensued.

### Drug selection and dosing
- Failure to individualize drug dose for patient
- Administration of excessive sedation
- Administration of excessive local anesthetic dose
- Administering β-blocker before local anesthetic with epinephrine as a routine despite bradycardia
- Administration of caustic drug in a peripheral foot vein

### Monitoring
- Failure to employ ETCO₂ monitoring
- Unrecognized esophageal intubation

### Management
- Failure to immediately intubate when clearly necessary
- Proceeding with multiple attempts to place epidural block in a patient with a history of lumbar spine disease/previous lumbar surgery and complications
- Proceeding with IV insertion despite paresthesia
- Administering deep sedation without provision of oxygen or securing airway
- Administering high-flow oxygen near ignition source
- Early discharge of morbidly obese patient with OSA following 13-hour surgery
- Proceeding with surgery/anesthesia despite low unexplained preoperative SaO₂
- Failure to conduct comprehensive preoperative evaluation or proceeding despite lack of necessary preoperative testing

### Equipment
- Placing a heated saline bag under patient’s axilla for positioning
- Failure to use safety straps for positioning
- Use of a chair for positioning because OR table was broken

### Patient selection/match for facility
- Performing anesthesia/surgery on patients with ASA status 3 or greater
- Performing anesthesia/surgery in extremely obese patients in office/freestanding surgical centers
- Performing multiple procedures in patients in office/freestanding surgical centers
- Performing procedures lasting excessive times in office/freestanding surgical centers

#### Table 4. Identified Behaviors Representing Normalization of Deviance
<table>
<thead>
<tr>
<th>Abbreviations</th>
<th>ETCO₂, end-tidal carbon dioxide; IV, intravenous; OR, operating room; OSA, obstructive sleep apnea; SaO₂, arterial oxygen saturation.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drug selection and dosing</td>
<td>• Failure to individualize drug dose for patient&lt;br&gt;• Administration of excessive sedation&lt;br&gt;• Administration of excessive local anesthetic dose&lt;br&gt;• Administering β-blocker before local anesthetic with epinephrine as a routine despite bradycardia&lt;br&gt;• Administration of caustic drug in a peripheral foot vein</td>
</tr>
<tr>
<td>Monitoring</td>
<td>• Failure to employ ETCO₂ monitoring&lt;br&gt;• Unrecognized esophageal intubation</td>
</tr>
<tr>
<td>Management</td>
<td>• Failure to immediately intubate when clearly necessary&lt;br&gt;• Proceeding with multiple attempts to place epidural block in a patient with a history of lumbar spine disease/previous lumbar surgery and complications&lt;br&gt;• Proceeding with IV insertion despite paresthesia&lt;br&gt;• Administering deep sedation without provision of oxygen or securing airway&lt;br&gt;• Administering high-flow oxygen near ignition source&lt;br&gt;• Early discharge of morbidly obese patient with OSA following 13-hour surgery&lt;br&gt;• Proceeding with surgery/anesthesia despite low unexplained preoperative SaO₂&lt;br&gt;• Failure to conduct comprehensive preoperative evaluation or proceeding despite lack of necessary preoperative testing</td>
</tr>
<tr>
<td>Equipment</td>
<td>• Placing a heated saline bag under patient’s axilla for positioning&lt;br&gt;• Failure to use safety straps for positioning&lt;br&gt;• Use of a chair for positioning because OR table was broken</td>
</tr>
<tr>
<td>Patient selection/match for facility</td>
<td>• Performing anesthesia/surgery on patients with ASA status 3 or greater&lt;br&gt;• Performing anesthesia/surgery in extremely obese patients in office/freestanding surgical centers&lt;br&gt;• Performing multiple procedures in patients in office/freestanding surgical centers&lt;br&gt;• Performing procedures lasting excessive times in office/freestanding surgical centers</td>
</tr>
</tbody>
</table>

#### Table 5. Ineffective Communication Patterns
| Characteristics of the cosmetic claims sample, outcomes, and types of procedures are shown in Tables 1 through 3. Most cases involved female patients with an ASA physical classification of 2 for elective procedures performed in ambulatory surgery facilities. Major themes that emerged from the dataset included (1) normalization of deviance, (2) ineffective communication patterns, and (3) deviations from the AANA Standards for Nurse Anesthesia Practice. Examples of behaviors validating the theme “normalization of deviance” are provided in Table 4, examples validating the theme “ineffective communication” are provided in Table 5, and specific | Lack of disclosure<br>Dishonesty<br>Failure to advocate<br>Intimidation<br>Lack of transparency |

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standards of care that were not adhered to are described in this section. Table 6 reveals that frequently more than 1 theme played a role in the outcome of care.

- **Normalization of Deviance.** Normalization of deviance is defined as the gradual process through which unacceptable practices or standards become acceptable.\(^\text{12}\) As the nonstandard behavior is repeated without catastrophic results, it becomes the social norm for the organization or, in these cases, for the providers of care.\(^\text{12}\) The following cases are excerpts drawn from the files demonstrating evidence of normalization of deviance.

  - **Case 1.** In a scenario involving a bilateral breast augmentation and mammoplasty, the anesthetic plan was a nondescript field block with a mixture of lidocaine, bupivacaine, and epinephrine, and intravenous sedation. Sedation included propofol administered via a continuous infusion and intravenous bolus doses of midazolam and fentanyl. Intravenous labetalol, a \(\beta\)-adrenergic blocking agent, was administered before the field block. The baseline heart rate before administration of any anesthesia medications was noted to be 50/min to 60/min. The total dose of local anesthetic exceeded recommended doses based on patient weight. Following incision, the heart rate decreased from 58 to 59/min to 39/min. Shortly thereafter, the patient became asystolic. Although resuscitation efforts were successful and vital signs stabilized within minutes, the patient never regained full consciousness and died a few days later. The postmortem report denoted the cause of death as anoxic encephalopathy secondary to cardiac arrest consistent with acute heart failure and coronary artery insufficiency. Documented in the claim notes, the CRNA expected the patient to experience tachycardia from the epinephrine as part of the field block, and labetalol was administered to counteract the expected tachycardia. When asked why a \(\beta\)-blocker was given, the anesthetist indicated, “It is the way I always do it.”

  - **Case 2.** A 41-year-old woman with a body mass index of 31.6 kg/m\(^2\) and a history of hypertension presented for liposuction of the flank and buttocks to a freestanding ambulatory surgery center. Sedation was the noted anesthesia plan. After prone positioning and

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### Table 6. Themes Identified in Cosmetic Surgery Closed Claims

<table>
<thead>
<tr>
<th>File No.</th>
<th>Procedure</th>
<th>Normalization of deviance</th>
<th>Ineffective communication</th>
<th>Nonadherence to standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Liposuction</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>2</td>
<td>Multiple facial procedures</td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>3</td>
<td>Breast augmentation</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Face-lift</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Face-lift</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Liposuction</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Abdominoplasty/breast augmentation</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Abdominoplasty/liposuction</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Multiple lesions/excisions</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Multiple facial procedures</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>IV catheter insertion (postoperatively)(^\text{a})</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Release of burn contractures/grafts</td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>13</td>
<td>Face-lift/thinoplast</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Lipectomy/breast augmentation</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Abdominoplasty/breast augmentation</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Excision of facial mass</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Bilateral breast reduction(^\text{a})</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Liposuction flank/face-lift</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Multiple facial procedures(^\text{a})</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Liposuction/flab transfer</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>Abdominoplasty</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>Breast augmentation</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>Multiple facial procedures</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>Liposuction</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>Multiple breast/body/face procedures</td>
<td>X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\(^\text{a}\)Claims with no theme identified.
application of oxygen, intravenous midazolam, fentanyl, propofol, and ketamine were administered immediately before the surgeon injected lidocaine and saline into the buttocks. The patient’s oxygen saturation decreased to 80%, and after 15 to 20 minutes of failed attempts to increase it, the patient was repositioned supine. There was no indication of use of end-tidal carbon dioxide monitoring. Subsequently the patient was intubated but progressed to a full cardiac arrest and eventually died after transfer to the hospital.

**Ineffective Communication Patterns.** The Joint Commission has defined effective communication patterns as the transfer of content from a sender to a receiver in which both the sender and receiver achieve a shared understanding and perceive the content in the same way. Communication failures are known to be the leading cause of inadvertent patient harm; many factors contribute to these failures unique to healthcare. The authors of this report operationally defined ineffective communication as those patterns of communication in stark contrast to The Joint Commission definition of effective patterns. Table 5 depicts the ineffective communication patterns that illuminated this theme. The following cases are excerpts drawn from the files demonstrating evidence of ineffective communication patterns.

*Case 1.* A 72-year-old woman presented for elective outpatient cosmetic surgery involving a facelift and multiple other facial procedures. The planned anesthetic was general anesthesia with placement of an endotracheal tube. In the patient’s medical record—and documented as “unremarkable”—was a recent cardiac consultation and assessment, a “cleared for surgery” note from the primary care provider (PCP), and a laboratory report revealing a preoperative hemoglobin (Hb) level of 10 g/dL. The CRNA consulted the surgeon about the low Hb level; reassurance was given that blood loss would be minimal. At that time, the CRNA contacted the PCP concerning the Hb level; however, no additional useful information was provided. The same clearance note and cardiac catheterization report were resent to the anesthetist. The anesthesia and surgery commenced, the intraoperative blood loss was substantial (750 mL), and the total surgery time was greater than 6 hours. The CRNA was responsible for the first hour of postoperative recovery and, when the patient appeared stable, transferred care to the surgeon and other staff (unknown titles). After transfer of care, the oxygen saturation decreased, and an additional 450 mL of blood collected in the surgical drainage bag. Transfer to a hospital followed, where on hospital admission the Hb level reportedly dropped to 4.8 g/dL. In addition, the patient was thrombocytopenic, and other coagulation abnormalities were obvious based on laboratory reports. The patient arrested sometime thereafter and died the following day. Unknown to the entire perioperative team was the patient’s medical history of “liver problems as a child”, upper gastrointestinal tract bleeding, and multiple blood product transfusions, including platelets. Neither the patient nor the primary care physician conveyed this important information before surgery and anesthesia.

*Case 2.* A patient underwent a 290-minute breast augmentation in a freestanding ambulatory surgical facility. The operating room table had been out for repair, and a makeshift table resembling a dental chair was used in its place. The arms of the chair were not adjustable for appropriate patient positioning. Whether the CRNA felt persuaded, coerced, or even intimidated and therefore proceeded with the case using the dental chair instead of the appropriate table is unclear but may be presumed from documentation in the file. However, during the anesthetic, the CRNA continuously asked the surgical team to reposition the pseudo arm boards. Although the CRNA documented positioning changes made during the procedure, the patient emerged complaining of left arm numbness. She later received a diagnosis of a brachial plexus nerve injury. Despite the operating room table being broken, the “team” agreed to do the lengthy procedure in the makeshift chair.

**Nonadherence to the AANA Standards for Nurse Anesthesia Practice.** Themes emerged demonstrating deviations from the AANA Standards for Nurse Anesthesia Practice. Direct comparisons were made between documented care processes in the claims to the AANA Standards. The AANA Standards preamble states that adherence to the standards cannot ensure specific outcomes. Their intended applicability, however, is to promote high-quality care, assist the CRNA in evaluating adherence to the standards, and provide a common base for CRNAs to use in their development of a high-quality practice, assist the public in what to expect from anesthetists, and support and preserve the basic rights of the patient. The following are examples of nonadherence to Standards I, IV, VII, and VIII.

**Standard I:** Perform and document a thorough preanesthesia assessment and evaluation.

* Failure to further investigate a low preoperative oxygen saturation before proceeding with general anesthesia
* Failure to identify a history of lower back pain, back injury, spinal surgery, and past difficulty with regional anesthesia before initiating epidural anesthesia/analgesia

**Standard IV:** Implement and adjust the anesthesia care plan based on the patient’s physiologic status. Continuously assess the patient’s response to the anesthetic, surgical intervention, or procedure. Intervene as required to maintain the patient in optimal physiologic condition.

* Failure to monitor respiration and titrate anesthetic accordingly
* Failure to recognize an esophageal intubation
* Failure to monitor ventilation (end-tidal carbon dioxide)

**Standard VII:** Evaluate the patient’s status and deter-
mine when it is safe to transfer the responsibility of care. Accurately report the patient’s condition, including all essential information, and transfer the responsibility of care to another qualified healthcare provider in a manner that assures continuity of care and patient safety.

- Failure to transfer to a greater resourced hospital a patient who had low beginning Hb level and subsequently experienced substantial intraoperative blood loss
- Failure to transfer a patient from a freestanding surgical center to a hospital with sustained motor block following an epidural anesthetic
- Transfer of care to nonqualified, unlicensed providers.

**Standard VIII:** Adhere to appropriate safety precautions as established within the practice setting to minimize the risks of fire, explosion, electrical shock and equipment malfunction. Based on the patient, surgical intervention or procedure, ensure that the equipment reasonably expected to be necessary for the administration of anesthesia has been checked for proper functionality and document compliance. When the patient is ventilated by an automatic mechanical ventilator, monitor the integrity of the breathing system with a device capable of detecting a disconnection by emitting an audible alarm. When the breathing system of an anesthesia machine is being used to deliver oxygen, the CRNA should monitor inspired oxygen concentration continuously with an oxygen analyzer with a low concentration audible alarm turned on and in use.

- Failure to use proper precautions to prevent fire in the operating room.

**Discussion**

Anesthesia is vital to patient safety during surgical, diagnostic, and other related procedures. Safety comprises not only the chosen technique but also the actions of providers, the team, and the patient, in each respective setting. Any one of these components can and does influence the outcome of care. Analysis of adverse events associated with anesthesia through the review of closed malpractice claims was originally noted in the literature in 1985 when Dr F. Cheney published the article describing cardiac arrest following spinal anesthesia.16 Years later and following a similar trajectory, the AANA Foundation assembled a CRNA research team for similar purposes, with the exception that the closed-claim project is explicit to cases involving CRNAs. The intent was to use established and reliable methods to gain knowledge about adverse events during anesthesia; to identify if contributions to the unfavorable outcome were by members of the team, including the anesthetist; and to isolate components of care negatively influencing outcomes. Once details were analyzed, reporting of findings and ultimately recommendations to modify practice patterns, for the goal of improving patient care, could be made.3

Historically, closed-claim research, conducted as retrospective reviews of medical records, legal documents, and other documents, permitted quantification of morbidity and mortality rates. Additionally, if enough information was available, a descriptive narrative accompanied the metrics. We are limited to this type of method for closed-claim research because an experiment or other research approach such as qualitative participant observation,17 is illogical and not an option. It would be unethical to design an experiment comparing unacceptable practices with established standards of care. It would also be impractical to design a participant-observation qualitative study because this requires an unbiased observer to be present for every anesthetic and to transcribe all details of adverse events. Because adverse events are rare, the participant-observation approach is unfeasible. The study of adverse events in anesthesia is therefore limited to the analysis of documents within closed claims.

There is no disputing the value of the retrospective review of anesthetics and surgery proceedings when adverse events occur; in the same manner is the process of root cause analysis. However, a large gap remains, especially when there is no scientific or physiologic reason that explains a poor outcome. In the landmark analysis of cardiac arrest during spinal anesthesia, the claims analysis identified 2 patterns that most likely contributed to patient morbidity and mortality: sedation that produced a comfort state concomitant with unidentified cessation of breathing, and an inadequate appreciation of the interaction between regional anesthesia sympathetic blockade and how this affects resuscitation efforts.16 Dissemination of the results of this research allowed providers to understand what transpired that led to the poor outcomes and therefore an immense opportunity to improve patient care prospectively. What remains in the gap is an understanding of how and why we make the decisions we do, how we move forward in solving care dilemmas, and how we prevent anesthesia-related contributions to the unfavorable outcome. The most recent claims provided to the research team by CNA offered an opportunity to fill this gap in knowledge specific to adverse events during cosmetic surgical procedures.

Employing thematic analysis research methods, we can now begin to answer the research questions posed: what patterns emerged related to the anesthetic technique that appeared to contribute to the adverse event, what themes emerged related to human behaviors that appeared to also contribute to the poor outcome, and did deviations from the AANA Standards for Nurse Anesthesia Practice occur? The information gleaned provides an illumination of each respective situation. Portions of previously conducted closed-claim research had partial descriptive narratives, for example, where the researchers tried to identify whether the provider performed according to applicable standards of care at the time and therefore demonstrate vigilance. In addition, it was easy to make
correlations between adherence to care standards and remuneration. As expected, adherence to the standards of care led to payouts that were much less. This is valuable information no doubt, but unfortunately does not illuminate actions of the provider, team, and patient to the extent that is necessary to understand what truly transpired. Employing thematic analysis, we have added critical information to traditional descriptive methods.

The number of cosmetic surgical procedures in the most recent dataset of closed-claim files was large enough to warrant isolating these files for independent analysis. We sought to determine if there was something unique about the components of anesthesia care for these types of procedures. According to the American Society of Plastic Surgeons website, nearly 1.8 million cosmetic surgical procedures were performed in 2016. The top 5 surgical procedures involved breast augmentation, liposuction, nose reshaping, eyelid procedures, and facelifts. These are also the types of procedures inclusive of this dataset. Although the number of claims analyzed (N = 25) appears small relative to the 1.8 million cosmetic surgical procedures performed annually in the United States, any number is worthy of investigation.

Normalization of deviance and ineffective communication patterns were 2 of 3 themes that emerged during data analysis. Additionally, nonadherence to, or deviation from, the AANA Standards for Nurse Anesthesia Practice were identified; these were considered congruent with the 2 overarching themes. Worth repeating, the definition of normalization of deviation is the gradual process through which unacceptable practices or standards become acceptable. Initially addressed in nonhealthcare settings (ie, aeronautics and aviation), this phenomenon is becoming increasingly evident in the healthcare milieu. Becoming insensitive to deviant practices that these practices no longer appear objectionable is a major feature. This type of behavior develops in a gradual and subtle manner and may continue for extended periods without catastrophic events. Eventually, critical factors line up, problems occur, and only then there appears to be an impetus to discontinue the behavior. Examples of normalization of deviance in anesthesia and surgical settings, such as failing to do time-outs before procedures, not following the universal protocol, shutting off alarms, omitting neuromuscular blocking reversal agents, and breaches of infection control guidelines, have all been reported. We also identified other patterns of deviant behavior during the claims analysis and, as such, we continue to search for answers as to why the deviation occurred. Conceivably drivers, such as time, cost, and even peer pressure created barriers to performance considered safe and standard-adhering. Perhaps in the cosmetic surgical setting, the pressure to get the surgery done prevails because most procedures are elective, private pay, and desired by the patient. These motivations to proceed are very different from nonelective procedures where the surgery and anesthetic itself is critical for survival, or at best, an enhanced quality of life. Maybe anesthetists feel an obligation to improvise to appease the patient and truly do not see the potential harm that may ensue. The Figure illustrates a model developed by the authors depicting movement from safe to unsafe practice patterns and the benefits that may be presumed for those deviating. The result is usually catastrophic but not immediately recognized like the benefits are. There

![Figure. Movement From Safe to Unsafe Practice Patterns](https://www.aana.com/aanajournalonline)
is tremendous opportunity to learn from other trades, gain an awareness of this concept, and identify steps that prevent deviant behaviors and practices from persisting.20

Additionally, it is important to recognize that the phenomenon of normalization of deviance is not indicative of a lack of critically important knowledge.21 The psychology of decision making has been studied across disciplines to determine why cognitive errors are made in both judgment and processes. It has been discovered that cognitive errors are intimately related to decision-making processes; they occur more often than any technical errors.21 Errors in decision making are different from gaps in knowledge; however, identifying why these errors are made is crucial to preventing them from happening repeatedly. There appears to be a relationship between cognitive errors as a component of decision-making processes and patterns of normalization of deviant behaviors inherent in these findings.21

Possibly another reason for deviant actions turned normal is that CRNAs develop a false sense of security with drugs that are used, monitors heavily relied on, and the minimal overall numbers of adverse events that do occur. This may precipitate a skewed view of reality and a false sense of comfort. Have we become too relaxed with our team, our processes, and our technical equipment, that we improvise in more ways than we realize? Has improvisation not been met with negative consequences often enough to reinforce compliance with standard-of-care practices?

The second major theme that emerged from this dataset is the concept of ineffective communication and related patterns. Communication, both effective and ineffective, is addressed extensively in healthcare while relating it to patient safety and error reduction. It is not a new concept but certainly worthy of further consideration. Unlike normalization of deviance, there is not a unique or clear definition of what constitutes ineffective communication; therefore, identifying patterns that are in opposition to universally accepted effective communication processes and behaviors seems appropriate. The Joint Commission has defined effective communications patterns as the transfer of content from a sender to a receiver in which both achieve a shared understanding and perceive the content in the same manner.13

Good communication practices among the healthcare team improve the quality of care provided to patients that ultimately precipitates favorable outcomes. Additionally, good communication is considered an inalienable right and a prerequisite for building genuine and meaningful relationships between patients, nurses, and other health professionals.22 There is a clear and strong association between nurse-physician communication and collaboration and positive patient outcomes such as lower mortality rates.23-25

This analysis, rather straightforward, easily identified several ineffective communication patterns. It was obvious when a communication failure by the provider, team member, or patient appeared to contribute to the adverse event or poor outcome. Instances of nondisclosure from the patient, deceit on the part of patients and other members of the team, a lack of transparency specific to knowing something about the patient and/or setting but keeping it to oneself, a failure on the part of the CRNA to advocate on behalf of the patient, and intimidation, were all evident. These failures in the high-risk perioperative setting cannot persist. Bezemer et al26 studied communication failures affecting patient safety in the operating room by conducting intraoperative random observations and found 76 communication failures during 150 hours of observation. Because of the findings, a team training curriculum followed, which included teamwork importance and communication skills. The result of the team training was a significant reduction in communication failures.

We accept the challenges that exist among healthcare professionals and their inability to facilitate effective communication practices, practices that indeed potentiate favorable patient outcomes. The intricacies of each distinct setting, the fact that multiple providers prioritize numerous activities independently and often in a silo context, the existence of hierarchical organizational structures, and a lack of established educational curricula that focus on teamwork and communication skills are all factors that can contribute to adverse events related to faulty communications.27

The findings of this cosmetic closed-claim thematic analysis direct us to consider, for CRNAs and the entire perioperative team, team training that focuses on effective communication strategies and education on the concept of normalization of deviance and the psychology of decision making. There currently exist many opportunities for healthcare professionals to learn about patient safety initiatives from a plethora of perspectives and regulatory processes; however, much of the impetus to engage in education with a focus on improving patient safety, reducing errors, and minimizing adverse outcomes is based on self-motivation. The results of this study beg the question: should formal requirements for credentialing, as it relates to patient safety and effective communication strategies, be mandated?

### Table 7. Limitations of Retrospective Cosmetic Closed Claim Analysis

- Use of secondary source data
- Presence of missing or conflicting data
- Inferior level of evidence compared with prospective research
- Small sample size
- Lack of control of extraneous variables
- Actual number of total adverse events unknown

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A crucial component to mitigating risks leading to anesthesia mishaps and patient injury begins with ensuring that an educated and cohesive team is in place. Often we look to organizations to provide this structured education, but should we wait for such external opportunities? Although most healthcare organizations do invest in educating their workforce on strategies to improve patient safety, what remains clandestine is the extent of the programs and devoted resources to the cause. We would venture to say that most systems do not provide true team training or simulation experiences that provide the insight needed to build teams, avert poor communication, and assist providers in recognizing behaviors consistent with normalization of deviance. Focus on, and development of, teamwork and communication are the foundational changes needed to bring about improved patient outcomes. Interventions to improve care must be inextricably linked with efforts to improve teamwork, and with networks of teams to centralize the common goal of patient safety. Without this approach, a “silo syndrome” develops where over time individual workgroups manifest their own culture to meet their needs rather than interacting on common agendas across the organization, industry, or profession, resulting in fragmented practice standards that put patients at risk.

There are a few methodological weaknesses associated with our study. One of the authors (M.G.) has already identified the limitations associated with retrospective chart reviews. Another limitation is the use of secondary source data. Ideally, thematic analysis methods are considered highly reliable when the researcher has access to primary data. Ideally, thematic analysis methods are considered highly reliable when the researcher has access to primary data such as interview transcripts between the researcher and the anesthetist who provided care during the adverse event. Table 7 depicts the limitations associated with this cosmetic surgery closed-claim research.

In conclusion, themes emerged from the dataset of closed-claim files for cosmetic surgery that appeared to contribute to adverse events. They included anomalous anesthetic techniques, aberrant patterns of human behavior, and noncompliance with the AANA Standards for Nurse Anesthesia Practice. Rarely was a single theme identified as the lone contributor to the adverse event.

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