



Outcomes and Complications in Elective Head and Neck Surgery: A Retrospective Multicenter Review

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Abstract

Background: Head and neck surgery encompasses a range of complex procedures often associated with oncologic, reconstructive, and functional challenges. This study aimed to analyze the surgical outcomes and perioperative complications associated with elective head and neck procedures performed across three tertiary centers over a five-year period.

Methods: A retrospective review was conducted on 834 patients who underwent elective head and neck surgery between 2017 and 2022. Data on demographics, surgical type, complications, length of hospital stay, and 30-day readmission were analyzed.

Results: The most common procedures were thyroidectomy (32%), parotidectomy (21%), and neck dissection (18%). The overall complication rate was 14.7%, with wound infection (5.6%) and transient nerve palsy (4.1%) being the most frequent. The average hospital stay was 3.8 days. Factors significantly associated with higher complication rates included age >65, ASA score >II, and extended operative time (>4 hours) ($p < 0.05$).

Conclusion: Elective head and neck surgeries are generally safe with an acceptable complication profile when performed in specialized centers. Risk stratification based on patient age, comorbidities, and procedure complexity remains essential to minimize adverse outcomes.

Keywords: head and neck surgery, surgical outcomes, elective procedures, postoperative complications, thyroidectomy, neck dissection, risk factors

Introduction

Head and neck surgery is a specialized field addressing both benign and malignant pathologies involving

structures such as the thyroid gland, salivary glands, pharynx, larynx, and cervical lymph nodes. Advances in surgical technique and perioperative care have improved outcomes; however, these procedures still pose substantial risks due to the anatomical complexity and proximity to vital neurovascular structures.

Surgical outcomes in head and neck procedures are influenced by various factors including surgeon expertise, patient comorbidities, tumor staging, and the availability of reconstructive options. This study aims to provide a comprehensive review of elective head and neck surgeries performed in high-volume centers, focusing on complication rates and predictive risk factors.

Materials and Methods

Study Design and Setting:

A retrospective observational study was conducted across three tertiary referral centers specializing in head and neck surgery in the USA, UK, and China. Institutional review board approval was obtained from all participating institutions.

Inclusion Criteria:

- Adult patients (≥ 18 years)
- Elective head and neck surgery performed between January 2017 and December 2022
- Complete perioperative data available

Exclusion Criteria:

- Emergency procedures
- Re-operative cases
- Incomplete records

Data Collection:

Patient data were extracted from electronic medical records using a standardized data collection form. Parameters included demographics, ASA (American Society of Anesthesiologists) score, type of surgery, operative duration, complications, length of stay, and 30-day readmission.

Statistical Analysis:

Data were analyzed using SPSS Version 26.0. Descriptive statistics were used for baseline characteristics. Chi-square tests and logistic regression models were employed to identify predictors of postoperative complications. A p-value of < 0.05 was considered statistically significant.

Results

A total of 834 patients were included (mean age: 54.7 ± 12.9 years; 52% female). The most frequently

performed surgeries were thyroidectomy (267 cases), parotidectomy (175), and neck dissection (150). Minor procedures included excision of benign neck masses and superficial biopsies.

Complication Rates:

- Overall complication rate: 14.7%
- Most common complications:
 - Wound infection: 5.6%
 - Transient facial nerve palsy: 4.1%
 - Hematoma requiring drainage: 2.3%
 - Hypocalcemia (in thyroidectomy patients): 2.9%

Hospital Stay and Readmission:

- Mean hospital stay: 3.8 ± 1.2 days
- 30-day readmission: 4.8%, primarily due to infection or bleeding

Predictors of Complications:

Age > 65 (OR: 1.8, CI: 1.2–2.7), ASA $> II$ (OR: 2.1, CI: 1.4–3.2), and operative time > 4 hours (OR: 1.9, CI: 1.3–2.8) were significantly associated with increased postoperative complications.

Discussion

The findings demonstrate that elective head and neck surgeries, when performed in specialized centers, are associated with relatively low morbidity. Complications like transient nerve palsy and wound infections, while common, were mostly manageable without long-term sequelae.

Advanced age and higher ASA classification emerged as strong predictors of complications, aligning with existing literature. Notably, extended operative time independently contributed to risk, highlighting the importance of surgical efficiency and preoperative optimization.

Despite the retrospective nature of the study, the multicenter data provide valuable insight into real-world outcomes and offer a benchmark for performance and quality improvement in head and neck surgical practices.

Conclusion

Elective head and neck surgeries remain safe and effective interventions for a variety of conditions, with a manageable risk of complications. Careful preoperative evaluation and tailored perioperative strategies are key to minimizing adverse events, especially in elderly or high-risk patients. Future

prospective studies are warranted to validate predictive

models and optimize patient selection

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