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Impact of Preoperative Anemia on Maxillofacial Surgical Outcomes in Oral Cancer Patients: A Systematic Review and Meta-Analysis

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ADMINISTRATIVE INFORMATION

Support - King Khalid University.
Review Stage at time of this submission - Completed but not published.
Conflicts of interest - None declared.
INPLASY registration number: INPLASY202580099
Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 31 August 2025 and was last updated on 31 August 2025.

INTRODUCTION

Review question / Objective To evaluate the specific impact of preoperative anemia on postoperative complications, wound healing, and survival in adults undergoing maxillofacial surgery for oral cancer.

Rationale Anemia may worsen surgical and oncologic outcomes in oral cancer; but its specific impact in oral cancer surgery has not been studied.

Condition being studied Oral cavity and oropharyngeal squamous cell carcinoma treated with curative-intent surgery.

METHODS

Search strategy Databases used are PubMed/MEDLINE, Scopus, Web of Science, and Cochrane Library using keywords for anemia, hemoglobin, oral cancer, surgery, complications, and survival.

Participant or population Adults (≥18 years) with pathologically confirmed oral or oropharyngeal cancer undergoing primary surgical resection.

Intervention Preoperative anemia status, defined as hemoglobin <13 g/dL (men) or <12 g/dL (women).

Comparator Non-anemic patients undergoing similar surgical treatment.

Study designs to be included Interventional or observational human studies—randomized trials, prospective/retrospective cohorts, or case-control—published in peer-reviewed journals.

Eligibility criteria Adults with oral/oropharyngeal cancer, primary surgery, and reported anemia status; outcomes measured; excluded case reports <10 patients, pediatric studies.

Information sources Electronic Databases of PubMed/MEDLINE, Scopus, Web of Science, Cochrane Library.

Main outcome(s) Postoperative complications (like infection, wound dehiscence, and flap failure) and survival outcomes.

Additional outcome(s) Wound healing metrics, hospital stay length, perioperative mortality, cancer-specific survival, and recurrence rates.

Data management Two reviewers used a standardized extraction form; duplicates were removed (using EndNote); and disagreements were resolved by consensus.

Quality assessment / Risk of bias analysis Newcastle–Ottawa Scale for observational studies; narrative appraisal of confounding and variability in anemia definitions.

Strategy of data synthesis Random-effects meta-analysis using the DerSimonian-Laird method with odds ratios and hazard ratios.

Subgroup analysis Planned by anemia severity, surgical procedure type, and neoadjuvant therapy status.

Sensitivity analysis Explore heterogeneity and robustness as data permit.

Language restriction Included only English-language publications.

Country(ies) involved Saudi Arabia, United States of America, India.

Other relevant information Review follows PRISMA 2020 with a predefined protocol.

Keywords Preoperative anemia; oral squamous cell carcinoma; oropharyngeal cancer; maxillofacial surgery; postoperative complications; overall survival; blood transfusion; patient blood management.

Dissemination plans Findings will be synthesized per PRISMA to inform clinical perioperative blood management, with emphasis on practice-relevant guidance..

Contributions of each author

Author 1 - Abdullah M Al-Shahrani - Project administration, Study Design, Conceptualization, Data collection.
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