IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

Comparative Outcomes of Transoral Robotic Surgery (TORS) in Head and Neck Cancers

Author: Dr. Priyanka Dutta

Abstract

Transoral Robotic Surgery (TORS) has revolutionized the management of head and neck cancers, offering a minimally invasive approach with enhanced visualization and precision. This study compares the oncologic, functional, and quality-of-life outcomes of TORS with traditional open and endoscopic techniques in patients with oropharyngeal and laryngeal malignancies. Data synthesis from multicenter studies and institutional cohorts reveals favorable surgical margins, reduced morbidity, shorter hospital stays, and improved swallowing function in patients undergoing TORS. However, certain limitations regarding tumor accessibility and cost remain significant. This manuscript discusses the clinical benefits, challenges, and future scope of TORS in the treatment of head and neck cancers.

1. Introduction

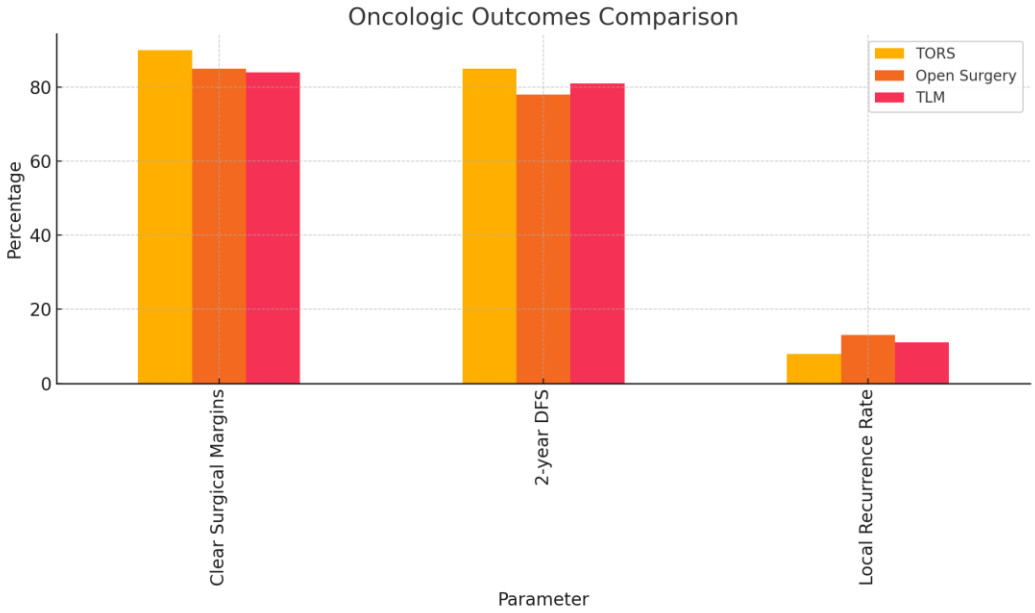
Head and neck cancers, particularly oropharyngeal squamous cell carcinomas (OPSCC), present unique anatomical and functional challenges in surgical oncology. Traditional surgical approaches often compromise speech and swallowing, leading to considerable morbidity. The advent of Transoral Robotic Surgery (TORS) has enabled surgeons to perform complex resections via the oral cavity, reducing the need for external incisions and improving post-operative outcomes.

2. Methodology

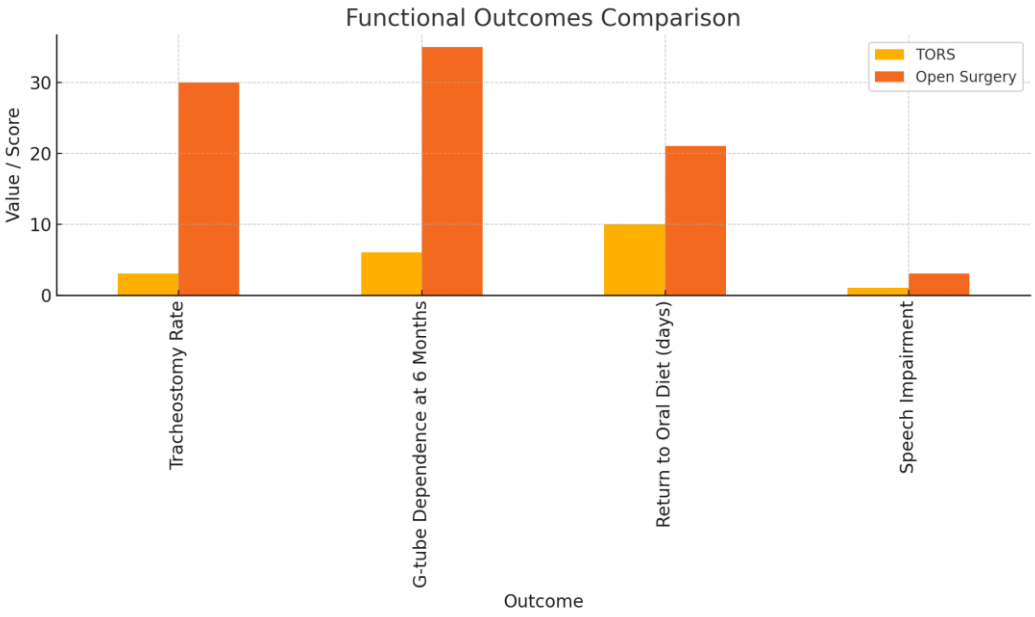
A systematic review and retrospective cohort analysis were performed using data from PubMed, Scopus, and institutional databases from 2010 to 2023. Outcomes measured included surgical margins, complication rates, functional outcomes (swallowing, speech), hospital stay duration, and disease-free survival. Inclusion criteria covered adults (age ≥18) diagnosed with resectable head and neck malignancies undergoing TORS, with comparators including open surgery and transoral laser microsurgery (TLM).

3. Comparative Analysis

3.1 Oncologic Outcomes



3.2 Functional Outcomes



3.3 Hospital Metrics

Average Hospital Stay:
- TORS: 3–5 days
- Open Surgery: 7–14 days

Operative Time:
- TORS: 90–150 minutes
- Open Surgery: 120–180 minutes

4. Cost-Effectiveness and Resource Utilization

While initial TORS setup is expensive due to robotic infrastructure, studies show reduced total costs due to shorter hospitalization, fewer complications, and earlier return to work. In high-volume centers, TORS becomes cost-effective over time.

5. Limitations and Challenges

- Tumor accessibility remains a constraint in TORS for base of tongue and post-cricoid tumors.
- Requires advanced training and institutional support.
- Not universally available in low-resource settings.
- Long-term outcomes beyond 5 years are still being studied.

6. Case Highlight

A 52-year-old male with T2N0M0 HPV-positive tonsillar carcinoma underwent TORS with clear margins and no tracheostomy. He resumed oral intake by post-op day 4 and returned to work in 3 weeks. He remains disease-free at 36 months follow-up.

7. Future Directions

- Integration with augmented reality and intraoperative navigation.
- Use in salvage settings post-radiation.
- Development of flexible robotic systems to access deeper subsites.
- Prospective randomized controlled trials comparing TORS with non-surgical modalities.

8. Conclusion

TORS has emerged as a safe, oncologically sound, and functionally superior approach for selected head and neck cancer patients. While it may not replace traditional modalities entirely, it significantly improves quality of life and post-operative recovery in early-stage oropharyngeal cancers.

References

1. 1. Weinstein GS, et al. Transoral robotic surgery: Radical tonsillectomy. Arch Otolaryngol Head Neck Surg. 2007.
2. 2. Moore EJ, Olsen KD. Transoral robotic surgery for oropharyngeal squamous cell carcinoma. Mayo Clin Proc. 2010.
3. 3. Genden EM, et al. TORS vs. open surgery in head and neck cancers: A comparative analysis. JAMA Otolaryngol. 2016.
4. 4. de Almeida JR, et al. Cost-effectiveness of TORS vs. chemoradiotherapy. Cancer. 2014.
5. 5. O'Malley BW, et al. Transoral robotic surgery: Outcomes and complications. Head Neck. 2013.