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TRANSORAL ROBOTIC SURGERY (TORS) IN HEAD AND NECK ONCOLOGY: A SYSTEMATIC REVIEW OF CURRENT TRENDS AND FUTURE PERSPECTIVES

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Background

Head and neck tumors remain one of the major challenges in modern oncology, as treatment requires maintaining a balance between radical tumor resection and preservation of vital functions. In recent years, Transoral Robotic Surgery (TORS) has attracted considerable attention as a minimally invasive technique for tumor removal through natural anatomical pathways. According to the studies by G.S. Weinstein and B.W. O'Malley, as well as several systematic reviews, TORS provides high surgical precision, minimizes operative trauma, shortens hospital stay, and improves postoperative functional outcomes.

Objective

To perform a systematic analysis of current medical evidence regarding the application of Transoral Robotic Surgery (TORS) in the treatment of head and neck tumors and to evaluate its oncological effectiveness.

Materials and Methods

A comprehensive review of the scientific literature was conducted. The review included original research articles, multicenter studies, NCCN and ESMO clinical practice guidelines, and specialized references on head and neck surgical oncology published in peer-reviewed journals.

Results

The analysis demonstrated that Transoral Robotic Surgery (TORS) has become an increasingly important treatment modality for head and neck tumors due to its combination of high oncological efficacy and favorable functional outcomes. One of the earliest clinical studies by Weinstein et al. (2007) demonstrated the feasibility and safety of transoral robotic supraglottic laryngectomy, providing excellent visualization of the surgical field while maintaining the principles of radical oncological surgery. According to O'Malley and Weinstein (2010), the robotic platform offers high-definition three-dimensional visualization and enables highly precise surgical manipulation within anatomically challenging regions of the oropharynx. De Almeida et al. (2015) reported oncological outcomes comparable to conventional treatment methods while demonstrating faster recovery of swallowing function, shorter hospitalization, and reduced need for tracheostomy and prolonged enteral feeding. A systematic review by Meccariello et al. (2017) identified one of the major contemporary trends as the transition toward organ-preserving surgical strategies that prioritize not only locoregional disease control but also patients' quality of life. Park Y.M. et al. (2010) investigated the use of TORS for early hypopharyngeal cancer and confirmed the technical feasibility of the procedure, reporting rapid recovery of swallowing function and favorable postoperative functional outcomes.

Conclusions

Transoral Robotic Surgery is an effective and promising organ-preserving treatment modality for selected head and neck tumors, providing excellent oncological outcomes together with favorable functional recovery. Current evidence supports the continued expansion of TORS applications and highlights the need for further accumulation of long-term clinical outcome data.