How I Do It

Robotic-Assisted Lingual Tonsillectomy

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INTRODUCTION

This report presents a new technique of transoral robotic-assisted lingual tonsillectomy (RALT). The lingual tonsil area is difficult to visualize and access in the oropharynx. When a lingual tonsillectomy is performed to obtain diagnostic tissue, visualization of this area is important. Transoral robotic surgery (TORS) has been reported to be feasible and safe in other areas of the oral cavity and is reported frequently in resection of tonsillar squamous cell carcinomas.1,2 We report a single institution’s experience with RALT, including the feasibility, safety, utility of the procedure, as well as functional and quality-of-life (QOL) data.

METHODS

Institutional review board approval was obtained from The Ohio State University Office of Responsible Research Practices. Patients undergoing RALT were identified from The Ohio State University Medical Center TORS database.

Surgical Technique

RALT was performed under general anesthesia with a laser-safe endotracheal tube. The da Vinci Surgical System (Intuitive Surgical, Inc., Sunnyvale, CA) was positioned on the right side of the patient, and the bedside surgical assistant was seated at the patient’s head. A Crow-Davis retractor was used in a majority of the cases to expose the base of tongue (BOT) and the lingual tonsil area. A Feyh-Kastenbauer retractor (Gyrus ACMI, Southborough, MA) was used if greater visualization of the base of tongue was necessary. The end of the retractor was placed anteriorly just enough to visualize the anterior extent of the lingual tonsil and to expose the posterior aspect of the BOT. The retractor was suspended with a Storz endoscope holder (Karl Storz, Tuttlingen, Germany). The position of the robotic arms included a central 0° video endoscope, and the robotic surgical arms with bipolar cautery and grasper trocars coming in on either side of the endoscope.

Data Collected

Demographic, clinicopathological, and operative data was collected for each patient. QOL data was assessed with the Head and Neck Cancer Inventory3 at 3 weeks, 3 months, and 6 months postoperatively.

RESULTS

A total of six patients with a median age of 54 years (range, 37–61 years) underwent RALT; four (67%) were females. Median follow-up time was 7 months (range, 2–12 months). Four (67%) of the patients had a previous history of cancer, including neck, lung, esophageal, and ovarian cancer. All patients experienced BOT asymmetry, and three (50%) patients had increased uptake in the BOT on positron emission tomography/computed tomography (Table I). All patients underwent RALT for diagnostic purposes. There were three cases of bilateral and three cases of unilateral lingual tonsillectomy. Median operating room RALT setup time was 31 minutes (range, 20–46 minutes), and RALT operative time was 10 minutes (range, 2–20 minutes), with a median estimated blood loss of 3.8 mL (range, 2–5 mL). Final pathological review showed benign pathology in four (67%) patients, whereas prominent lymphoid tissue and lymphoid infiltrate with focal atypia was seen in the remaining two patients. Two patients stayed in the hospital for 1 night, whereas the rest were discharged home the same day as their surgery. No patients experienced immediate postoperative complications, with all of the patients tolerating an oral diet without any airway compromise on the day of surgery and on a 3-week postoperative follow-up. The QOL data did not demonstrate a significant difference between the preoperative and postoperative speech, eating, social disruption, aesthetic, or overall QOL domains.

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DISCUSSION

Traditional surgical approach to the lingual tonsil area is through the nonrobotic transoral approach with either a headlight and monopolar cautery or laser microsurgery. The challenges of transoral surgery are access, visualization, tissue manipulation, and protection of surrounding structures. Robotic optics allow for excellent visualization of the tongue base and lingual tonsil mucosa. This visualization allows for a thorough inspection and resection of abnormal areas. This approach yielded a definitive histopathological diagnosis in all of our cases. The mean setup time was 31 minutes, and the mean operative time was 10 minutes. The RALT setup time varied with the surgeon’s experience with the robotic system, and patient factors such as retrognathia, narrow mandibular arch, and poor neck mobility.

Swallowing and breathing are most at risk with lingual tonsillectomy. None of our patients experienced these complications from RALT, and all patients were tolerating an oral diet on the day of surgery. No significant QOL changes were reported by the patients following surgery. We believe that the favorable outcomes were largely due to improved visualization and access that allowed for resection of minimal tissue required to yield a diagnosis.

Although the focus of this report is the feasibility and safety of RALT, we are encouraged by the results of this series in that it shows that RALT is not only feasible and safe, but it is also efficient and has low morbidity. Thus, RALT used for diagnostic purposes within the oral cavity is yet another application of the transoral...
robotic technology that may be used in centers that own the da Vinci surgical robot.

CONCLUSION
RALT is a feasible and safe procedure with minimal complications and favorable outcomes in its applications for diagnostic purposes of the lingual tonsil area. This procedure may be useful in patients where optimal visualization of the base of tongue mucosa is required for diagnostic purposes, and may possibly be extended to treat malignancies in this area.

BIBLIOGRAPHY