Abstract

Transoral robotic surgery (TORS) is a technique used for cancer resection. It has been studied in squamous cell carcinoma (SCC), but this series reports outcomes for resections of non-SCC involving the oropharynx. This is a case series of four patients diagnosed with non-SCC who underwent TORS from April 2011 to January 2013 at a tertiary care center. Four patients underwent TORS with the da Vinci surgical system (Intuitive Surgical). Charts were reviewed retrospectively for age, gender, cancer type, tumor site, surgical margins, TNM stage, complications, return of swallowing, adjuvant therapy, and disease free survival. Tumors resected included a soft palate minor salivary gland low grade mammary analog secretory carcinoma, an intermediate grade laryngeal chondrosarcoma with extensive oropharyngeal extension, and a high and intermediate grade mucoepidermoid carcinomas from minor salivary glands of the base of tongue. Surgical margins in all cases were negative. No major intraoperative complications were observed. One patient underwent further surgery on POD10 for delayed bleeding. All patients had restoration of swallowing by POD2. Two patients received adjuvant radiotherapy, and one patient underwent chemotherapy with cisplatin single agent treatment based on pathological findings. No patients had cancer recurrence with mean follow up of 16 months. Although a small series, TORS appears to provide an innovative treatment option for non-SCC of the oropharynx, where primary surgical treatment is the best initial option. It affords complete resection of the primary tumor with functional restoration.

Methods and Materials

A retrospective, single-center review of all TORS cases performed on patients with non-SCC of the oropharynx between April 2011 and January 2013 was performed. All surgeries were performed by one surgeon at the Cleveland Clinic using the da Vinci Surgical System.

The four patient charts that fit these criteria were reviewed for patient demographics, cancer pathological type, tumor site, surgical margins, clinical and pathologic TNM stage, post-operative complications, return of swallowing, adjuvant therapy, and disease recurrence.

Results

All four patients had a different cancer pathology. Tumors resected included low grade mammary analog secretory carcinoma, intermediate grade laryngeal chondrosarcoma with extensive oropharyngeal extension, and high and intermediate grade mucoepidermoid carcinomas. Tumor sites included the soft palate, base of tongue, and the epiglottis with extensive base of tongue involvement.

TORS was the primary approach used in all patients. Patient 3 required a right modified neck dissection with sparing of the internal jugular vein and cranial nerve 11. No major intraoperative complications were noted. All surgical margins were negative. Tumor staging was to be performed in all patients. All patients had restoration of swallowing by day 2. Patient 2 underwent reoperation on POD10 for delayed bleeding from a branch of the left lingual artery and had restoration of swallowing on POD17.

Two patients received adjuvant intensity-modulated radiotherapy (IMRT), and one patient underwent chemoradiotherapy with cisplatin based on pathological findings of extracapsular spread of neck lymph nodes with high grade mucoepidermoid carcinoma and IRR approved study eligibility for the adjuvant use of chemotherapy in this patient population. No patients had had cancer recurrence with mean follow up of 16 months.

Table 1. Patient characteristics, staging, and outcomes after TORS.

<table>
<thead>
<tr>
<th>Patient</th>
<th>Gender</th>
<th>Age at operation</th>
<th>Months since operation</th>
<th>Carcinoma type</th>
<th>Grade</th>
<th>Tumor site</th>
<th>Surgical Margins</th>
<th>pTNM/CtNM</th>
<th>Post-operative complications</th>
<th>Return of swallowing</th>
<th>Adjuvant therapy</th>
<th>Recurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Female</td>
<td>27</td>
<td>27</td>
<td>Mammary secretory analog</td>
<td>Low</td>
<td>Soft palate</td>
<td>Negative</td>
<td>cT1NxM0</td>
<td>None</td>
<td>1 day</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>2</td>
<td>Male</td>
<td>47</td>
<td>24</td>
<td>Chondrosarcoma</td>
<td>Intermediate</td>
<td>Base of tongue</td>
<td>Negative</td>
<td>cT4NxM0</td>
<td>Bleeding on POD10</td>
<td>2 days</td>
<td>IMRT</td>
<td>None</td>
</tr>
<tr>
<td>3</td>
<td>Female</td>
<td>48</td>
<td>7</td>
<td>Mucoid epidermoid</td>
<td>High</td>
<td>Base of tongue</td>
<td>Negative</td>
<td>pT1N2aM0</td>
<td>2 days</td>
<td>2 days</td>
<td>Cisplatin and IMRT</td>
<td>None</td>
</tr>
<tr>
<td>4</td>
<td>Female</td>
<td>54</td>
<td>6</td>
<td>Mucoid epidermoid</td>
<td>Intermediate</td>
<td>Base of tongue</td>
<td>Negative</td>
<td>cT1NxM0</td>
<td>1 day</td>
<td>1 day</td>
<td>IMRT</td>
<td>None</td>
</tr>
</tbody>
</table>

Discussion

Since its approval by the Food and Drug Administration, TORS has started to gain ground as a minimally invasive approach to head and neck cancers, especially those involving the oropharynx. Studies performed at institutions across the country have demonstrated that TORS is a viable option for primary resection and salvage surgery, and that it results in shorter hospital stays, decreased gastrostomy tube dependence, decreased tracheostomy need, and decreased hospital-related costs than open approaches in select patients. Further studies exploring TORS to deintensify treatment options for oropharyngeal squamous cell carcinomas will help further define its role.

In cancer pathologies other than squamous cell cancer, where surgery provides the best treatment option without a comparable alternative in regard to oncologic outcomes, TORS may prove to be an attractive option to decrease the morbidity of traditional surgical approaches. Our case series focuses on non-SCC of the oropharynx, and shows similar, favorable results in a very small select group of patients. Regardless of tumor type, negative surgical margins were achieved in all cases, which is crucial for oncologic control. Additionally, morbidity from TORS was low, with functional swallowing achieved by POD2 for all patients. The risk of acute and delayed bleeding, similar to other transoral surgical approaches, exists. TORS should be explored further as a treatment option for patients with non-SCC involving the oropharynx.

Conclusions

Although this is a small series, TORS appears to provide an innovative treatment option for non-SCC of the oropharynx, where primary surgical treatment is the best initial option. It affords complete resection of the primary tumor with functional restoration. This surgical method should be studied further to establish its role as a treatment modality and compared to open techniques in non-SCC of the oropharynx.

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References