Endoscopy-assisted transoral resection of large benign parapharyngeal space tumors

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Abstract

We have evaluated the outcomes of endoscopically-assisted resection of large benign tumours of the parapharyngeal space by an intraoral approach. Six patients with primary benign tumours were treated in this way. The lesions were pleomorphic adenomas, Warthin’s tumour, and schwannoma. The sizes of the tumours varied from 4 × 4 cm to 7 × 7 cm. All tumours were removed completely without rupture and without damage to the facial nerve. No patient developed any permanent postoperative complications such as damage to the facial nerve, salivary fistula, or limited mouth opening. The cosmetic effects were excellent. The patients were followed up for 8 to 21 months without recurrence. Endoscopically-assisted transoral resection of large benign tumours of the parapharyngeal space is a simple and safe technique that achieves excellent aesthetic and functional results.

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Introduction

Tumours that originate in the parapharyngeal space are rare, and make up about 0.5% of all tumours of the head and neck. About 80% of these tumours are benign, and the most common origins are salivary and neurogenic.1 Although they are rare, these tumours are always a challenge for surgeons because of their complex anatomy, few symptoms, and difficulties in diagnosis.1 Traditionally, they have been removed transorally,2,3 transcervically,1 or by transparotid4 or transmandibular approaches,5,6 or a combination.7,8 Although endoscopic surgery has progressed in recent years, endoscopically-assisted resection of tumours of the parapharyngeal space has to our knowledge seldom been reported. In this study we have evaluated the outcomes of 6 such operations.

Material and methods

Between January 2012 and October 2013, 6 patients (4 men and 2 women, mean age 42 (range 22-61) years) with primary benign tumours of the parapharyngeal space were treated by endoscopically-assisted resection through an
Figure 1. A 22-year-old man with a pleomorphic adenoma of the parapharyngeal space (Case 1): intraoral view showing a left parapharyngeal mass.

Figure 2. Magnetic resonance scan showed a large mass within the left parapharyngeal space.

Surgical technique

All operations were done under general anaesthesia with nasoendotracheal intubation. The patients were placed supine with a pillow under the shoulder. The operative team (excluding anaesthetists) comprised a chief surgeon, an endoscope assistant, an assistant surgeon who helped to maintain the working field by clearing it using a retractor and suction, a circulating nurse, and a scrub nurse. The surgical site was exposed using a mouth gag.

A 0° endoscope 5 mm in diameter (Karl-Storz Corporation, Tuttingen, Germany) was inserted transorally, the proposed incision was marked, and a mucosal incision was made over the tumour with a high-frequency electrical knife. Under endoscopic assistance, an ultrasonic scalpel (Ethicon Corporation) was used to separate the tumour from the surrounding tissue. It was carefully separated from the medial aspect of the ascending ramus of the mandible, the medial pterygoid laterally, and the constrictor musculature medially (Fig. 3). Once the superior and inferior extensions of the incision were complete and the borders of the tumour could be clearly seen, the superior medial fibres of the medial pterygoid muscle were divided as needed to expose the tumour. It was carefully dissected from the constrictor muscles medially and the parapharyngeal fat laterally.

In some cases, the styloglossus and stylopharyngeus were divided to provide wider exposure of the parapharyngeal

Table 1
Details of the 6 patients with tumours in the parapharyngeal space. There were no complications, and no recurrences.

<table>
<thead>
<tr>
<th>Case No</th>
<th>Age (years)</th>
<th>Sex</th>
<th>Diagnosis</th>
<th>Size of tumour (mm)</th>
<th>Duration of follow-up (months)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>22</td>
<td>F</td>
<td>Pleomorphic adenoma</td>
<td>7 × 7</td>
<td>21</td>
</tr>
<tr>
<td>2</td>
<td>39</td>
<td>M</td>
<td>Schwannoma</td>
<td>5 × 5</td>
<td>18</td>
</tr>
<tr>
<td>3</td>
<td>33</td>
<td>F</td>
<td>Pleomorphic adenoma</td>
<td>6 × 7</td>
<td>16</td>
</tr>
<tr>
<td>4</td>
<td>42</td>
<td>M</td>
<td>Pleomorphic adenoma</td>
<td>6 × 6</td>
<td>16</td>
</tr>
<tr>
<td>5</td>
<td>53</td>
<td>M</td>
<td>Warthin’s tumour</td>
<td>4 × 4</td>
<td>9</td>
</tr>
<tr>
<td>6</td>
<td>61</td>
<td>M</td>
<td>Pleomorphic adenoma</td>
<td>5 × 6</td>
<td>8</td>
</tr>
</tbody>
</table>
space. The facial nerve was identified and carefully protected. Once the tumour had been exposed we used blunt dissection initially with cautery by the surgeon, combined with suction dissection by the assistant, and subsequently with finger dissection. Eventually, the tumour was successfully separated from the parapharyngeal space and delivered transorally because of its size (Fig. 4). The wound bed was inspected for haemostasis to any questionable areas in the surgical bed if the capsule had been disrupted. The residual parapharyngeal space was packed with iodoform gauze for secondary healing or Avitene Microfibrillar Hemostatic Flour (Davol Inc., Warwick, RI). The iodoform gauze was removed 2 weeks postoperatively in the outpatient clinic.

**Results**

All tumours were removed completely without rupture, and damage to the facial nerve was avoided. No patient developed severe pain or swelling, and they were all started on a liquid diet on the first postoperative day and discharged on the second day. All wounds healed uneventfully. No patient had any permanent postoperative complications, damage to the facial nerve, salivary fistula, or limited mouth opening (Fig. 5). The cosmetic effects were excellent. The patients were followed up for a median of 16 months (range 8-21), and none developed a recurrence (Table 1).

**Discussion**

Any approach to the parapharyngeal space to allow enough room to remove the tumour adequately should meet two criteria: wide intraoperative visibility for safe, radical, dissection, and minimal functional or cosmetic after-effects. When a double mandibular osteotomy is used to gain access to such a tumour, a neck incision that extends from the mastoid process to the mandibular symphysis is used, resulting in a large cervicofacial scar. Proper occlusion is not easy, and cutting the temporalis muscle that is attached to the coronoid process may result in decreased occlusive power. The transcervical, transparotid, and transmandibular approaches also carry a risk of damage to the facial nerve.

The transoral approach should be considered only in selected cases because of the risk of haemorrhage, damage to the cranial nerve, or spillage of tumour cells, and this approach should be used only in association with the transcervical approach for a relapsed pleomorphic adenoma. Endoscopic surgery has been more widely used in the head and neck region since the late 1970s, and it has advantages, including smaller incisions, less tissue damage, and direct vision of a magnified and illuminated operative field.

We treated 6 patients with large, benign parapharyngeal space tumours with endoscopy-assisted resection by an intraoral approach. The technique provided reliable access for complete removal of the tumour (maximum size 7 × 7 cm) without rupture. This may be attributed to the careful operation and anatomical fixation under endoscopic illumination. No patient developed severe pain or swelling, and they were all discharged on the second postoperative day. The cosmetic effects were excellent, and there was no recurrence during the follow-up period. Compared with the traditional approach, this one seems to be efficient, safe, and minimally invasive. It reduces the risk of causing a salivary fistula or injury to the facial nerve or the inferior alveolar nerve, and eliminates conspicuous facial scars, parotid dissection, and decreased occlusive power.

We think that this approach is indicated for tumours suspected of being benign based on the history, examination, and findings on CT and MRI, and may not be indicated for resection of lateral poststyloid lesions that involve or displace the internal carotid artery medially, salivary tumours with extension into the stylomandibular tunnel, neoplasms that involve the osseous skull base, and paragangliomas with common adherence to the carotid artery.

In conclusion, endoscopically-assisted resection by an intraoral approach is indicated for benign tumours of the parapharyngeal space. The approach is efficient, safe, and minimally invasive, it reduces the risk of salivary fistula and injury to the facial and inferior alveolar nerves, and eliminates
conspicuous facial scars, parotid dissection, and decreased occlusive power.

Conflict of Interest

We have no conflict of interest.

Ethics statement/confirmation of patients’ permission

The Institutional Review Board of the Hospital approved the study. Ethical approval not required.

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References