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Endoscope-assisted transoral excision of a huge parapharyngeal pleomorphic adenoma

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Abstract. *Endoscope-assisted transoral excision of a huge parapharyngeal pleomorphic adenoma*. The treatment of choice for a parapharyngeal pleomorphic adenoma is total surgical resection. We describe an endoscope-assisted transoral excision of a huge parapharyngeal pleomorphic adenoma, and discuss the benefits of this type of operation.

Introduction

The treatment of choice for parapharyngeal pleomorphic adenomas is total surgical resection with a disease free surgical margin. Traditionally, because of the anatomic complexity of the parapharyngeal space, resection of parapharyngeal tumours has been done by a transoral or external approach. However, when a large parapharyngeal tumour is extended to the palate, complete excision by these approaches can be difficult. Here, we introduce a new transoral endoscope-assisted approach. Our previously reported endoscopic techniques.[1-8] were refined and successfully adapted for resecting this type of tumour. Here, we describe this novel transoral endoscope-assisted approach, and discuss the benefits of this type of operation.

Case report

A 42-year-old woman presented with a huge pleomorphic adenoma in the parapharyngeal space, originating from the minor salivary glands. The patient suffered from discomfort and foreign body sensation in her mouth for months. The physical examination revealed a large, submucosal bulging mass in the left soft palate with a smooth surface. Magnetic resonance imaging (MRI) revealed a huge mass ($7 \times 4.5 \times 3.3$ cm) in the left parapharyngeal space near the carotid artery with well-defined margins, no obvious invasion of adjacent tissues, and no connection with the deep lobe of the parotid gland (Figure 1). There are various approaches when dealing with tumours of the parapharyngeal space: trans-cervical, transoral, trans-parotid, or a combination of approaches. The patient had a history of severe keloid formation; therefore, after evaluation of the mass's location, size, nature, and cosmetic appearance, we decided to remove the mass by the transoral method, assisted by endoscopy. The patient was put under general anaesthesia and in a supine position, and her mouth was maintained open with a Dingmann mouth gag for adequate exposure of her soft palate. After a shallow incision in her soft palate mucosa by a surgical blade, we used artery forceps to carefully dissect until the capsule of the mass was visible. Stay sutures were used on the soft palate mucosa to maintain good exposure. Due to the size of the parapharyngeal tumour, it was difficult to see into the deep part of the mass; therefore, we used a 4 mm diameter, 0 degree and 30 degree angle endoscope (Karl-Storz, Tuttlingen, Germany) for assistance. Under endoscopic control, we further dissected the tumour mass from the adjacent tissue using artery forceps and cotton balls, and carefully maintained hemostasis. Neither obvious bleeding nor parotid gland tissue was noted during the dissection (Figure 2). Finally, we used a specially designed wire to hold the huge tumour mass in order to complete the final dissection. The tumour, along with its intact capsule, was resected. Important vessels or nerves, such as the internal carotid artery and vagus nerve, were carefully preserved without injury. The surgery took approximately 160 minutes to complete because of the size of the tumour and since most of the surgical procedure was done under endoscope. After checking the wound and hemostatic control, one small penrose was

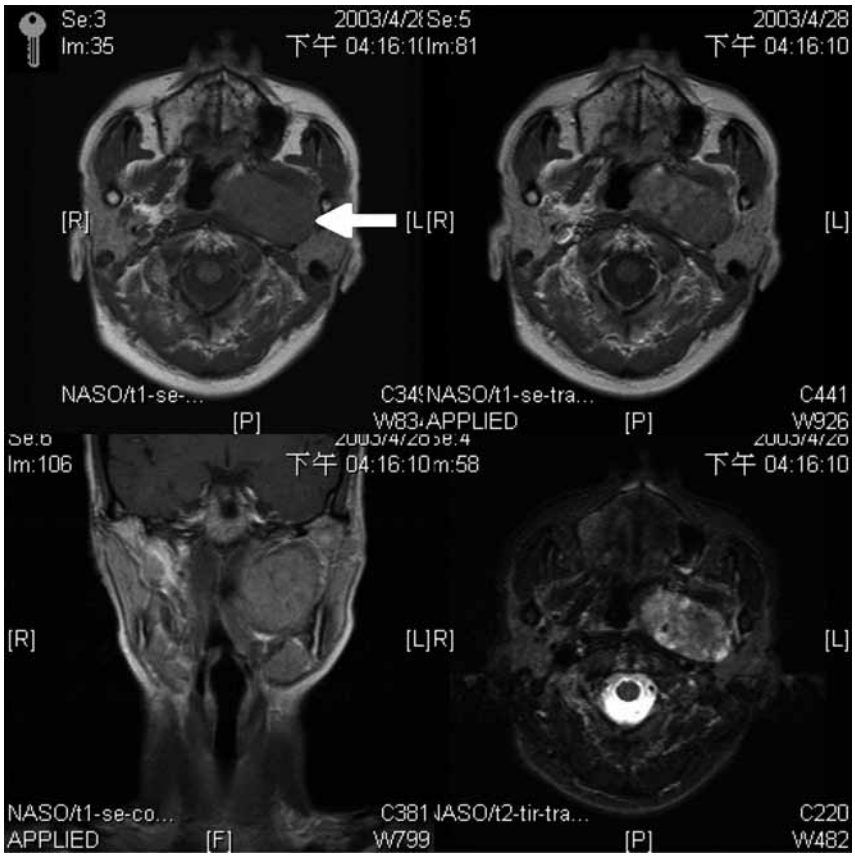

Figure 1
MRI imaging demonstrated a huge parapharyngeal mass (arrow) with a well-defined margin and no evidence of direct connection between the mass and the deep lobe of the parotid gland.

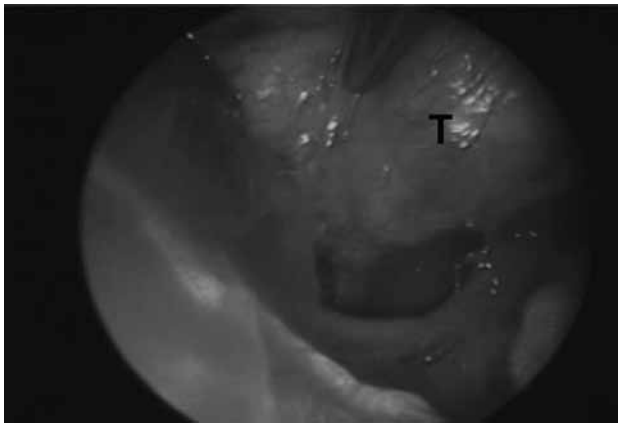

Figure 2
The adjacent tissue was separated away from the tumour (T) and there was no parotid tissue observed with the endoscope during dissection.

inserted for drainage and the total blood loss was minimal. The mass was totally excised from parapharyngeal space by this transoral endoscope-assisted approach. The resected specimen was approximately 6.5 × 4.2 × 3 cm in size and well-encapsulated (Figure 3). The pathologic report showed the tumour contained myoepithelial islands and myxochondroid stroma, compatible with pleomorphic adenoma, and the resection margin was clean. There were no post-operative complications observed. The patient was discharged from the hospital on the 4th day with regular follow-up in the out-patient department. The healing of the intraoral wound was good, without any severe pain, and there has been no post operation recurrence for a period of 4 years.

Discussion

Primary tumours in the parapharyngeal space comprise approximately 0.5% of all head and neck tumours; 80% are benign, while the others are malignant. Pleomorphic adenoma is the most common type.[9] To make the correct clinical diagnosis, it is necessary to take a detailed history and perform a physical examination of the neck, oral cavity, nasopharynx, oropharynx, and hypopharynx. Endoscopic examination may also be of considerable help. Further imaging studies are recommended if there is any asymmetry of the pharyngeal wall or a bulging but smooth mucosal surface, which may indicate submucosal lesions. For the diagnosis of parapharyngeal space tumours, MRI is still the modality of choice. It has several advantages, such as making a differential diagnosis easier according to the characteristic appearance in T1-, T2-weighted signal intensity. MRI also helps physicians to locate the lesion, adjacent vessels, and nerves more precisely due to its

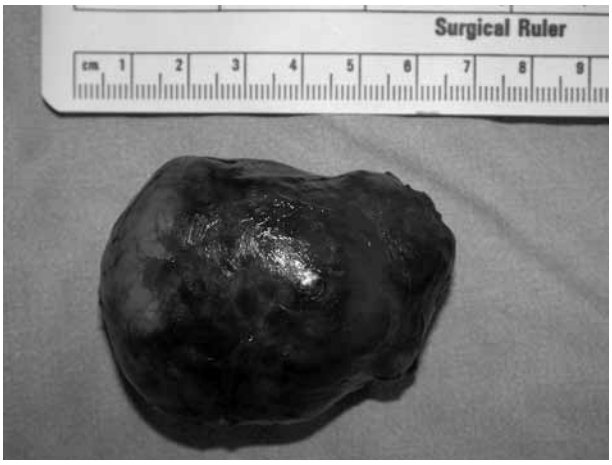

Figure 3
The well-encapsulated tumour mass was 6.5 cm in diameter

multiplanar imaging, and surgical plans are based on the findings from MRI. A pleomorphic adenoma exhibits high and homogenous signal intensity in T2-weighted imaging due to its myxoid content, but low intensity in T1-weighted imaging. MRI imaging can also demonstrate that the tumour is thin walled and well-encapsulated.

Beyond clinical observation, surgical excision is the treatment of choice for pleomorphic adenomas. An adequate margin is mandatory during the surgery to reduce the chance of recurrence from microinvasion, which is caused by the pseudopods perforating through the capsule. There have been large studies indicating a 6% local recurrence rate in surgical excision of pleomorphic adenomas in the minor salivary glands. This might be even higher if the tumour is located in the parapharyngeal space, since establishing an adequate margin is more difficult because of the adjacent vessels and nerves. Post-operative follow-up is mandatory, and some articles report that post-operative radiotherapy reduces the recurrence rate.[10]

The techniques for surgical excision of parapharyngeal space tumours include trans-cervical, transoral, trans-parotid, transmandibular, or a combination of methods. The trans-cervical method is useful for dealing with palpable tumours in the neck region that do not extend into the upper part of the parapharyngeal space, and this method effectively and easily manages the carotid artery and internal jugular vein.[11] If the tumour is located in the upper part of the parapharyngeal space, a trans-parotid procedure is required, which means resection of the parotid and submandibular gland tissue after preserving the facial nerve. However, exposure and control of superior and posterior tumour aspects might not be adequate. The trans-mandibular method does achieve good exposure, but it also has a higher complication rate, including wound infection, poor healing of the mandible and dentition, and cosmetic problems; furthermore, a tracheotomy is sometimes required when using this method.[12] A better way to deal with a tumour situated in the upper part of the parapharyngeal space is the transoral method. This method does not destroy as much tissue by exposure and careful dissection avoids injury to the adjacent important structures. However, inadequate exposure and poor control of the proximal end vessels are the disadvantages when the tumour mass is large, and combining this method with the trans-mandible method might be indicated in such circumstances.[12] We used an endoscope-assisted technique to overcome these problems. During the operation, we identified the tumour capsule and endoscopically dissected it from the adjacent structures, including the internal carotid artery and vagus nerve. This transoral method combined with an endoscope-assisted technique provides a less invasive way to resect a parapharyngeal space tumour without cosmetic problems. There is also better recovery of the wound and shorter hospitalization for patients. Therefore, we suggest the endoscope-assisted transoral method as an alternative when dealing with benign parapharyngeal tumours.

Conclusions

We suggest this endoscopic or endoscope-assisted method is more widely used. Endoscopic or endoscope-assisted operations have a number of benefits, including less local tissue destruction and blood loss during the procedure, an enhanced cosmetic appearance, and a shorter hospital stay.

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