Diagnosis and Management of Giant Esophageal Fibrovascular Polyp With Hypopharyngeal Pedicle

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Abstract

Background: Fibrovascular polyps (FVPs) with hypopharyngeal pedicles (hFVPs) are the rare intraluminal benign tumours of the upper aerodigestive tract, and their accurate diagnosis and optimal management are challenging. Purpose: The present retrospective study attempted to explore the optimal diagnosis and treatment of hFVPs. Research Design: The clinical records of 2 patients with giant, irregularly shaped hFVPs, who underwent several failed surgical procedures after inaccurate diagnosis, were reviewed. Finally, the patients were correctly diagnosed and successfully treated at Capital Medical University Beijing Friendship Hospital in different years, 2018 and 2020. Results: Case 1 was of a 43-year-old woman with 2 months of progressive dysphagia. Gastroenterologists overlooked the origin of her FVP, and decided to sever its narrowest point in the oesophagus through endoscopy. However, upon unsuccessful removal of the mass, a gastrotomy procedure was performed to extract the mass 7 days later. Symptoms recurred 3 months after the treatment, and a fibreoptic laryngoscopy confirmed hFVP in the patient at our department. A transcervical approach was used to sever the hypopharyngeal pedicle, achieve haemostasis and remove the oesophageal tumour. No recurrence was detected during the 2-year follow-up period after the treatment. Case 2 was of a 32-year-old man with dysphagia who had previously undergone transthoracic and transcervical oesophagotomy procedures within a gap of 3 months for the removal of FVP causing dysphagia. The hypopharyngeal pedicle was not diagnosed in the patient. The symptoms of dysphagia recurred 4 years after the treatment, and a fibreoptic laryngoscope confirmed hFVP at our department. The tumour was removed successfully through the transcervical approach. No recurrence was detected during the 6-months follow-up after surgery. Conclusion: In conclusion, the transcervical approach is suitable for achieving haemostasis and removing giant, irregularly shaped hFVPs.

Keywords
oesophageal inlet, fibrovascular polyp, hypopharyngeal pedicle, transcervical approach, width

Introduction

Fibrovascular polyps (FVPs) are benign, intraluminal tumours of the upper aerodigestive tract.1 These tumours produce symptoms after they gradually grow into a large size. Although the incidence of FVPs is rare, caution must be exercised because they may lead to asphyxiation secondary to polyp aspiration; a total of seven such cases of fatalities have been reported in literature.2 Clinical presentations of FVPs include regurgitation of the polyp to the mouth and progressive dysphagia due to the growing oesophageal tumour. Other
symptoms include dyspnoea, vomiting, laryngeal discomfort, weight loss, syncope, anaemia and sore throat.\(^3\)

FVPs are potentially lethal, and their surgical excision is essential for improving the symptoms. Transoral, transcervical, transsthoracic and transabdominal approaches or a combination of these approaches are generally used for specific oesophageal tumour removal. Malignant transformation and disease recurrence are rare after complete resection.\(^3\)

The management of FVPs with hypopharyngeal pedicles (hFVPs) is challenging. Globally, only 16 cases of hFVP have been reported.\(^1\) The accurate diagnosis of hFVP can be problematic if the concerning doctors (gastroenterologists, thoracic surgeons and otolaryngologists) are unaware of the disease and fail to thoroughly examine the patient’s hypopharynx. The lack of accurate diagnosis of hFVP may result in incomplete resection, recurrence of symptoms and repeated surgeries.

Long and thin tumours have been reported in literature that could be removed rapidly from the oesophageal inlet after pedicle severance by using the less invasive transoral endoscopic approach. The presence of an hFVP tumour in the stomach has been reported in only a single case that required gastrotomy (5). However, when oesophageal masses were giant and irregular in shape, the protocol of management could be very different, and minimally invasive transoral approaches (including video assisted endoscopic approach, or robotic approach) might not be adequate to deliver satisfactory haemostasis and mass extraction.

This study analysed the diagnosis and management of 2 cases of giant, irregularly shaped hFVP by using the transcervical approach at a tertiary academic institution.

**Patients and Methods**

**Patients**

This retrospective study was conducted in 2 patients with giant, irregularly shaped hFVPs who were treated at the Department of Otolaryngology Head and Neck Surgery, Beijing Friendship Hospital, Capital Medical University in 2018 and 2020. Clinical data of the patients were retrieved. The protocol of the research project was approved by the Bioethics Committee of Beijing Friendship Hospital, and it conformed to the provisions of the Declaration of Helsinki. A written consent form was obtained from the patients.

Case 1 was of a 43-year-old woman, whereas Case 2 was of a 32-year-old man. Both patients received inaccurate diagnoses initially and underwent several surgeries without the proper management of hypopharyngeal pedicles, which eventually failed. Finally, both the patients received the accurate diagnosis of hFVP and were successfully treated at our department. Both patients received a routine follow-up.

**Diagnostic Workup**

The preoperative diagnostic workup included fibreoptic laryngoscopy for evaluating the hypopharynx and identifying the pedicle of the giant oesophageal tumour; barium swallow test for demonstrating the intraluminal nature of the oesophageal tumour by observing the circumferential flowing down around the oesophageal tumour; gastroscopy also for demonstrating the intraluminal nature of the oesophageal tumour (yet in the case of giant hFVP, its view could be blocked, and might not be able to give definite conclusions); and computed tomography (CT) and magnetic resonance imaging (MRI) with contrast for analysing the extent, feature and shape of the tumour to design a management strategy.

**Surgical Procedure**

Complete removal of the hypopharyngeal pedicles is crucial for the successful management of hFVPs. The transcervical approach and hypopharyngeal incision were utilised in the 2 cases because of two reasons. First, the size of oesophageal tumours was large. Second, both the hypopharyngeal pedicles were thick and had high vasculature, which was confirmed intraoperatively.

The transcervical approach involved a horizontal incision on the lowest cervical skin crease above the clavicles, followed by elevation of the subplatysmal flaps and lateral retraction of the strap muscles. Superior vascular pedicle of thyroid lobe ipsilateral to the hypopharyngeal pedicle was ligated, and the entire lobe was mobilized and retracted to the contralateral side. The superior and recurrent laryngeal nerves were monitored and preserved. The ipsilateral half of the hyoid bone was removed for additional hypopharyngeal exposure, followed by detachment of the muscles attached with the ipsilateral thyroid cartilage. The lateral hypopharyngotomy was performed to reveal the bulky hypopharyngeal pedicle, followed by removal of the entire pedicle from the hypopharynx. After achieving haemostasis, the whole tumour was gradually pulled out of the oesophagus. Multiple layers of suturing of the hypopharyngeal mucosa were performed, and the recovered muscles were utilised for protecting the hypopharyngeal wall. Negative-pressure suction device was placed, and incision was closed.

**Results**

**Case 1**

The female patient with progressive dysphagia for 2 months received a diagnosis of FVP through gastroscopy, CT, MRI and barium swallow test, which confirmed a giant tumour in her oesophagus. The oesophageal tumour was 20 cm in length, with a maximum width of approximately 6 cm in the middle section (Figure 1 and 2).

Initially, gastroenterologists overlooked the origin of this FVP, and decided to sever its narrowest point in the oesophagus under endoscope. However, the oesophageal tumour could not be moved. The patient was transferred to the intensive care unit (ICU), expecting a downward tumour...
movement into the stomach due to necrosis. However, the peristaltic movement failed to move down the tumour even after 7 days in the ICU. Eventually, a transabdominal gastroscopy procedure was performed to remove the oesophageal tumours and avoid toxic effects of the necrotising tumour.

Symptoms recurred after 3 months, and the patient was referred to our department. Fibreoptic laryngoscopy revealed the presence of a hypopharyngeal pedicle, and the diagnosis of hFVP was made. The transcervical approach was used to sever the hypopharyngeal pedicle that occupied an area of approximately 7 cm² of the medial wall of the right pyriform sinus and to achieve haemostasis of the heavily diffused haemorrhage. The tumour was removed successfully. Recovery was smooth. The final pathology report confirmed the presence of hFVP. No recurrence was detected during the 2-year follow-up period.

Case 2

The male patient with a history of progressive dysphagia was diagnosed as having a giant intraluminal oesophageal mass 4 years ago. Despite this, the concerning thoracic surgeons did not attempt to determine the origin of the mass. First, the patient underwent a transthoracic oesophagotomy procedure, which revealed that the pedicle of the mass too high to be completely resected. Three months later, a transcervical oesophagotomy procedure was performed to remove the residual oesophageal mass. However, the origin of the tumour was not determined.

Although the symptoms improved considerably after the second surgery, the patient was presented to our department 4 years after surgery due to the recurrence of progressive dysphagia along with slight dyspnoea. A giant, irregularly shaped hFVP was detected after a careful preoperative workup, which included fibreoptic laryngoscopy, gastroscopy, CT, MRI and barium swallow test. The maximum width of the oesophageal tumour was approximately 6 cm near the oesophageal inlet, which was also enlarged (Figure 3 and Figure 4). Gastroenterologists and thoracic surgeons were consulted with, and they all agreed that we should try the transcervical approach first.

During surgery, the hypopharyngeal pedicle was found to be thick, with an area of approximately 4.5 cm² and located majorly on the medial wall of the left pyriform sinus. Some parts were found in the post cricoid region, which caused the blockage of the laryngeal inlet. The hypopharyngeal pedicle was completely severed, and haemorrhage was rather heavy and diffuse. After achieving haemostasis, the oesophageal tumour (15 cm in length) was pulled out smoothly, and a giant multilobular tumour with the maximum width immediately below the hypopharyngeal pedicle was discovered (Figure 4). Recovery of the patient was smooth. The final pathology report could not rule out liposarcoma based on immunohistochemistry assays. The patient was informed, and agreed to routine observation (without postoperative radiotherapy
or chemotherapy). No recurrence was detected during the 6-month follow-up period.

**Discussion**

FVPs have been named as fibromas, fibrolipomas, myxofibromas, polyps and pedunculated lipomas, all of which have been grouped and classified under FVP, according to the recommendations of World Health Organization’s International Histological Classification of Tumours.  

Locating the exact origin or pedicle of an FVP, particularly the hFVP, is essential for an accurate diagnosis. Since hFVPs are extremely rare, they are easily overlooked, which leads to recurrence of symptoms and unsuccessful surgical procedures, causing physical, economical and psychological burden to patients. Thus, gastroenterologists and thoracic surgeons should be aware of hFVPs. Additionally, a consensus should be reached that otolaryngologists should be consulted with whenever the pedicle of an FVP is not definitely confirmed, and whenever a hypopharyngeal one is suspected. Moreover, fibreoptic laryngoscopy should be included as a routine examination in the diagnostic workup of FVPs to avoid misdiagnosis.

The hFVPs likely originate as nodular submucosal thickenings that elongate progressively due to the combined forces of the local peristalsis and the friction created by the traction of moving debris. FVPs may even grow into the stomach with a length of 26 cm. Hence, we believe one advantage of managing hFVPs through an open transcervical approach is that, any redundant mucosa around the stalks of hFVPs could be removed, because this manoeuvre may prevent further recurrences caused by the continuous propulsive forces of the oesophagus.

Histologically, giant oesophageal polyps are covered by the squamous epithelium and have a fibrovascular axis comprising various types of adipose and connective tissues and a well-developed vascular network. Hence, it is our belief that the vasculature within the hypopharyngeal pedicle would gradually increase to sustain a giant and growing oesophageal mass, and the size of the pedicle itself would also gradually increase. Therefore, we believe another important advantage of utilizing the open transcervical approach to deal with hypopharyngeal pedicles is that, haemorrhage can be better managed than transoral endoscopic approach. In this study, broad hFVPs with a high degree of vasculature were discovered. Diffuse and heavy haemorrhage was observed after the complete severance of hypopharyngeal pedicles, although
Declaration of Conflating Interests
The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.