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Case Report
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Combined Approach to a Giant Esophageal Polyp: Case Report and Literature Review

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Abstract

Benign esophageal tumors are less common than esophageal malignancies. Benign lesions may reach gigantic size and then provoke dysphagia, chest pain, food regurgitation, and weight loss typical of other more common diseases of the esophagus. There are scanty reports in the literature available describing different approaches in the surgical treatment of giant esophageal polyps. We present a case of a 65-year-old male patient with a 14.5 cm × 5.5 cm × 4 cm fibrovascular esophageal polyp originating from the hypopharynx. The diagnostic modalities include endoscopy, computer tomography, magnetic-resonance imaging, and virtual angiography. Under general anesthesia with transnasal endotracheal reinforced tube, an endoscopic approach by using of a Weerda distending diverticuloscope is achieved. Manipulations are performed with a flexible gastroscope and 10 mm 30° angled laparoscope. The flexible endoscope passes easily around the mass and reaches the stomach without any signs of esophageal wall injury. After catching the polyp's pedicle with a suture loop, it is sclerotized and resected with 5-mm laparoscopic Ligasure. There are no pertinent publications on this approach in the literature available yet. Because of the considerable polyp size, a transgastric extraction is carried out. The postoperative course is uneventful. There is no recurrence after two-year follow-up.

Keywords: Gastrointestinal endoscopic surgery; Giant esophageal fibrovascular polyp; Weerda diverticuloscope; Ligasure; Bipolar tissue sealing device

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Introduction

Benign esophageal tumors are less common than esophageal malignancies. Usually, they are asymptomatic and develop unsuspected for long period of time. These lesions are characterized by their ability to reach a gigantic size and cause dysphagia, chest pain, food regurgitation, weight loss, which are typical of other more common diseases of the esophagus. There are several publications describing different approaches in the surgical treatment of the benign esophageal neoplasms. We present a case of a 65-year-old male patient with a gigantic 14.5 cm × 5.5 cm × 4 cm esophageal polyp originating from the hypopharynx. Under general anesthesia with transnasal endotracheal reinforced tube. The significant size indicates a non-standard approach including transoral endoscopic resection and transgastric extraction. Polyp's pedicle was injected with sclerosant and resected with laparoscopic 5-mm Ligasure devices that provided excellent hemostasis. The postoperative course was uneventful. No recurrence was established during a two-year follow-up.

Case Presentation

A 65-year-old male patient presented with complains of slowly progressing dysphagia for solid foods, food regurgitation, and weight loss of 20 kg over six months and anemia (Hb 81 g/L). Endoscopy revealed a large esophageal pedunculated polyp with partially smooth surface with large area of superficial ulceration at the distal half taking up the entire lumen and reaching up to 3 cm in front of the cardio-esophageal junction (Figure 1). The biopsy showed necrotizing tissue with inflammatory changes, which could not exclude a malignant origin. Preoperative contrast-enhanced computed tomography (CT) and magnetic-resonance imaging (MRI) confirmed the presence of a heterogeneous tumor sized 14.5 cm × 4 cm × 3.6 cm of clavate shape (Figure 2 and 3). It rose from

Table 1: Approaches and techniques for giant esophageal polyp resection.

Author	Localization	Size	Approach/Exctraction route	Resection Method	Complications	Reccurrence
Schumaher et al. [37]	Upper esophageal sphincter	Upper esophageal sphincter and reaching to the cardia	Thoracic esophagectomy	Esophagectomy		
Paczona et al. [26]	Cervical esophagus	22 cm × 6.0 cm × 3 cm	Transoral	Ligation, snare electrocoagulation		
Drenth et al. [12]	Two polyps in the hypopharynx -1993	1.5 cm × 2 cm × 20 cm	Transorally and left cervical esophagotomy	Snare coagulation and resection		Yes
	Hypopharynx - 1999	4 cm	Cervical esophagotomy	Resection		Yes
	Hypopharynx - 2001	18/3 cm × 6.3 cm	Cervical esophagotomy	Resection		
Fries et al. [13]	Two polyps - hypopharynx and postcricoid region	11.8 cm × 3 4.3 cm × 2.2 cm; 3.0 cm × 2.5 cm × 1.0 cm	Cervicotomy and transoral	Open resection, endoscopic resection		
Ozcelik et al. [19]	Bellow the cricopharingeus muscle	2.5 cm × 1.5 cm	Cervicotomy, esophagotomy	Ligation and excision		
Palacios et al. [17]	Cervical esophagus	Upper esophageal sphincter to the cardia	Transhiatal esophagectomy	Esophagectomy		
Hoseok et al. [23]	Anterior hypopharynx	26 cm × 10 cm × 4 cm	laryngoscopy, pharyngotomy, laparotomy and gastrotomy	Endoscopic laser excision and open resection		
Chourmouzi et al. [22]	Hypopharynx	from the cervical oesophagus to the upper body of the stomach	Cervical esophagotoy, gastrotomy	Resection		
Lee et al. [20]	Two polyps - upper third of the oesophagus	4 cm × 4 cm and 6 cm × 6 cm	Left thoracotomy, esophagotomy	Excision		Yes
	Upper esophagus	5 cm × 6 cm	Transoral excision	Stapler resection		Yes
	Upper esophagus	6 cm × 7 cm	Cervical esophagotomy, thoracic esophagotomy	Excision		
Zhang et al. [31]	upper esophagus	17 cm × 5 cm	Endoscopic resection	Electrosurgical snare	Minor bleeding – adrenaline and hemoclips	
Peltz et al. [25]	Anterior cervical esophagus	5.5 cm × 5.5 cm × 13 cm	Cervicotomy, esophagotomy	Submucosal resection of the pedicule		
Millás-Gómez et al. [30]	Right pyriform sinus	3 cm × 0.9 cm	Direct hypopharyngoscopy	Microsurgical Resection, cauterization	Bleeding	
Pallabazzer et al. [10]	Hypopharynx	3 cm	Left cervicotomy, pharyngotomy,	Stapler resection		
Sen et al. [21]	Upper end of esophagus to the junction	10 cm × 4 cm size	cervicotomy, esophagotomy	Resection	Compression on the endotracheal tube - tracheostomy	
Nascimento et al. [38]	Epiglottis and right pharyngoepiglotic fold	11.5 cm × 0.8 cm	Direct laryngoscopy	Excision, cauterization		
Haytoglu et al. [36]	Posterior hypopharynx	13 cm × 3 cm × 2 cm	Transorally	Electrocautery resection		
Kumar et al. [24]	Upper esophagus	15 cm × 4.5 cm × 3.5 cm	Cervicotomy, esophagotomy	Resection		

the anterior esophageal wall immediately after the hypopharynx with a narrow and long pedicle without infiltration to adjacent structures. No thoracic or abdominal lymphadenopathy was established at all. The virtual angio reconstruction (Figure 2) did not demonstrate any increased tumor vascularization and enlarged blood vessels at the polyp's pedicle, which defined the further surgical strategy.

The patient was planned for trans-oral endoscopic excision. He was placed in supine position (Figure 4). Under general anesthesia with transnasal endotracheal reinforced tube, patient's head was deflected and a Weerda distending diverticuloscope (Karl Storz, Tuttlingen, Germany) was introduced. The manipulations were performed with a flexible gastroscope and 10 mm 30° angled laparoscope. The localization of the pedicle and the head of the polyp were verified endoscopically once again. Handling the polyp proved to be difficult, because of its relative rigidity. Still a flexible endoscope with an external diameter of 10 mm could be passed easily around the mass and reached the stomach without any signs of injury to the esophageal wall. For a better control of the pedicle, a polydioxanone (PDS) loop 1-0 suture was inserted in a 4 Fr catheter and placed from the polyp's base to the pedicle (Figure 5). The loop was retracted and lifted the polyp from the esophageal surface. To avoid bleeding the polyp base was injected with 2 mL of sclerosant (polidocanol, Aethoxysklerol®) and later transected with 5 mm laparoscopic vessel sealer and divider (LigaSure™, Covidien Inc, Minneapolis, MN, USA) (Figure 5). Due to its large diameter, the polyp could not be extracted through the pharynx and therefore it was extracted via minilaparotomy and small gastrotomy. Microscopically, there was a squamous epithelium with hydropic degeneration in the spinous layer, edematous fibrovascular stroma, large areas ulcerated mucosa, coagulation necrosis and fresh granulation tissue (Figure 6). The postoperative period was uneventful and the patient was discharged on the second postoperative day. There was no recurrence after two-year follow-up.

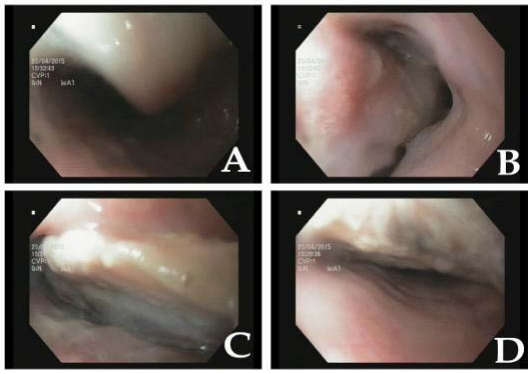

Figure 1: Endoscopic image of the esophageal polyp. A) Polyp pedicle, B) Upper third of the polyp, C) Polyp surface with ulceration, D) Distal polyp end.

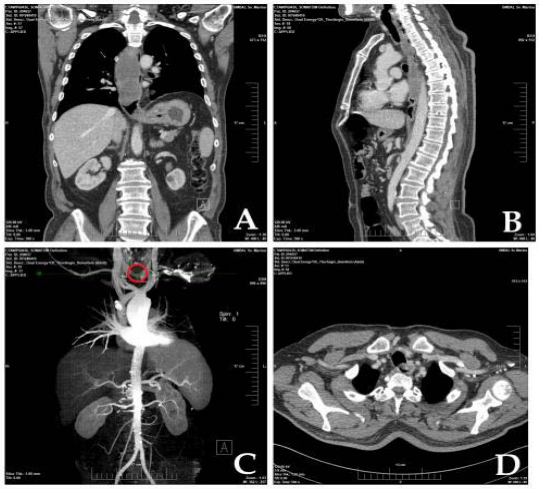

Figure 2: CT image of the esophageal polyp. A) Coronal plane, B) Sagittal plane, C) Virtual angiography: the red circle marks polyp base, D) Transverse plane at the level of polyp origin.

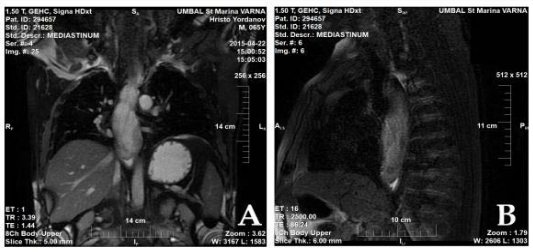

Figure 3: MRI image of the esophageal polyp. A) Coronal plane, B) Sagittal plane.

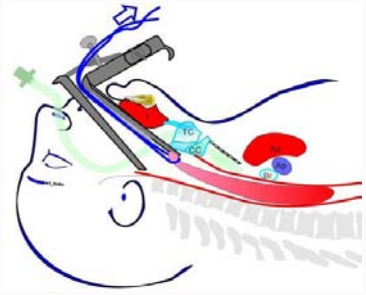

Figure 4: Patient's head positioning, Weerda diverticuloscope, and loop around the polyp pedicle.

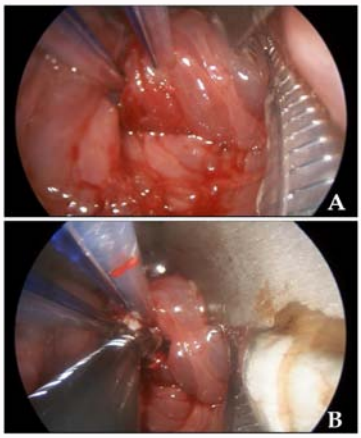

Figure 5: Intraoperative images. A) Loop positioning around polyp pedicle: note the endotracheal tube to the right, B) Polyp resection with laparoscopic 5-mm LigaSure vessel sealer and divider.

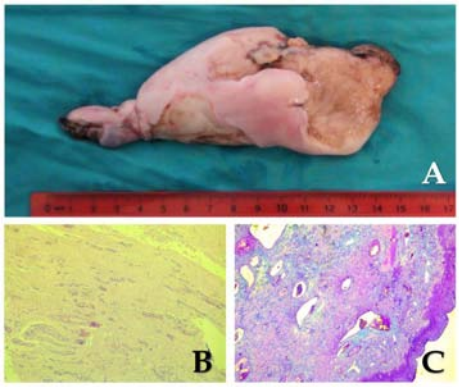

Figure 6: Pathomorphological examination of the polyp. A) Pale formation sized 14.5 cm × 5.5 cm × 4 cm with narrow pedicle with length of 2 cm, B and C) Squamous epithelium with hydropic degeneration in the spinous layer, edematous fibrovascular stroma, large areas with ulcerated mucosa, coagulation necrosis and fresh granulation tissue.

Discussion

The benign esophageal tumors are rare diseases. Based on the analysis of nearly 20,000 autopsies performed over 50 years, Plachta found out only 90 benign esophageal tumors with a prevalence rate of 0.45% [1]. The most common classification divides them in two groups of intramural and intraluminal lesions [2]. The latter group consists of fibrolipomas, fibromixomas, hamartomas, fibromas, and lipomas, which are generally ranked by the World Health Organization as fibrovascular polyps (FVPs) [3]. Histologically, giant esophageal polyps originate from the esophageal submucosa and are covered by squamous epithelium with fibrovascular axis, consisting of adipose and connective tissue to varying degrees as well as a well-developed vascular network [3,4]. The most frequent localizations of the benign esophageal tumors are in the middle and lower thirds of the thoracic esophagus. Tumors arising from the cervical esophagus are less common except for FVPs. Malignant transformation is rare although squamous cell carcinomas originating from the epithelium and liposarcoma arising from the stroma have been reported [5,6].

Usually, FVPs are characterized by slow growth that allows them to reach a formidable size (up to 25 cm) prior to diagnosis [7].

Their symptoms are overlapping with other more common upper gastrointestinal tract diseases. Dysphagia (62% to 87%) is the most common presenting symptom followed by regurgitation of food or the polyp itself (13% to 38%), sensation of a lump (25%), weight loss (13%), respiratory symptoms (25%), odynophagia (6% to 7%), and chest pain (8%) [8-10]. Anemia is also reported due to ulcerations [11]. Regurgitation of the polyp in the oral cavity or obstruction of the larynx may have potentially lethal consequences [9,12]. FVPs are usually solitary lesions although cases of synchronous polyps can be observed, too [13,14].

Endoscopy could easily establish the presence of a large esophageal polyp that takes up the entire lumen and identify the polyp's pedicle. Erroneous diagnosis such as achalasia is rarely reported [15]. The differential diagnosis between other esophageal tumors such as leiomyoma is not difficult. Endoscopic ultrasound (EUS) has been reported as a method to demonstrate the submucosal origin of analogical polyps [16,17]. Endoscopic biopsies could rarely provide FVP diagnosis prior to the procedure and may even lead to misdiagnosis and too radical treatment strategy [10,18]. Both CT and MRI represent key-stone diagnostic tests. There are smooth but variably lobulated intraluminal masses that originate in the lower cervical esophagus and present with variable sizes and distal extents, with an average length of 15 cm [8].

The combination of CT and MRI provides axial, coronal and sagittal scans, which are important in the exact pedicle identification and further treatment planning. CT also provides the option of virtual angiography that may confirm the presence of large blood vessels at the polyp base. EUS provides information about polyp diameter, vascularity and insertion point [19]. Pathomorphological examination reveals polypoid masses covered by unremarkable squamous epithelium composed of varying amount of fibrovascular and adipose tissue [3].

The removal of esophageal and hypopharyngeal polyps is strongly recommended due to symptoms and potentially lethal complications [20].

Various approaches and techniques are used for the resection of giant esophageal polyps. Some of them described in the literature available are summarized on Table 1. The most common include transcervical and transthoracic esophagotomies, although endoscopic approach is also feasible for giant polyps of the upper esophagus and hypopharynx.

Most commonly, the polyp is removed by transcervical esophagotomy and less frequently, by thoracotomy [11,13,14,21-27]. Thoracotomy or even esophagectomy due to preoperative malignant histology has also been described [22]. Endoscopic resection is possible even in larger (>15 cm) lesions.

Usage of Weerda diverticuloscope for granting the direct endoscopic approach to the lesion has been reported [26,27]. Direct endoscopy without any complementary tools to enhance the visualization at resection site has been described, too [28]. In the majority of the cases reported with endoscopic approach, a rigid laryngoscope is used. In our case, the visualization has been achieved by means of Weerda distending diverticuloscope, which has proven its advantages for diagnostic and surgical interventions in patients with upper airway and digestive system disorders [29]. Its opening tip provides wider operative field and liberty for manipulation when compared with direct laryngoscopes with only slight increase in the space requirements at the insert on point (mouth/teeth) [29].

Endoscopic procedure safety is provided by several key-points. Manipulation on the large tumor mass may cause compression on the airways. As some authors underline the importance of enforced endotracheal tube, we recommend this approach as standard for every procedure on the hypopharynx [23,29]. Bleeding in the narrow settings of endoscopic procedure would be a great challenge and may require conversion to open procedure. Some authors have performed electrocoagulation and laser resection [23,30,31]. Electrocautery near to the endotracheal tube in the pharyngeal area is associated with risk of ignition and fire, therefore, we choose an approach minimizing the use of such devices [32,33]. Post-procedural bleeding has been reported in one case after electrocoagulation snare use managed by injection of adrenaline and hemostatic clips as well as in another case after electrocoagulation use managed by vessel compression and repeat coagulation.

No studies report initial injection of locally sclerosant agents yet. According to the institutional own experience in endoscopic polypectomy and, additionally, by analysis published by Facciorusso et al. [34], polidocanol injection decreases the bleeding rate after polypectomy. Although effective, some authors fear the risk of unpredictable depth of tissue injury caused by these agents [35]. We injected sclerosant at the polyp base and resected the polyp with a laparoscopic 5-mm Ligasure that resulted in excellent hemostasis.

The extraction of unusually large polyps remains a problematic issue because its great diameter often does not allow it to pass through the postcricoid sphincter. In such cases, a two-field approach is used with endoscopic resection and extraction via small gastrotomy [12,20,23,26,36]. In general, polyp removal is uneventful. Recurrences have been described in few cases only [12,20].

In conclusion, the giant esophageal FVPs are rare benign tumors. The diagnosis is rarely problematic, although treatment planning requires endoscopy and imaging modality enabling the multiplanar reconstruction and small blood vessel identification. The impressive size of FVPs represents a treatment challenge. As proven by our and other author's experience, endoscopic resection is safe and feasible with no recurrence. Gastrotomy presents an alternative to transcervical or transthoracic routes of extraction.

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