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SURGICAL APPROACH OF CRICOPHARYNGEAL CARTILAGE HYPERSTROPHY ASSOCIATED WITH ESOPHAGEAL MOTOR DYSFUNCTION USING THE PINOTTI- DOR TECHNIQUE: A CASE REPORT

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ABSTRACT: The Pinotti technique is a surgical treatment for megaesophagus combining Heller esophagomyotomy with anterior Dor fundoplication. The procedure relieves functional obstruction, protects the esophageal mucosa, and minimizes postoperative reflux. It involves careful dissection of the distal esophagus, preservation of adjacent nerves, myotomy of the esophageal muscle layers, and anterior wrapping of the gastric fundus over the myotomy site to create a functional lower esophageal sphincter. This approach effectively alleviates dysphagia while safeguarding mucosal integrity¹.

Goal: To describe the surgical approach of a rare case of a cricopharyngeal cartilage hypertrophy associated with esophageal motor dysfunction, emphasizing the technical aspects of surgical treatment using the Pinotti-Dor technique. **Case report:** We report the case of a 51 year-old female patient with a dry cough, mild heartburn, progressive dysphagia, weight loss and sensation of cervical obstruction. Endoscopic evaluation revealed narrowing at the upper esophageal sphincter. Amongst the imaging studies, including barium esophagogram, demonstrated a focal thickening consistent with cricopharyngeal cartilage hypertrophy. Manometric analysis confirmed esophageal motor dysfunction. Initial diagnostic evaluations such as gastrointestinal endoscopy and chest CT scan, were unremarkable. Given the anatomical findings and symptoms, surgical intervention was indicated. The chosen surgical approach was the Pinotti-Dor technique. **Discussion / Final Considerations:**

Cricopharyngeal cartilage hypertrophy is a rare structural abnormality of the upper esophageal sphincter that can coexist with esophageal motor disorders and pose diagnostic and surgical challenges. Careful knowledge of regional anatomy and

a well-planned approach are essential. The Pinotti-Dor technique allows excellent exposure of the cricopharyngeal region while minimizing surgical risk.

KEYWORDS: Cricopharyngeal cartilage hypertrophy, Esophageal motor dysfunction, Dysphagia, Pinotti-Dor technique, Surgical approach.

INTRODUCTION

The Pinotti technique was named after Henrique Walter Pinotti (1929-2010), a Brazilian gastric surgeon, who described a specific surgical technique to treat megaesophagus⁵. This technique is a combination of the Heller esophagomyotomy followed by anterior fundoplication, known as Dor. The objective of this procedure is to protect the exposed esophageal mucosa and minimize postoperative reflux without causing tightness¹.

In greater detail, firstly the surgeon locates the esophagus below the diaphragm and carefully dissects the surrounding tissues to expose the area of the lower esophageal sphincter. Subsequently, the Heller myotomy is performed, which involves the cutting of the longitudinal and circular muscular layers of the esophagus and mobilizing the gastric fundus to improve the functional obstruction causing the dysphagic symptoms². Following this, the surgeon sutures the gastric fundus anteriorly in a 180-200 degree wrap over the myotomy site and covering the exposed esophageal mucosa, known as the Dor fundoplication. Thereby, creating a new functional sphincter that helps prevent gastroesophageal reflux and protects the mucosa from injury or herniation. Notably, the adjacent nerves governing esophageal function were care-

fully preserved throughout the procedure³. Moreover, the Heller-Dor procedure can be performed via laparoscopic or via an open laparotomy approach. In this particular case, the procedure was performed using an open technique.

CASE REPORT

A 51-year-old female patient, previously healthy and with no history of comorbidities or medication use, presented with a one-month history of progressive dry cough, mild retrosternal burning, reports of progressive weight loss and an increasing sensation of cervical obstruction associated with intermittent dysphagia. There was no report of fever, hematemesis, melena, or respiratory symptoms such as sputum production or dyspnea. She denied prior gastrointestinal disease, allergies, or previous surgeries. The patient was then admitted for further investigation of dysphagia of unclear origin.

Due to the persistence of symptoms, the patient underwent an upper gastrointestinal endoscopy, which revealed normal esophageal caliber, motility, and mucosal integrity, without hiatal hernia or evidence of gastroesophageal reflux. Biopsies of the gastric body and antrum were taken for histopathological analysis and Helicobacter pylori testing, both of which were unremarkable.

Subsequently, a chest computed tomography (CT) scan was performed to investigate possible structural or compressive causes. The study demonstrated normal tracheobronchial and esophageal anatomy, with no mediastinal lymphadenopathy, pleural effusion, or pulmonary abnormalities. These findings did not explain the patient's persistent oropharyngeal symptoms.

Physical examination revealed a clinically stable, well-hydrated individual, oriented and afebrile, with no signs of cyanosis or jaundice. Cardiopulmonary and abdominal examinations were unremarkable. Laboratory tests and autoimmune markers were requested to rule out systemic conditions such as scleroderma, and she was referred for specialist evaluation in gastrointestinal surgery.

Given the absence of findings on conventional imaging and the progressive nature of her symptoms, a videosophagogram was performed. This examination revealed hypertrophy of the cricopharyngeal region, with preserved motility of the pharyngeal and esophageal phases and normal distal esophageal transit. The findings were consistent with cricopharyngeal cartilage hypertrophy causing functional narrowing at the upper esophageal sphincter. Based on the anatomical and functional evidence of obstruction, the surgical team determined that emergency surgical intervention was indicated to relieve the obstruction and prevent further deterioration of swallowing function.

Surgical Description: An open surgical approach was performed through an upper midline (high median) laparotomy. Following entry into the abdominal cavity, and exposure of the diaphragmatic hiatus were conducted. Dissection and reduction of the hiatal structures were carried out, followed by careful mobilization of the distal esophagus and esophagogastric junction. Approximately the last 20 cm of the distal esophagus were liberated circumferentially, ensuring full visualization of the cricopharyngeal region.

A Heller-type esophagomyotomy was performed, extending over the distal esophagus, followed by an anterior 180–200° Dor fundoplication completing the Pinotti maneuver in order to protect the exposed mucosa and prevent postoperative reflux. The diaphragmatic crura were reinforced posteriorly to restore hiatal competence. Hemostasis was achieved, and the abdominal cavity was irrigated and carefully inspected. Layered closure was completed, and a Blake drain was positioned before wound closure.

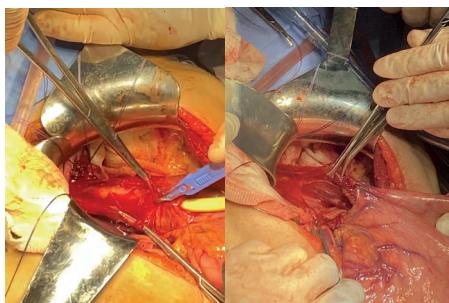


Figure 1. Illustration showing the Heller myotomy with Dor fundoplication. The image depicts the longitudinal incision of the muscular layer of the lower esophagus and the underlying mucosa exposed. The gastric fundus is positioned anteriorly in preparation for Dor fundoplication.

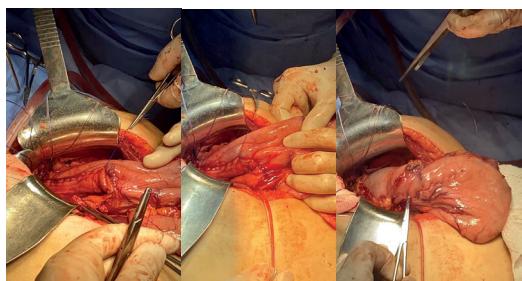


Figure 2. Macroscopic view of Dor fundoplication after Heller myotomy, showing anterior fundic mobilization and fixation over the myotomy site.

FINAL CONSIDERATIONS

Cricopharyngeal cartilage hypertrophy is a rare structural abnormality of the upper esophageal sphincter that can contribute to functional obstruction and complicate surgical management. The Pinotti-Dor procedure provides excellent exposure of this region and effectively relieves obstruction, protects the esophageal mucosa, and minimizes postoperative reflux. It involves careful dissection of the distal esophagus, preservation of adjacent nerves, myotomy of the esophageal muscle layers, and anterior fundoplication over the myotomy site, creating a functional lower esophageal sphincter and alleviating dysphagia while safeguarding mucosal integrity.

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