

## Descending Necrotizing Mediastinitis: Treatment by Transcervical Thoracic Drainage

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We report the case of a 29-year-old man with descending necrotizing mediastinitis and subcarinal spread secondary to oropharyngeal infection. The thoracic infection was treated by placement of a transcervical thoracic drain, which was removed 15 days after surgery. The outcome was satisfactory and no further invasive treatment was required. We believe that transcervical thoracic drainage is a useful initial treatment for descending necrotizing mediastinitis with subcarinal spread but no pleural cavity involvement.

**Key words:** *Descending necrotizing mediastinitis. Transcervical mediastinal drainage. Peritonsillar abscess.*

Mediastinitis necrosante descendente: tratamiento con drenaje torácico transcervical

Presentamos el caso clínico de un varón de 29 años de edad que presentó una mediastinitis necrosante descendente con extensión infracarinal secundaria a un proceso infeccioso orofaríngeo. La infección torácica fue tratada mediante un drenaje torácico vía transcervical, que se retiró al decimoquinto día del postoperatorio. La evolución fue favorable sin necesidad de una reintervención más radical. Consideramos que en la mediastinitis necrosante descendente con extensión infracarinal sin rotura pleural es útil inicialmente el tratamiento con drenaje torácico transcervical.

**Palabras clave:** *Mediastinitis necrosante descendente. Drenaje mediastínico transcervical. Absceso periamigdalino.*

### Introduction

Today, infectious mediastinitis is usually seen as a complication of sternotomy in cardiothoracic surgery or, less often, as a complication of oropharyngeal infection. Acute mediastinitis that arises from an oropharyngeal infection was termed descending necrotizing mediastinitis by Estrera et al<sup>1</sup> in 1983. It is a very rare entity that is clinically important because of its high rate of mortality, which ranges from 14% to 50% in different reports.<sup>2-4</sup> The flora responsible for this condition are usually a mixture of aerobic, anaerobic, gram-negative and gram-positive pathogens that act synergistically.<sup>1,5,6</sup> Surgical treatment is controversial—whether it be by cervicotomy and thoracotomy as argued by some authors<sup>4,7-9</sup> or the more conservative measure of transcervical thoracic drainage suggested by others.<sup>10</sup> In the case we report, transcervical thoracic drainage was applied.

### Case Description

The patient was a 29-year-old man whose most relevant medical history was that he was a smoker (1 pack/day). The patient presented with a sore throat that was diagnosed as pultaceous tonsillitis and treated with amoxicillin and ibuprofen. After 9 days pain had increased, swallowing caused

pain, and fever was 38.5°C. Leukocytosis (20 000 cells/μL; 86% neutrophils) developed and his general condition had deteriorated, with hypotension, and oliguria. He was admitted to the intensive care unit with septic shock. The oropharynx was normal, without asymmetry, upon inspection through a fiberoptic laryngoscope. Cervical palpation was also normal. A computed tomography scan revealed peritonsillar tumors to the left with ectopic gas bubbles and retropharyngeal spread to the infrahyoid musculature and the left periesophageal region behind the mediastinum, along with a small bilateral pleural effusion and regions of alveolar consolidation in both lower lobes. The patient was stabilized with intravenous cardiotoxic therapy and broad-spectrum antibiotics (penicillin G, ciprofloxacin, clindamycin, and piperacillin-tazobactam). *Escherichia coli*, *Acinetobacter baumannii*, *Enterococcus faecalis*, and *Staphylococcus haemolyticus* were isolated in blood culture. *Serratia marcescens* was identified in sputum culture and *E coli* in fluid drained from the abscess. Given the slow response to medical treatment, 4 days after admission to the intensive care unit a surgical procedure was scheduled. A Y-shaped incision was made on the left side of the neck and the left prelaryngeal muscle fascia were debrided. Abundant purulent material was evacuated from deep inside the prelaryngeal musculature and 2 Penrose drains were placed there, in addition to a thoracic drain (a number 16 Nelaton catheter) posterior to the mediastinum by way of digital dissection. The thoracic drain was gradually withdrawn and finally was fully removed 15 days after surgery. During the course of treatment, it was necessary to give a transfusion because of digestive tract bleeding, which was treated by endoscopic sclerosis in the second duodenal segment. The patient was discharged after 22 days.

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Figure 1. Postoperative computed tomography scan of the chest that shows the thoracic drain placed behind the mediastinum by a transcervical approach.

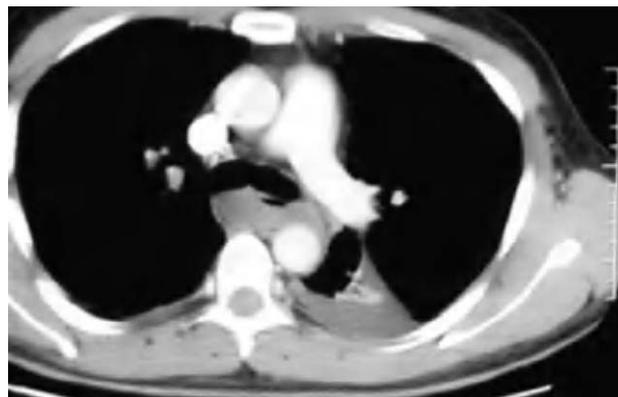


Figure 2. Computed tomography scan showing paraesophageal and subcarinal collection of pus.

## Discussion

Descending necrotizing mediastinitis is a rare entity of which around 20 cases have been described in the literature.<sup>3,4</sup> Formation of an oropharyngeal abscess as a consequence of dental or tonsillar infection can lead to the development of descending necrotizing mediastinitis. In its severe clinical form, the mortality rate remains high even now, in spite of the availability of broad-spectrum antibiotics and the development of surgical and intensive care techniques.<sup>2,3,6</sup> Suspicion is the key to early diagnosis, which is usually based on visualization of fluid collection, sometimes with ectopic air, indicating anaerobic bacterial flora, in a computed tomography scan.<sup>8</sup> The spread of an oral cavity or cervical abscess to the mediastinum is explained by the fact that there is anatomical communication between those regions and the fascia of the neck muscles; moreover, the upper part of the mediastinum has no ceiling that isolates it from the neck. Negative intrathoracic pressure and gravity also facilitate the descent of infection to the mediastinal region.<sup>2</sup> A diagnosis of descending necrotizing mediastinitis requires immediate response in the form of initiation of broad-spectrum antibiotic therapy because mixed polymicrobial flora are usually present.<sup>6,11</sup> The correct surgical approach is currently being disputed. Some authors defend drainage of the abscess by cervicotomy and thoracotomy,<sup>4,7-9</sup> given the high mortality rate associated with this infection. Others, however, consider that transcervical drainage, as was applied in the case we report, can provide good results.<sup>10</sup> The mediastinum is a compartment separated from the pleural cavity by the pleural membranes but open cranially to the cervical region. Thus, pus from an oropharyngeal abscess descends along the mediastinum collects there provided the mediastinal pleural membranes do not break. A sterile pleural effusion may develop in response to the mediastinal infection, as occurred in our patient. The abscess of descending necrotizing mediastinitis can be easily drained transcervically. During follow up, it is important to monitor the amount of fluid drained and a computed tomography scan can be useful. The chest tube

is gradually removed as drainage diminishes. Lavage with physiological saline or a diluted antiseptic solution is sometimes useful for preventing the drainage tube from becoming obstructed. Once cultures of drained fluid are negative and the amount of fluid removed is scant, the tube can be withdrawn. Simple chest radiographs taken daily indicate whether or not there is pleural effusion, how much there is, and if it increases or not. Accordingly, and in keeping with analytical results and clinical picture, other treatment approaches such as thoracotomy with aggressive debridement can be adopted if necessary.

We conclude that descending necrotizing mediastinitis with subcarinal spread secondary to an oropharyngeal abscess can be effectively treated by transcervical thoracic drainage. When subcarinal mediastinitis presents without compromise of the pleural cavity, initial conservative treatment by this means is appropriate.

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