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SUBGLOTTIC STENOSIS AFTER PROLONGED INTUBATION: CASE REPORT AND MANAGEMENT

Vesna Petreska Dukovska[1,4], Aleksandar Mitevski[1,4], Blagoj Kocev[2], Gabriela Kopacheva Barsova[3], Igor Kamshikoski[3], Ana Pejkoska[3], Vladimir Cvetanovski[1,4]

[1]Re-Medika General Hospital - Skopje, North Macedonia, [2]Health Center"- Radovish, North Macedonia, [3]Clinic for ear, nose and throat, University Campus "Ss. Mother Theresa", Medical faculty, Skopje, North Macedonia, [4]Faculty of Medical Sciences, Goce Delcev University, Stip, North Macedonia

Abstract

Subglottic stenosis represents abnormal narrowing of the airway below the vocal cords, most commonly resulting from prolonged endotracheal intubation. This condition can cause significant respiratory difficulties and requires timely recognition and treatment. This paper presents a clinical case of a young patient with subglottic stenosis and discusses the selection of an appropriate treatment method.

We report the case of a 23-year-old patient with a history of prolonged intubation and tracheostomy. The patient underwent endoscopic evaluation, followed by CO_2 laser therapy combined with airway dilation. Surgical treatment with CO_2 laser resection and dilation resulted in significant improvement of respiratory symptoms and airway patency. The patient recovered successfully and continued with regular postoperative follow-up without complications.

Subglottic stenosis is a frequent complication after prolonged intubation and requires early recognition. Endoscopic CO_2 laser therapy combined with dilation represents an effective treatment method. Early detection, appropriate treatment selection, and long-term follow-up are crucial for a successful outcome.

Keywords: subglottic stenosis, intubation, CO_2 laser, dilation, tracheostomy.

Introduction

Subglottic stenosis is a condition characterized by a non-physiological narrowing of the airway below the level of the vocal cords, specifically in the subglottic region of the larynx. The narrowing may be congenital or acquired; the acquired form most commonly results from prolonged endotracheal intubation, inflammatory processes, or trauma [1-3].

The clinical presentation varies widely, ranging from mild respiratory difficulties to severe airway obstruction, depending on the degree of stenosis. A definitive diagnosis is most commonly established by laryngoscopy and computer tomography (CT). Treatment may be either conservative or surgical. Surgical management includes dilation procedures or reconstructive surgery. We present a case of subglottic airway stenosis in a 23-year-old patient following prolonged intubation, in whom an endotracheal cannula had been placed before presentation at our institution.

The patient was treated with endoscopic therapy using a CO_2 laser, which demonstrated excellent results [4].

Case Presentation

The patient, male, 23 years old, presented with dyspnea and inability to speak at full capacity after placement of a tracheostomy cannula. When the cannula was occluded, he could not breathe through the natural airway. Dyspnea was also present during physical activity.

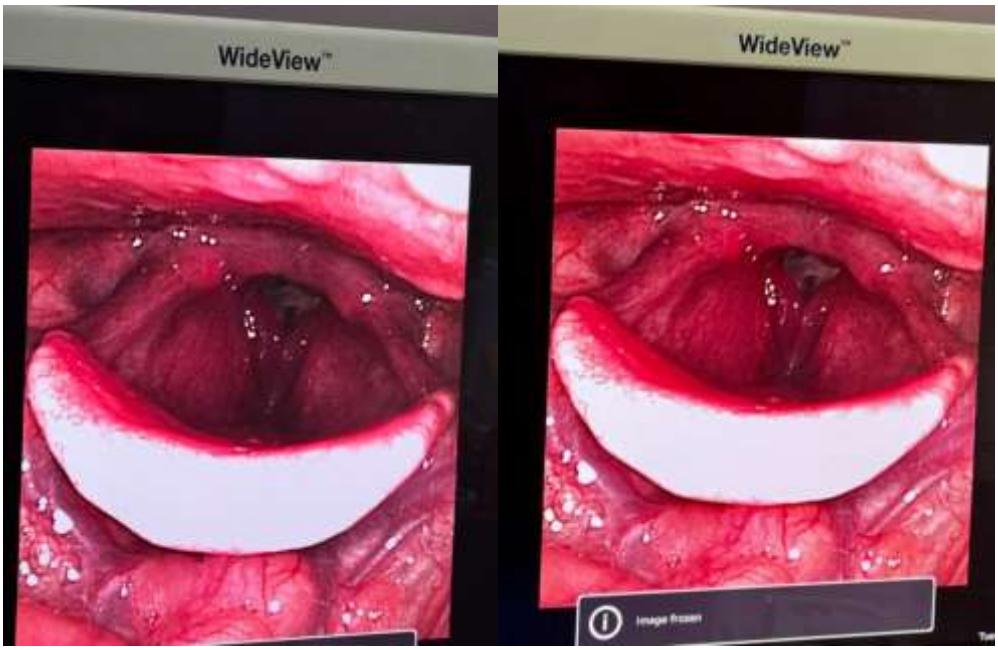
Past history included prolonged intubation due to severe craniocerebral injury (epidural hematoma and multiple bilateral cerebral contusions). Neurological examination was normal, and the patient was able to attend the clinic independently. However, he remained dependent on the tracheostomy cannula. The patient had a weak voice, almost inaudible on canula occlusion. Clinical examination and diagnosis were made with endoscopic laryngoscopy, which confirmed Grade III subglottic stenosis (Myer–Cotton classification), nearly complete airway obstruction. (Picture 1,2).



Picture 1, 2 Sublotic stenosis.

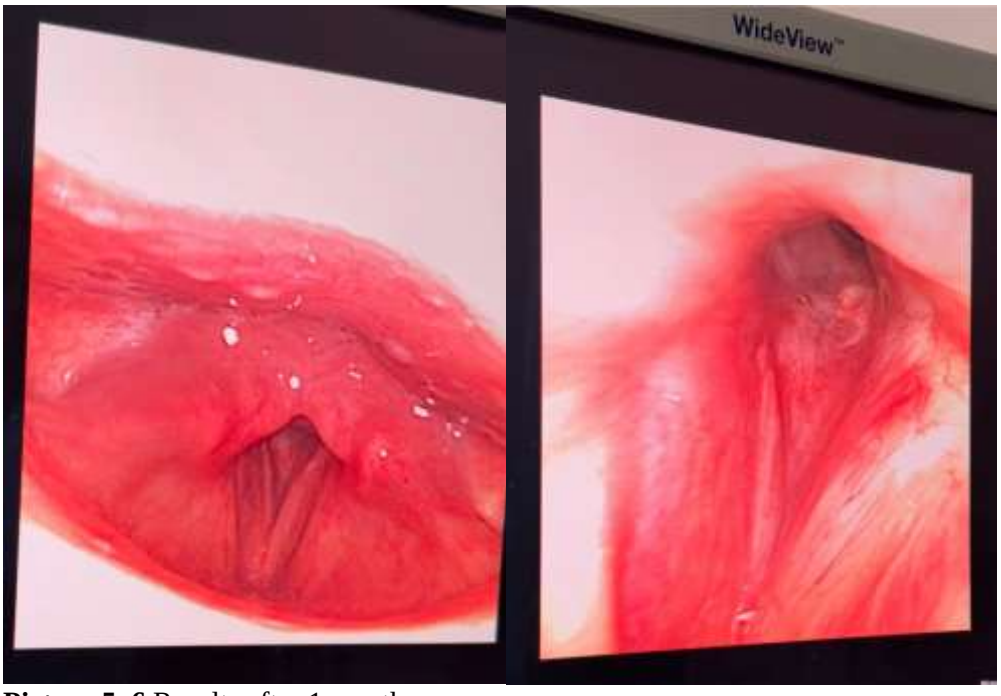
Based on a CT scan of the neck and thorax with contrast, stenosis was localized in the subglottic region without involvement of surrounding tissues. After flexible laryngoscopy and imaging technique, our diagnosis was confirmed as subglottic stenosis due to trauma from prolonged intubation. CBC analysis was also made for the patient.

Treatment included conservative and endoscopic therapy. Intravenous initial therapy with antibiotics and anti-edematous therapy was given to the patient before the operative treatment. The patient was prepared for endoscopic treatment. Endoscopic therapy was performed using a CO_2 laser to create a star-shaped incision in the fibrotic subglottic tissue. (Picture3,4)



Picture 3, 4 Results after first control.

The patient was released from the hospital on the first day. Postoperative it was discharged on antibiotics, gastroprotective therapy, and corticosteroids. Follow-up was scheduled at 14 days (Picture 5,6).



Picture 5, 6 Results after 1 month.

The first follow-up that occurred after 14 days showed recurrent subglottic adhesions. The second follow-up, presented 14 days later, revealed subglottic narrowing of cartilaginous origin. And

by the third follow-up, which was also after 14 days of the last, showed improvement in breathing with cannula occlusion; normal physical activity was tolerated, airway diameter increased, allowing normal function.

Discussion

Subglottic stenosis is commonly caused by tissue injury after prolonged intubation. Pressure from the endotracheal tube causes local ischemia, fibrosis, and eventual airway narrowing. The risk increases with prolonged intubation duration.

Endoscopic CO_2 laser resection allows precise removal of fibrotic tissue with minimal surrounding tissue damage and effective hemostasis. Close follow-up and communication with the patient are essential due to possible recurrence. Endoscopic treatment is particularly effective in young patients without comorbidities and with localized lesions, offering a minimally invasive alternative to open surgery [5, 6].

Conclusion

Subglottic stenosis is an important complication of prolonged intubation. Early diagnosis, timely tracheostomy if needed, and appropriate intervention are critical. Endoscopic CO_2 laser therapy with dilation is highly effective. Continuous follow-up ensures optimal outcomes.

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