
Swallowing of a dynamic tracheal stent: An unusual complication

Serkan ENÖN, Ayten KAYI CANGIR, İlker ÖKTEN

Ankara Üniversitesi Tıp Fakültesi, Göğüs Cerrahisi Anabilim Dalı, Ankara.

ÖZET

Dinamik trakeal stent yutulması: Olağan dışı bir komplikasyon

Skatrisyel trakea stenozları; entübasyon, trakeotomi ya da trakea cerrahisi sonrası iatrojenik hasarlara bağlı olarak gelişir. Trakea stenozlarının tedavisinde, silikon ve genişleyebilen metal stentler kullanılarak hava yolu sağlamada ilerlemeler sağlanmıştır. Günümüzde trakeal stenozların tedavisinde dinamik trakeal stentler yaygın olarak kullanılmaktadır. Bununla birlikte hava yolu stentlerinde; mukostaz, granülasyon dokusu oluşumu, infeksiyon ve migrasyon olmak üzere dört ana sorun mevcuttur. Trakeal stentlerin olağan dışı bir komplikasyonu olarak, dinamik stent yutulması olgusu sunulmaktadır.

Anahtar Kelimeler: Trakea stenozu, dinamik stent, komplikasyon.

SUMMARY

Swallowing of a dynamic tracheal stent: An unusual complication

Serkan ENÖN, Ayten KAYI CANGIR, İlker ÖKTEN

Department of Chest Surgery, Faculty of Medicine, Ankara University, Ankara, Turkey.

Cicatricial tracheal stenoses are mainly related to iatrogenic injury as postintubation, posttracheotomy or postoperative. Advances in airway prosthetics have provided a variety of silicone stents and expandable metal stents as a therapeutic option for tracheal stenoses. Nowadays, dynamic tracheal stents are performed prevalently for the treatment of tracheal stenosis. Four major problems are currently associated with airway stents: Mucostasis, formation of granulation tissue, infection and migration. In this report, we present a case of swallowing a tracheal dynamic stent as an unusual complication of tracheal stents.

Key Words: Tracheal stenosis, dynamic stent, complication.

Yazışma Adresi (Address for Correspondence):

Dr. Serkan ENÖN, Ankara Üniversitesi Tıp Fakültesi, İbn-i Sina Hastanesi, Göğüs Cerrahisi Anabilim Dalı, Sıhhiye 06100 ANKARA - TÜRKİYE

e-mail: enon@medicine.ankara.edu.tr

Cicatricial tracheal stenoses are mainly related to iatrogenic injury as postintubation, posttracheotomy or postoperative. The recommended treatment choice for such lesions is tracheal resection and reconstruction. However, surgery is not always possible both for anatomical and general contraindications (1). Furthermore surgery has a high morbidity. Advances in airway prosthetics have provided a variety of silicone stents and expandable metal stents as a therapeutic option (2). In selected cases tracheal dynamic stent insertion is a successful treatment option. Nowadays, dynamic tracheal stents are performed prevalently for the treatment of tracheal stenosis, with acceptable low rates of complications like mucostasis, infection and migration. Here, we present a case of swallowing a tracheal dynamic stent as an unusual complication of tracheal stents.

CASE REPORT

A 40-year-old man was admitted to our hospital with dyspnea. His medical history revealed that he had admitted to another institution with loss of consciousness. Ventriculoperitoneal shunt had been applied with diagnosis of subarachnoid hemorrhage and hydrocephaly. The patient had been intubated and mechanically ventilated for associated respiratory failure. At the end of first week, tracheotomy had been performed and the patient had been mechanically ventilated for three weeks. He had uneventful recovery and was discharged. Four weeks later he had admitted to the hospital again with dyspnea and cough after oral intake. He had subsequently been referred to our institution with the diagnosis of trachea stenosis and tracheoesophageal fistula.

On admission, physical examination revealed bilateral rhonchus on auscultation and ataxia. Biochemical blood examination results and X-ray examination of the thorax were normal. In rigid bronchoscopic evaluation, circumferential trachea stenosis and suspicious tracheoesophageal fistula were seen 3 cm below the vocal cords. Mechanical dilatation was done with rigid bronchoscopes. Oral intake was stopped and the patient was treated medically for three weeks. At the end of the 3rd week, rebronchoscopy was perfor-

med as the patient became dyspneic. Bronchoscopic examination revealed granulation tissue formation at the same level but no exact tracheoesophageal fistula. Second mechanical dilatation was applied with rigid bronchoscopes. However, as no recovery seen on patient's symptoms tracheal stent insertion was planned. After the 3rd mechanical dilatation a dynamic stent was performed with rigid bronchoscopy (Figure 1). The patient remained well and asymptomatic after stent insertion. He was informed about stent complications and discharged.

However, two weeks later the patient admitted to our hospital again following severe cough and trying to reinsert the stent by himself in medical history. The patient was asymptomatic on admission. On chest X-ray the stent was not in the trachea. On plain abdominal X-ray examination the stent was seen in the stomach and the diagnosis was confirmed by endoscopic examination (Figure 2). On flexible gastroscopy the stent was seen in stomach and was taken out. Afterwards another bronchoscopy was performed; the remaining granulation tissue was diathermically resected and the patient was discharged.

DISCUSSION

Cicatricial tracheal stenoses are mainly related to iatrogenic injury as postintubation, post-tracheotomy or postoperative. Although circumferential resection and end-to-end anastomosis is the



Figure 1. Chest X-ray after stent insertion.

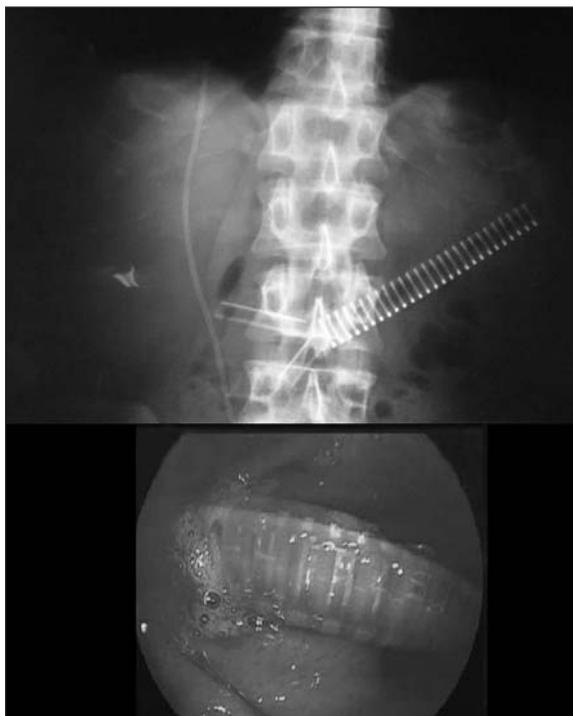


Figure 2. Plain abdominal X-ray and endoscopic view showing the stent in the stomach.

treatment choice for tracheal stenosis, surgery is not always possible both for local reasons (extensive longitudinal damage, excessive subglottic involvement, aspiration pneumonia due to laryngeal dysfunction) and for general contraindications (age and associated medical disease). Therapeutic options for these patients are dilatation, laser therapy and stenting (1,3).

A variety of stent types are currently available to aid in the management of tracheal stenoses. The ideal airway stent would be simple to insert, support the airway without causing any adverse effects while in place, and either be simple to remove or not need removal at all (4). Four major problems are currently associated with airway stents: Mucostasis, formation of granulation tissue, infection and migration. A dynamic stent is a removable stent which is made of silicone that incorporates horseshoe-shaped steel struts. A flexible posterior membrane enables dynamic compression during cough, whilst the clasps maintain the airway lumen in the face of external compression. Its complex shape provides a smoother distribution of pressure on the muco-

sa; thereby, lowering the stimulus for granulation formation. The bronchial limbs saddle on the carina, preventing displacement (1,5).

Dynamic stent insertion is an easy and successful treatment option for tracheal stenoses. Moreover it has a very low morbidity according to surgical treatment. The main complications of dynamic stents are migration, mucostasis, granulation tissue formation, cough and infection (1).

Therefore we should keep in mind these rare complications and inform the patients about these complications. The only similar report was notified by Schmidt and colleagues, although the stent was fixed surgically to the trachea by one single stitch through the anterior wall to eliminate the migration, as procedures like this described by Colt, et al. before (6,7). After a severe cough with massive expectorations, the silicone stent was removed endoscopically from the stomach like our case. However in our case, the patient tried to reinsert the stent by himself although he was informed about the complications of the tracheal stents.

REFERENCES

1. Puma F, Ragusa M, Avenia N, et al. The role of silicone stents in the treatment of cicatricial tracheal stenoses. *J Thorac Cardiovasc Surg* 2000; 120: 1064-9.
2. Stephens KE, Wood DE. Bronchoscopic management of central airway obstruction. *J Thorac Cardiovasc Surg* 2000; 119: 289-96.
3. Martinez-Ballarín JI, Diaz-Jimenez JP, Castro MJ, Moya JA. Silicone stents in the management of benign tracheobronchial stenoses. Tolerance and early results in 63 patients. *Chest* 1996; 109: 626-9.
4. Jacobs JP, Quintessenza JA, Botero LM, et al. The role of airway stents in the management of pediatric tracheal, carinal and bronchial disease. *Eur J Cardiothorac Surg* 2000; 18: 505-12.
5. Freitag L, Eicker R, Linz B, Greschuchna D. Theoretical and experimental basis for the development of a dynamic airway stent. *Eur Respir J* 1994; 7: 2038-45.
6. Schmidt B, Gramse A, Hering A, et al. The missing stent - the most improbable complication. *Respiration* 2005; 72: 304.
7. Colt HG, Harrell J, Neuman TR, Robbins T. External fixation of subglottic tracheal stents. *Chest* 1994; 105: 1653-7.