

## Aspirated stoma button: an unusual complication

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### Abstract

The larynx functions as a protective valve of the upper airway. An end-tracheostomy represents a risk factor for foreign body aspiration. We describe a case of tracheostomy stoma button aspiration, leading to recurrent chest infection and irreversible lung damage, necessitating a pneumonectomy. This is the first reported case of this kind. This case also emphasizes the importance of patient education and of stoma button design.

**Key words:** Larynx; Prosthesis and Implants; Lung; Pneumonia; Surgical Procedures, Operative

### Introduction

The main function of the larynx is to provide a protective sphincter at the inlet of the air passage, in addition to phonation. This is achieved by the stimulation of abundant sensory receptors, which can initiate protective reflexes.<sup>1</sup> Patients with laryngectomies and tracheostomies are at risk of aspiration of foreign bodies due to the loss of protective reflexes offered by the larynx.<sup>2,3</sup> Sometimes the foreign bodies aspirated by the patient can be the devices specifically developed to maintain the patency of the tracheostome.<sup>4,5</sup>

Inhaled foreign bodies can cause severe problems in the form of acute respiratory distress<sup>3–5</sup> or present later with repeated chest infection, pneumonia or other serious pulmonary complications.<sup>6</sup> Hence, any patient in whom the laryngeal airway is bypassed and who is displaying chest symptoms should be thoroughly investigated. This paper describes a laryngectomized patient with unrecognized aspiration of a foreign body, which resulted in deleterious consequences to the patient.

### Case report

A 56-year-old man was presented to the chest physicians with a left-sided pneumonia. The patient had undergone a total laryngectomy for supraglottic squamous cell carcinoma seven years previously and wore a 12-mm external diameter stoma button on a regular basis. The infection resolved with antibiotics and physiotherapy; however, over the next three months the patient suffered from recurrent chest infections and was subsequently admitted into two different hospitals and treated with antibiotics. His chest X-rays on all occasions showed opacification of the left lung, but with no foreign bodies recorded (Figure 1).

Despite aggressive medical treatment, the patient's symptoms failed to improve on the third admission. In view of his non-resolving pneumonia, a computed tomography (CT) scan of the thorax was performed to rule out metastases or primary lung tumour. The CT scanogram

suggested a foreign body in the left main bronchus (Figure 2). The outline of the foreign body raised the possibility of an inhaled stoma button from the tracheostomy. On close questioning the patient recalled a bout of coughing and choking prior to the onset of the chest symptoms, which had resolved spontaneously, therefore not necessitating any further action.

Bronchoscopy was performed with the intention of removing the stoma button. Examination of the left main bronchus revealed a tight stenosis proximal to a stoma button and necrotic tissue was seen distally. The foreign body could not be retrieved by endoscopy; therefore, due to the radiological features suggestive of irreversible lung damage, the patient underwent thoracotomy and left pneumonectomy. He made an uneventful recovery.

### Discussion

Patients who have had laryngectomies lose the protective mechanism offered by the larynx, which has abundant sensory innervation and is critically placed for the initiation of the protective reflex.<sup>1</sup> The tracheal protective cough reflex persists but it is easy to aspirate objects as the mechanical protection of the larynx is lost. Objects which are aspirated by these patients include devices which are used to keep the stoma patent and clean, such as stoma buttons, tracheostomy tubes, cleaning brushes and various other inanimate objects.<sup>2,4,5,7</sup>

In the majority of patients, inhalation or aspiration of a foreign body, either accidentally or iatrogenically, presents as a sudden emergency as it causes considerable difficulty in breathing and severe respiratory distress.<sup>8,9</sup> Usually, the foreign body is retrieved easily, using flexible or rigid endoscopy and suitable forceps, via the tracheostome.<sup>8</sup> Rarely, tracheobronchial foreign bodies can present with pulmonary pathology if a long period of time has elapsed from aspiration to diagnosis.<sup>6</sup>

A stoma button is inserted into an end-tracheostomy in order to maintain patency. Stoma buttons come in various sizes, with an outer flange diameter of up to 22 mm. They are

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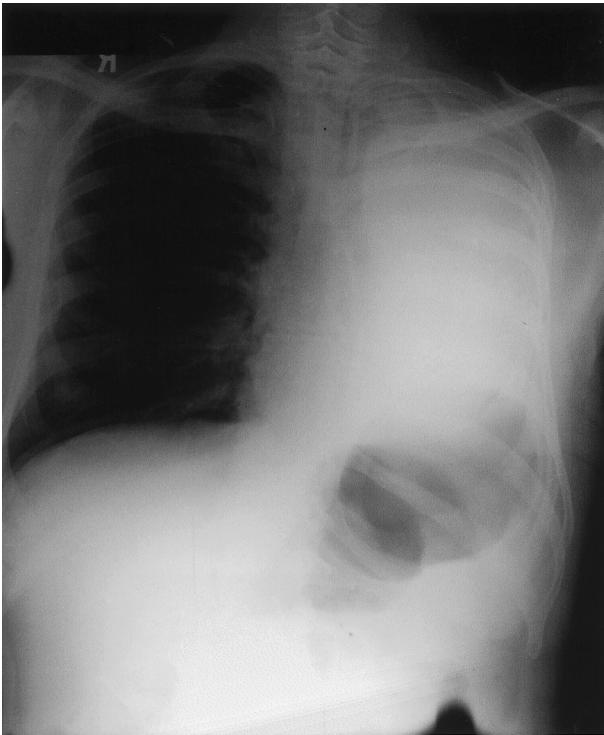


FIG. 1  
Chest radiograph.

radio-opaque but manufacturers warn that they will not be visible in the midst of radio-dense structures such as the mediastinum.<sup>4</sup> Stoma buttons are flesh-coloured for cosmetic purposes, which makes recognition difficult at bronchoscopy.

- **This is a case report of a patient who aspirated a stoma button, which became impacted in the left main bronchus**
- **After a series of chest infections a bronchoscopy was performed, but the button could not be retrieved and pneumonectomy was required**
- **This case is reported solely due to the significant and serious nature of the complication**

In our case, the patient and the carers were not aware of aspiration of or loss of the stoma button. The patient believed a stoma button had been coughed up and disposed of with phlegm after a coughing bout and did not associate the onset of the symptoms of pneumonia with this event.

Aspiration of a stoma button is indeed a recognized event; however, in other reports to date, the stoma button has been successfully retrieved through the tracheostome without complication.<sup>4</sup> The reasons for the late presentation in this case were, firstly, the failure to notice the loss of, or possible aspiration of, the stoma button, and, secondly, the fact that the stoma button, which has a reasonably sized lumen, was lodged in the left main bronchus causing only partial obstruction, with little in the way of symptoms. The latter would explain the lack of acute symptoms and the subsequent delay in diagnosis. In addition, the stoma button, which is made of inert material, would have caused a delayed foreign body reaction, which would have resulted in progressive narrowing of the left



FIG. 2  
CT scanogram of the chest.

main bronchus and subsequent irreversible lung damage, compared with the acute inflammatory reaction caused by an organic foreign body with subsequent acute onset of symptoms. The weakness of the radio-opacity of the stoma button makes the button extremely difficult to detect on chest radiography. Indeed, in our case, the stoma button was not identified radiologically on three occasions with routine chest X-rays and was only successfully detected on a CT scan.

This is the first case in the literature, according to our search, in which an aspirated stoma button led to thoracotomy and pneumonectomy. It is extremely rare for large, blunt objects to require thoracotomy for removal from the airway.<sup>9</sup> Multiple case reports exist in which thoracotomy was required to remove sharp objects, e.g. a pin.<sup>2,7,10</sup> Other objects inhaled by patients via a laryngectomy stoma include portions of a wire knitting needle, safety pins, a tracheostomy tube cleaning brush and nails.<sup>2</sup>

### Conclusion

In conclusion, patients with a permanent tracheal stoma need to fully understand that the stoma is now a valuable part of the airway. The stoma provides direct and easy access to the lower tracheobronchial tree, with a resultant increase in the risk of aspiration of a foreign body.

Other specialists and paramedical staff should also consider this when treating patients with laryngectomy and added chest symptoms. It is essential to maintain a high standard of communication between the ENT surgeons and other health care professionals, as well as patients and their relatives, to prevent unnecessary complications.

It would also seem appropriate to increase the diameter of the outer flange of the stoma button and the radio-opacity of the material of the button.

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