CASE REPORT

Novel use of videolaryngoscopy to remove a foreign body

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SUMMARY

We present a case where a C-MAC video laryngoscope was used to remove a duodenal stent that was inadvertently dislodged in the patient's proximal oesophagus during an interventional radiology procedure, causing upper airway obstruction. Using the C-MAC and a pair of Magill forceps, we were able to successfully remove the stent. Video feed allowed for further communication between us and the ENT (ear, nose and throat) surgeons.

BACKGROUND

Interventional radiology procedures are widespread in modern procedures, and often safer than traditional surgical approaches. We present a case of a rare complication that has not previously been reported. The C-MAC is an indirect video laryngoscope that has a role in the management of difficult airways. The ability to project the image seen onto a video monitor allowed the various members of the team to discuss and formulate a plan as to how to rescue the situation.

CASE PRESENTATION

A 68-year-old man with a known distal gastric outflow tract obstructing tumour was having a palliative duodenal stent inserted electively in the interventional radiology suite under light sedation with midazolam. He had a history of previous tonsillar squamous cell carcinoma that was surgically resected, mild asthma and well-controlled diabetes mellitus.

A self-expanding metal stent was placed successfully in a very narrow duodenal stricture. Unfortunately, as the delivery device was withdrawn, the stent failed to disengage and was pulled up into the patient's oesophagus.

The patient became very distressed and agitated. At this point, a medical emergency call was put out. On arrival, the patient was making stridulous noises, and retching and salivating. There was also a new onset of vocal hoarseness and poor phonation. He was saturating at 94% on a non-rebreather mask at 15 L. There was poor air entry throughout his lungs bilaterally. He was tachycardic and hypertensive, with a heart rate of 109 bpm and a blood pressure of 180/65 mm Hg. His conscious level was reduced, although this was thought to be due to the 5 mg of midazolam that the interventional radiology team had given him to help his anxiety.

INVESTIGATIONS

Fluoroscopy in the interventional radiology suite revealed that the stent had lodged in the upper oesophagus at the T4 level, and was thought to be posteriorly compressing the larynx. Visual examination of the oropharynx did not show the foreign body, and the patient had a Mallampati score of III.

A CT of the neck was initially discussed, but the decision was made to bring the patient to emergency theatres for an examination under anaesthesia, as his airway continued to be compromised.

DIFFERENTIAL DIAGNOSIS

Fluoroscopic evidence combined with the clinical signs of upper airway obstruction (vocal hoarseness, poor phonation) exhibited by the patient suggested that there was direct compression of the larynx.

TREATMENT

When the anaesthetist arrived, the patient was already placed in the lateral position, which had eased the stridor. However, his vocal hoarseness and poor phonation persisted. As he remained haemodynamically stable with oxygen saturations of 94–96%, the decision was made to transfer him to main theatres with a view to conducting an examination under anaesthesia with the ENT (ear, nose and throat) surgical team.

A plan was made to employ the C-MAC Macintosh blade to visualise the larynx and to remove the stent, if possible, and if not, to secure the airway with an armoured endotracheal tube. ENT surgeons were scrubbed and ready to provide a surgical airway if required.

The patient was preoxygenated via facemask until his end-tidal oxygen was above 85%, and supplemental oxygen was also provided via a nasal cannula through his left nostril. Anaesthesia was induced with remifentanyl infusion and propofol. A small dose of paralysis was delivered with rocuronium. Bag mask ventilation was achieved but required a three-handed technique.

Initial views on the C-MAC monitor showed the proximal end of the expanded stent protruding from the oesophagus (figures 1 and 2). The stent had displaced all other structures around it and it was not possible to see the larynx. Under direction from the Interventional Radiologist, using a pair of Magill forceps, the intubating anaesthetist was able to gently manipulate the stent out of the oesophagus (figures 3 and 4) in such a way that the hooks on the stent did not cause any further trauma. The larynx was visually examined by the anaesthetist

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Figure 1 View on initial laryngoscopy—stent compressing epiglottis and laryngeal inlet.

post removal (figure 5), and the ENT surgeons were satisfied that no immediate surgical input was required.

OUTCOME AND FOLLOW-UP

The patient had an uneventful recovery from the anaesthesia. He was observed in theatre recovery, where his vocal hoarseness and stridor had receded. He had an oesophagogastrroduodenoscopy to rule out damage to the oesophagus, which had minor abrasions at its proximal end but was otherwise unaffected. He eventually required a palliative gastrojejunostomy to relieve his gastric outflow obstruction.

DISCUSSION

Gastric outlet obstruction often occurs as a late complication in advanced gastric and pancreatic malignancies. Palliation with self-expanding metal stents inserted by Interventional Radiologists has been shown to be associated with less morbidity and mortality than traditional open gastrojejunostomy.¹

One of the complications associated with this procedure is stent migration, which is often a late presentation. Migration rates are quoted at 2–5%,^{2,3} and serious complications include small bowel obstruction and perforation due to distal migration of the stent.

Figure 2 Artist impression of where stent was located.

Figure 3 Stent grasped with Magill forceps. View of arytenoids behind stent.

This is a rare complication, which has not previously been reported. It was felt that perhaps the original stricture was so narrow that the stent was not able to fully expand and disengage from the delivery device.

The C-MAC is an indirect video laryngoscope that has a role in the management of difficult airways. In our case, the ability to project the image seen onto a video monitor allowed the various members of the team to discuss and formulate a plan as to how to rescue the situation, without progressing to unnecessary intervention. The anaesthetists in the room were better able to appreciate the difficulty surrounding the airway. The interventional radiologist was able to provide his expertise on the dimensions of the stent, including likelihood of removal

Figure 4 Extracted stent (Magill forceps placed alongside for size comparison).

Figure 5 Larynx post removal of stent.

secondary to the hooks on the stent. Lastly, the ENT surgeons were able to appreciate the location of the obstruction, and were satisfied post removal that no surgical intervention was required.

Videolaryngoscopy has been employed by ENT surgeons in the outpatient setting to aid in removal of small foreign bodies, such as chicken bones, from the hypopharynx,⁴ however, such cases tend to be in non-acute settings, and with flexible video laryngoscopes. The alternative approach to this case would have been a low threshold for a surgical cricothyroidotomy to secure

the airway, followed by detailed examination under anaesthesia by the ENT surgeons. This would have caused more trauma to the airway, and led to further complications to a patient already receiving palliative surgery.

With the increase in interventional radiology procedures, the incidence of complications will inevitably rise. In our case, the working together of several different specialties allowed for a successful outcome for the patient.

Competing interests None declared.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

Learning points

- ▶ Despite the relative safety of interventional radiology compared with surgery, potential complications can have drastic effects on patient safety.
- ▶ Videolaryngoscopy, a tool used in difficult airway scenarios, can also be used to encourage greater communication between different specialties.

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