CASE REPORT

Oesophageal perforation caused by screw displacement 16 months following anterior cervical spine fixation

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SUMMARY

Anterior cervical spine plating is a standard procedure for fixing unstable vertebral fractures. Following surgery, oesophageal perforation has an incidence of 0.25% and this is usually hours following surgery, due to over prominent screws or friction between the oesophagus and the plate. Instrumentation failure of these plates months or years following surgery is very rare but potentially life-threatening. We report a case of microcytic anaemia which was investigated by oesophagogastrroduodenoscopy, and subsequently found that a screw from the anterior plate had lifted off and perforated the oesophagus. This is very rare, but emphasises an important lesson. Anyone presenting with gastrointestinal bleeding or infectious signs, with a history of cervical spine plating should be investigated immediately for instrumentation failure as it brings a high mortality.

BACKGROUND

Anterior spine plating is a routine procedure for fixing unstable vertebral fractures. The main indications for an anterior approach to stabilising the vertebrae are osteomyelitis, spinal tumours and cervical spine trauma.¹ Current plating methods are safe and very effective in allowing bony fusion to occur.

The close relationship between the cervical spine and the oesophagus means that it can be damaged during an anterior approach.¹ Screw migration in few days following surgery is uncommon but screw migration after several years is a very rare and potentially fatal complication.² Few cases have been reported, with treatments ranging from conservative management to surgical intervention.

CASE PRESENTATION

A 57-year-old man presented in November 2012 after falling. This led to an unstable fracture of C5–C7, which was decompressed and stabilised with instrumented fixation and fusion. Posterior fixation was performed 1 week before anterior fixation, and these were both uncomplicated. The fractures, however, left him with C4 incomplete tetraplegia.

He had medical history, which included atrial fibrillation. He was referred in March 2014 for further investigation by his general practitioner with a diagnosis of microcytic anaemia with unknown cause.

INVESTIGATIONS

There was no relevant family history, unintentional weight loss or clinical signs of anaemia; however, he was referred for an oesophagogastrroduodenoscopy (OGD) and colonoscopy to rule out any gastrointestinal (GI) pathology. The OGD reported an obstruction just distal to the cricopharyngeus of food and a suspicious metallic object. He was then sent for an X-ray of the cervical spine which noted that the cervical spine had features of ankylosing spondylitis and that the anterior superior cervical screw and plate had displaced with subsequent erosion into the oesophagus (figure 1). A CT scan reported marked angulation of the cervicothoracic junction and air in the soft tissues anterior to C7 (figure 2). The anterior plate and screw fixation at C6 and C7 level, and the vertebral bodies were displaced forwards, particularly the upper screws, and this caused one of the upper screws to be visualised at endoscopy.

OUTCOME AND FOLLOW-UP

The OGD and colonoscopy were vital in investigating the anaemia. If a more routine pathology was found, GI surgery could have been considered. Our patient was offered the surgery to remove the anterior plate, as it was evident that bony fusion had occurred. The patient decided that he did not wish to have the invasive surgery to remove the plate unless it was absolutely necessary. He is not fed by percutaneous endoscopic gastrostomy (PEG), is still able to feed orally and not currently experiencing any dysphagia, he is being monitored

Figure 1 X-ray of the cervical spine.

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Figure 2 CT of the cervical spine.

carefully and should the patient become symptomatic or develop sepsis, surgical treatment may be considered.

DISCUSSION

The incidence of oesophageal perforation following anterior cervical spine plating is estimated at 0.25% with a mortality of 20–50%.² Common causes of oesophageal perforation following anterior cervical spine surgery are over prominent screws, plates or bony grafts or direct surgical trauma, and these usually present hours or days following surgery.³

Oesophageal perforation months or years following surgery is usually associated with increased friction between the implanted device and the posterior oesophageal wall.¹ These cases commonly present with dysphagia or GI bleeding but clinical presentation is variable and can include subcutaneous emphysema and odynophagia. Some patients present asymptotically and therefore treatment is on a case-by-case basis.² A CT scan is essential in investigating the extent of the screw displacement and to explore any pathological cause for the migration of the screw, it also helps to visualise soft tissue abscesses and vertebral angulation or movement.¹

If the patient is asymptomatic, and there are no infectious signs, conservative treatment may be considered. This usually

involves preventing oral intake and decompression of the stomach by a nasogastric tube.¹ Enteral nutrition is required until the absence of a perforation is confirmed by OGD. However, 20% of patients treated conservatively have a bad outcome by developing osteomyelitis or an abscess which brings an eventual mortality rate of 18%.¹

Surgical intervention is usually necessary if infection is present or the patient is symptomatic.³ This involves initially controlling infection by draining abscesses, closing the perforation and insertion of a drain. The anterior fusion should be removed and if solid bony fusion has not occurred, the spine should be stabilised using a posterior approach or a replacement anterior plate.¹

Learning points

- ▶ Long-term follow-up is required for all patients following anterior fixation of the cervical spine.
- ▶ Screw migration is a possible risk of cervical spine surgery in the years following the operation.
- ▶ Anyone who presents with upper gastrointestinal bleeding, dysphagia, dysphonia or infectious signs with a history of anterior cervical spine fixation should be investigated for instrumentation failure immediately, as this brings a high-risk of sepsis and death.
- ▶ Early medical or surgical intervention or monitoring is key and associated with a better outcome.

Competing interests None.

Patient consent Obtained.

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