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Case Report

Chronicle of coughed up screws

Brig J.K. Banerjee^a, Lt Col R. Saranga Bharathi^{b,*}, Gp Capt V.R. Mujeeb^c,
Col Giriraj Singh^d

^aConsultant (Surg & GI Surg), Command Hospital (Southern Command), Pune 411040, India

^bClassified Specialist (Surg & GI Surg), Command Hospital (Southern Command), Pune 411040, India

^cSenior Advisor (Gastroenterology), Command Hospital (Southern Command), Pune 411040, India

^dSenior Advisor (Radiology), Command Hospital (Southern Command), Pune 411040, India

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Introduction

Use of plates and screws for fixing cervical spine is not uncommon. However, dysphagia due to their delayed migration into esophagus is. Seeking medical attention because of coughing up of screws is exceptional. We chronicle such a singular case.

Case report

A 76-year-old male patient was operated in 2009 for compressive myelopathy with C6 corpectomy along with C5–6 and C6–7

discectomy, autologous bone grafting, and anterior cervical plating of C5–7. Postop recovery was uneventful. The patient developed throat discomfort, 5 years later, which he initially ignored. He hastened to seek medical attention, alarmed on coughing up two screws, which worsened his discomfort into dysphagia. Examination revealed stable vitals, no neck swelling/crepitus, but old healed scar of cervical surgery on right side. Radiograph and computerized tomogram showed fused cervical spine with implant inclined anteriorly with missing screws (Fig. 1). Endoscopy showed the implant eroded into esophagus, almost completely occluding its lumen (Fig. 2). Urgent cervical exploration, using left presternomastoid incision, found esophagus fixed to prevertebral fascia by dense fibrosis. Longitudinal esophagotomy exposed the dislodged implant with two remaining screws, which were retrieved (Figs. 3 and 4). The esophageal rent was apposed and buttressed with sternomastoid muscle flap. The patient recovered well; however, he reported with coughing on taking liquids (Ono's sign), not solids, few weeks later owing to a high, small (<5 mm) trachea-esophageal fistula (TEF). The patient underwent percutaneous endoscopic gastrostomy for feeding, especially liquids, as solid intake was without any discomfort. The patient had spontaneous closure of TEF and is well after a year's follow-up.

Discussion

Anterior cervical plating is employed for a variety of orthopedic and neurologic conditions, one of them being compressive myelopathy.^{1,2} Complications of such instrumentation range from 2% to 35%.¹ Dislodged implants may impinge/invade

* Corresponding author. Tel.: +91 20 26026117.

E-mail address: sarangabharathi@gmail.com (R. Saranga Bharathi).

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Fig. 1 – CT neck in axial section demonstrates anterior migration of fixation vertebral metallic plate into the hypopharynx and cervical esophagus.

upper aerodigestive tract, laryngeal nerves, or neck vessels with devastating consequences, including death.¹ Such implant failure is attributed to several factors: poor initial positioning of screws; malpositioning them into discs; instability of posterior ligaments; incomplete fusion; greater number of vertebrae removed; long grafts; implant astride cervicothoracic spines, and osteoporosis/poor general condition.¹⁻³ The implant failure in our case appears to be because of the osteoporosis associated with old age, as technical faults, if any, would have lead to dislodgement much earlier.

The timing and rate of dislodgement determine the clinical presentation, treatment options, and morbidity/mortality, all of which vary widely. Pharyngo-esophageal injuries that occur during surgery present immediately, within hours/days, with neck collection, cervical abscess, subcutaneous emphysema, sepsis, or descending mediastinitis, with high morbidity and

Fig. 2 – Endoscopy showing migrated metal plate in the esophagus.

Fig. 3 – Migrated implant seen on esophagotomy.

mortality. A similar picture is apparent when the implant erodes into pharynx/esophagus immediately following surgery.^{1,4}

Slower dislodgements/perforations, especially of screws, may be asymptomatic and pass off in feces, or are, very rarely, coughed up, as in our case.^{1,3} Some perforations present by forming pharyngo/esophago cutaneous fistulae.^{5,6} Dislodgement of plates is seldom asymptomatic, although, there are reports of their spontaneous passage in feces, as well.¹ The slower dislodgements seldom involve septic outcome, as evident by our case. The slow migration allows sufficient time for simultaneous fibrotic healing/walling off to take place.¹ Hence, morbidity, although present, is not devastating and mortality is rare.

Investigations needed depend upon the timing of presentation. Advanced imaging, such as, computerized tomogram and magnetic resonance imaging, are desirable in all situations, especially, in cases presenting early with sepsis, collection, and mediastinitis to aid comprehensive surgery.^{4,5} However, slower migrations may just need endoscopy, contrast swallow/fistulogram, and roentgenogram of neck for making a decision.

Management of implant migration again varies with the timing and presentation. Those which present immediately following surgery need urgent reexploration under broad spectrum antibiotics, with wide drainage, irrigation, primary repair with or without T-tube esophagostomy, and buttressing of local muscle flaps.^{1,4-6} Esophageal diversion and jejunal transposition have also been employed.⁶ Slower developing pharyngo/esophago-cutaneous fistulae may heal spontaneously or may have to be dealt with surgically using muscle flaps for closure.^{5,6}

Fig. 4 – Retrieved implant.

Migrated plates have to be invariably retrieved surgically. Left presternomastoid incision, used by us, amply exposes the cervical esophagus. The esophageal rents are generally at the level of C5–6 where their posterior wall is thin and is, hence, most susceptible to erosion.¹ Since the rent was large and with surrounding fibrosis, so dense, it would have been unwise to close it without buttress of local muscular flap. We chose sternomastoid flap owing to its sturdiness, excellent vascularity, local availability, good cosmesis, and little function consequence, as only the sternal head was used leaving behind the clavicular head for continuance of function.^{5–7} Small rents have been left alone to heal spontaneously without coming to grief.⁴

Alternate mode of spinal stabilization, such as external/posterior fixation, may have to be opted for first in cases needing removal of dislodged implants, especially in cases of their early migration, presenting with sepsis.⁵ However, the vertebrae may be left alone in delayed migrations as the implants would have served their purpose by the time they get dislodged.¹

Late formation of TEF was probably due to subclinical injury to trachea, by the implant, which manifested later. Most TEF have to be surgically dealt with; however, we chose conservative treatment as both the sides of neck were

violated by previous surgeries and, hence, access through any of them would entail significant risk of recurrent laryngeal injury owing to prohibitively dense fibrosis.⁸ Spontaneous closure of TEF, especially small ones, has been observed and, hence, the patient was put on expectant management for the same.⁸

Summing up, delayed esophageal migration of anterior cervical implant is rare. Its presentation by coughing up of fixing screws is exceptional, as well as propitious, as it leads to its prompt remedy. We have chronicled the tale of coughed up screws and the knowledge/wisdom gained by managing the case for readers' benefit.

Conflicts of interest

The authors have none to declare.

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