

Early Oral Extrusion of Screw after Anterior Cervical Interbody Fusion and Plating: A Case Report

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Abstract

We report a case of oral extrusion of screw in a 58-year-old male who underwent anterior cervical discectomy and fusion for traumatic C7/T1 protruded intervertebral disk. The extrusion took place in the early post-operative period and patient is absolutely asymptomatic except for a dysphagia for few days. There were no symptoms suggestive of esophageal perforation. Barium swallow study was negative for perforation or fistula. Upper gastrointestinal endoscopic studies showed small healing tear in lower esophagus. He was managed with nasogastric feeds for 1-week. Previous reports of similar cases described extrusion of screw in late post-operative period. Our case is first in the kind of extrusion of screw in early post-operative period with no symptoms of esophageal perforation.

Key words: Anterior cervical, Barium swallow, Esophageal perforation, Plating, Screw extrusion

INTRODUCTION

Anterior cervical discectomy or corpectomy and fusion supplemented with plating and screw fixation is a well-established procedure for 6 decades. It is the choice of procedure for cervical spinal diseases such as cervical myelopathy, cervical radiculopathy, cervical spondylotic diseases, trauma, infective pathologies of cervical spine, and neoplasms in cervical spine.¹

Oral extrusion of screw or plate after anterior cervical discectomy and fusion (ACDF) with plating was a described complication. All the previous reports described extrusion of screw in the late post-operative period with minimal

symptoms and in some potentially serious life-threatening symptoms.¹⁻⁵

Here, we report a case of extrusion of the screw in the early post-operative period with no symptoms suggestive of esophageal perforation except for dysphagia for few days.

CASE REPORT

A 58-year-old male patient sustained cervical spine injury due to stampede while traveling in bus. He presented with neck pain and weakness of all four limbs with more weakness in both upper limbs than the lower limbs suggestive of central cord like syndrome. Power in the upper limbs was 3/5 (MRC grading) and in the lower limbs 4/5.

Magnetic resonance imaging (MRI) cervical spine showed protruded intervertebral disc of C7/T1 causing indentation over the cord with cord edema.

Surgery was done through anterior cervical approach from right side. Discectomy of C7/T1 done and autologous iliac

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bone graft placed in the space and titanium plate fixed with screws in C7 and T1. Patient got improvement in the power in the upper limbs in the immediate post-operative period. Except for mild dysphagia there were no other complaints. After 5 days, he complained cough without expectoration and on coughing one of the screw placed in the cervical vertebra extruded from the mouth. Neck radiograph showed missing screw in Figures 1-3. Immediate barium swallow was negative for fistulae and perforation. Upper Gastro intestinal endoscopy showed small tear in lower esophagus, which was healing (Figure 4). He was kept on nasogastric feeds for 1-week. Dysphagia subsided. Regular follow-up imaging showed fusion of the segment, which was operated. Nine months post-operative imaging showed no displacement of the other parts of the implants.

DISCUSSION

The use of internal stabilization devices has expanded the indications for cervical surgery. Cervical plating after

graft placement had improved the results to a fusion rate of 98% and reduced graft related complications especially in multilevel fusions, also avoiding late deterioration of the cervical spine alignment obtained at surgery.¹ Overall complication rate with ACDF was approximately 5%.¹ Implant failure after anterior cervical plating has been well documented in that.

Complications related to implants include loosening, extrusion from the vertebral body, esophageal perforation, mediastinitis, aspiration pneumonia, abscess formation, fistula, sepsis, death, and missing of the implants leading to medico legal problems.¹⁻⁵ Instrumentation failure may be related to the hardware failure, purchase of an inadequate screw, purchase into osteoporotic bone, malpositioning of the screw into disc, incomplete fusion, excessive movements (e.g., long fusion grafts), subsidence related micro motion of the graft causing loosening of the screw, and existing medical problems of the patient.



Figure 1: X-ray of the neck-AP



Figure 2: Computed tomography scan of the neck (three dimensional reconstruction)



Figure 3: Computed tomography scan of the neck (three dimensional reconstruction)-right anterior oblique view

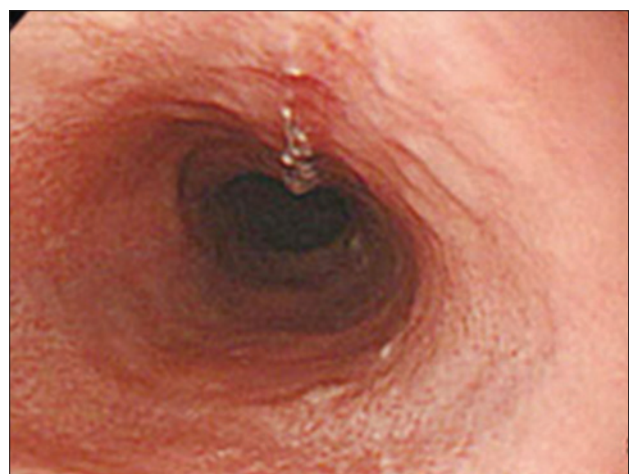


Figure 4: The small scar in the anterior wall of the esophagus-endoscopic view

Many authors suggested that main predisposing factor in the development of screw or plate extrusion is the initial malposition or suboptimal screw placement.¹

Extrusion of screws from the mouth or gastrointestinal tract is a well-documented complication. The patients generally present with dysphagia, hoarseness of voice, swelling in the neck, neck pain, fever, cough, and dyspnea.¹⁻⁵ Frank esophageal rupture can lead to devastating complications and even death. Our patient presented with mild dysphagia and cough with no overt signs of esophageal rupture. Causes of minimal symptoms after screw penetration and extrusion through esophagus may be due to small diameter of the screw and slow movement of the backtracking screw causing spontaneous healing of the tract from another side.²⁻⁴

These symptoms need to be addressed and investigations should include complete blood counts, erythrocyte sedimentation rate, C-reactive protein. Radiological investigations include X-ray of the cervical spine, computed tomography, and MRI of the cervical spine. Barium studies can detect the rupture, fistula tract or other causes of dysphagia. Endoscopy is necessary to assess the rent size, state of healing, and location of the tear.³⁻⁵

Immediate action should be taken for frank rupture with symptoms related to esophageal perforation. Initial management includes the elimination of oral feeds, nasogastric feeding to restore fluid and nutritional balance, mouth gargles with antibiotic solutions, and intravenous antibiotics. Small tears in the esophagus will heal spontaneously, but large defects require closure primarily or sternocleidomastoid or pectoralis muscle flaps for repair.²

Extrusion of implants can be minimized by careful surgical techniques. Osteoporotic evaluation in elderly and use of mesh

graft.¹ Single cortical purchase considered to be adequate for when lock screws are used, but the double cortical purchase is required for conventional screws. Plate should allow some space for the subsidence to occur. Dynamic semi-constrained plate is a third generation plate in cervical surgery, which prevents stress shielding and allows subsidence.^{2,5} Screw loosening of more than 5 mm, radiological progression of screw loosening or plate alignment, and persistent dysphagia necessitates removal of implants.⁵

CONCLUSION

ACDF is a well-established procedure since decades and stabilization with plating improves fusion rates. Implant failure with screw extrusion due to esophageal rupture can occur with symptoms ranging from minimal dysphagia to fatal complications including death. Screw extrusion trans orally with minimal dysphagia in a late post-operative period is described well in the literature.

Oral extrusion of the screw of anterior cervical instrumentation in the early post-operative period with mild dysphagia is reported for the first time.

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