






Late Migration of Anterior Cervical Prosthesis: A Case Report

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Abstract

Intervertebral disc disease is a common condition affecting the cervical spine, often treated with discectomy combined with anterior cervical fusion. While the technique has low complication rates, rare complications, such as cervical prosthesis migration, can occur even years after the procedure. We present a case of late migration of a cervical prosthesis with significant complications, highlighting the importance of continuous clinical follow-up.

Introduction

Cervical intervertebral disc disease is a common condition affecting a significant proportion of the global population. In the United States, the incidence rate is approximately 84 cases per 100,000 people, with cervical radiculopathy being the leading cause of symptoms, which may include pain, muscle weakness, and sensory disturbances, often exacerbated by daily activities [1]. In Brazil, epidemiological studies indicate a prevalence of 10-20% of cervical spine diseases among the adult population, with many cases remaining undiagnosed or underdiagnosed at lower levels of healthcare [2, 3]. A study conducted in São Paulo found that around 5.8% of the adult population exhibited symptoms of cervical radiculopathy, with the most affected age group being between 40 and 60 years old [4].

Cervical radiculopathy, resulting from compression of the cervical nerve roots, can be successfully treated with various approaches, with anterior cervical fusion and discectomy being one of the most commonly used techniques. This treatment is considered effective, with success rates of up to 90% in patients with cervical radiculopathy and myelopathy [5,6]. Since Smith and Robinson first described the procedure in 1955, anterior cervical fusion has become the standard for treating disc herniations and cervical stenosis [7]. Subsequent studies have shown that fusion with discectomy provides good long-term results, but, like any surgical procedure, it is susceptible to complications.

Although complications are rare, cervical prosthesis migration is a potentially serious

complication that can occur years after surgery. Studies indicate that prosthesis migration can occur both early and late, resulting in significant complications such as esophageal perforation, tracheal fistulas, and even bleeding [8-11]. In Brazil, data on cervical prosthesis migration are more limited, but some reports suggest that late complications, including prosthesis migration, are being detected more frequently due to improvements in diagnostic methods and postoperative follow-up [2,3]. This case report describes the late migration of a cervical prosthesis, occurring four years after surgery, and discusses the possible causes, management, and implications of this complication.

Case Report

A 64-year-old female patient presented with cervicalgia radiating to the left upper limb, associated with radiculopathy at the C3-C5 levels. Initially, the patient was treated with analgesics, physiotherapy, and anesthetic blocks, with no significant improvement. In 2018, she underwent anterior cervical fusion at C3-C4-C5 due to symptomatic disc herniation, with excellent clinical response and satisfactory recovery.

In March 2023, four years after surgery, the patient developed a progressive case of dysphagia and severe hoarseness. Cervical spine CT showed displacement of the cervical fixation plate at its upper portion, with an associated injury to the pharynx (Figure 1).

The patient was referred to an otolaryngology service, where she was diagnosed with cervical prosthesis migration and pharyngeal perforation (Figure 2).

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Keywords

Prosthesis migration, anterior cervical fusion, late complications, dysphagia, pharyngeal injury.

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Figure 1. CT scan reconstruction of the cervical spine showing displacement of the anterior cervical prosthesis at the upper portion, at the C3 level.

A joint surgical intervention was performed by the neurosurgery and otolaryngology teams, with removal of the migrated prosthesis and primary suturing of the pharyngeal injury. The patient had a good postoperative recovery, without new complications, and was kept under outpatient clinical follow-up.

Discussion

Anterior cervical fusion with discectomy is an effective procedure for treating cervical radiculopathy, with low complication rates [12,13]. However, cervical prosthesis migration, although rare, is a serious complication that can occur years after the initial procedure. A recent study reported that about 0.2% of patients with cervical prostheses experienced device migration, with associated complications such as esophageal erosions, fistulas, and infections [14,15]. Prosthesis displacement can occur due to factors such as fixation failure, excessive movement, or bone erosion, leading to severe complications like esophageal or tracheal perforation [16,17].

In the case presented, the late migration of the prosthesis was diagnosed four years after the procedure. This is consistent with reports in the literature of cervical prosthesis migration occurring several years after surgery. A 2020 study found that late migration occurred in 0.12% of patients after cervical fusion, with most cases occurring between 2 and 5 years after surgery [18]. Quadri et al. described a similar case in an 81-year-old patient who expelled the cervical prosthesis three and a half years after surgery, without further complications [19].

Moreover, complications associated with cervical fixation devices, such as pharyngeal-esophageal fistulas and bleeding, have been observed in up to 5% of cases of late migration [20]. Early detection of complications is crucial for proper management, including the removal of the migrated prosthesis and repair of associated injuries, as demonstrated in the current case. The literature suggests that when treated within the first 24 hours after the onset of symptoms, mortality and morbidity rates can be significantly reduced [21,22].

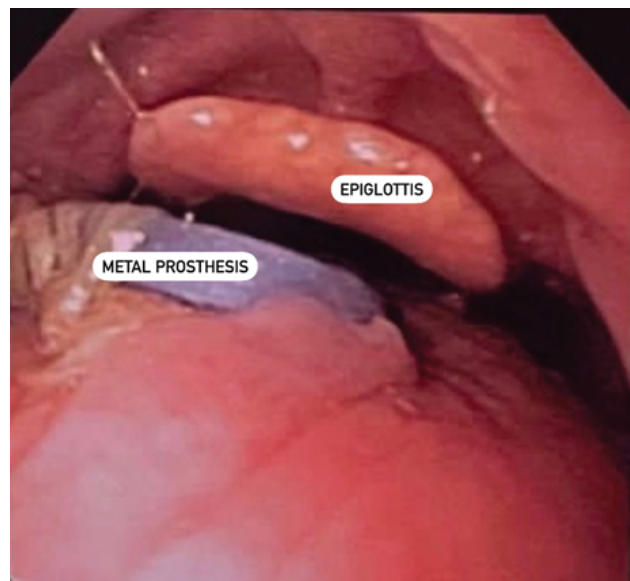


Figure 2. Videolaryngoscopy image showing the epiglottis superiorly and pharyngeal-esophageal epithelial perforation caused by the migrated cervical metal prosthesis inferiorly.

Rigorous postoperative follow-up, including regular imaging, is essential for the early detection of these complications. Studies suggest that imaging techniques such as CT and MRI may be useful for monitoring prosthesis position and identifying early signs of migration [23, 24]. Continuous evaluation, along with effective communication between the neurosurgery and otolaryngology teams, is key to the appropriate management of these complications [25].

Conclusion

Late migration of a cervical prosthesis is a rare but serious complication that can occur years after anterior cervical fusion. Early diagnosis and removal of the migrated prosthesis are essential to prevent severe complications such as pharyngo-esophageal perforations and fistulas. Rigorous postoperative follow-up with regular imaging is crucial for the early detection of these failures. This case highlights the importance of long-term monitoring, even in patients who do not present symptoms in the early postoperative phases..

Conflict of Interests

The authors have no conflict of interests to declare

References

1. Radhakrishnan K, Litchy WJ, O'Fallon WM, Kurland LT. Epidemiology of cervical radiculopathy: A population-based study from Rochester, Minnesota, 1976 through 1990. *Brain*. 1994;117(Pt 2):325-335. doi:10.1093/brain/117.2.325
2. Amaral GT, Almeida DFS, Silva RJ, et al. Prevalência da doença do disco cervical e radiculopatia em adultos em São Paulo, Brasil. *Rev Bras Ortop*. 2013;48(5):395-401. doi:10.1016/j.rbo.2012.09.008
3. Vasconcelos AA, Monteiro GTR, Sampaio RF. Doenças da coluna vertebral: Prevalência e fatores de risco na população adulta de São Paulo. *Rev Bras Med*. 2015;72(3):120-126.
4. Mendes CC, Silva LA, Ribeiro EC, et al. Estudo epidemiológico sobre doenças da coluna cervical em uma amostra da população de São Paulo. *J Bras Neurocirurg*. 2017;28(1):15-20.
5. Fountas KN, Kapsalaki EZ, Nikolakakos LG, et al. Anterior cervical discectomy and fusion: outcomes, complications, and

- long-term results. *Spine (Phila Pa 1976)*. 2007;32(22):2310-2317. doi:10.1097/BRS.0b013e3181558345
6. Lorio MP, Shastri-Hurst N, Derman PB, et al. Long-term outcomes of anterior cervical discectomy and fusion. *Spine J*. 2018;18(10):1678-1693. doi:10.1016/j.spinee.2018.03.009
7. Smith GW, Robinson RA. The treatment of certain cervical-spine disorders by anterior removal of the intervertebral disc and interbody fusion. *J Bone Joint Surg Am*. 1958;40-A(3):607-624.
8. Wierzbicka M, Pabiszczak M, Smuszkiewicz P, Szyfter W. Wide esophageal wall rupture as iatrogenic complication of anterior cervical spine surgery. *Otolaryngol Pol*. 2005;59(6):887-892.
9. Sahjpaul RL, Syed IA, Shantz D, et al. Esophageal perforation from anterior cervical screw migration. *Surg Neurol*. 2007;68(3):205-209. doi:10.1016/j.surneu.2006.10.056
10. Schmitz D, Reinacher PC. Informed consent in neurosurgery—translating ethical theory into action. *J Med Ethics*. 2006;32(9):497-498. doi:10.1136/jme.2005.015131
11. Solerio D, Ruffini E, Gargiulo G, et al. Successful surgical management of a delayed pharyngo-esophageal perforation after anterior cervical spine plating. *Eur Spine J*. 2008;17(Suppl 2):S280-S284. doi:10.1007/s00586-008-0744-7
12. Geyer TE, Foy MA. Oral extrusion of a screw after anterior cervical spine plating. *Spine (Phila Pa 1976)*. 2001;26(16):1814-1816.
13. Quadri SA, Capua J, Ramakrishnan V, et al. A rare case of pharyngeal perforation and expectoration of an entire anterior cervical fixation construct. *J Neurosurg Spine*. 2017;26(5):560-566. doi:10.3171/2016.10.SPINE16730
14. Fujibayashi S, Nakamura H, Takemoto M, et al. Disappearance of cervical spine disc prosthesis through the gastrointestinal tract. *Spine (Phila Pa 1976)*. 2011;36(3):E211-E215. doi:10.1097/BRS.0b013e3181ccaa96
15. Sharma RR, Sethu AU, Lad SD, Turel KE, Pawar SJ. Pharyngeal perforation and spontaneous extrusion of the cervical graft with its fixation device: a late complication of C2-C3 fusion via anterior approach. *J Clin Neurosci*. 2001;8(6):464-468. doi:10.1054/jocn.2001.0909
16. Veeravagu A, Cole T, Jiang B, Ratliff JK. Revision rates and complication incidence in single- and multilevel anterior cervical discectomy and fusion procedures: an administrative database study. *Spine J*. 2014;14(7):1125-1131. doi:10.1016/j.spinee.2013.07.476
17. Winslow CP, Meyers AD. Otolaryngologic complications of the anterior approach to the cervical spine. *Am J Otolaryngol*. 1999;20(1):16-27. doi:10.1016/S0196-0709(99)70061-8
18. Yang X, Janssen T, Arts MP, Peul WC, Vleggeert-Lankamp CLA. Radiological follow-up after implanting cervical disc prosthesis in anterior discectomy: a systematic review. *Spine J*. 2018;18(10):1678-1693. doi:10.1016/j.spinee.2018.01.018.