



Case Report

Spinal cord stimulator failure: Migration of a thoracic epidural paddle to the cervical spine

Sarah S. Travers, Thorkild V. Norregaard

Division of Neurosurgery, University of Missouri, One Hospital Drive, MC314 McHaney Hall, Columbia, Missouri, USA.

E-mail: *Sarah S. Travers - traverss@health.missouri.edu; Thorkild V. Norregaard - norregaardt@health.missouri.edu



***Corresponding author:**

Sarah S. Travers,
Division of Neurosurgery,
University of Missouri, One
Hospital Drive, MC314
McHaney Hall, Columbia,
Missouri, 65212, USA.

traverss@health.missouri.edu

Received : 11 May 19

Accepted : 28 May 19

Published : 25 June 19

DOI

10.25259/SNI-302-2019

Quick Response Code:



ABSTRACT

Background: Spinal cord stimulators successfully treat a number of pain syndromes but carry a risk of hardware complications. Here, we present a case of cranial migration of a thoracic epidural paddle to the cervical spine.

Case Description: A 53-year-old male underwent uncomplicated spinal cord stimulator placement at the T10–T11 with initially favorable results. However, postoperatively, he complained of paresthesias in his arms. An X-ray demonstrated cranial migration of the thoracic epidural paddle to the cervical spine. The stimulator/new paddle was placed again at the T10–T11 level, but the leads were now secured to the caudal lamina utilizing a cranial plating system. The patient subsequently did well without further sequelae.

Conclusions: A thoracic epidural paddle (T10–T11) migrated postoperatively into the cervical spine. It was subsequently removed and replaced into the thoracic region, but the leads were now secured in place with a novel caudal lamina/cranial plating system.

Keywords: Failed back surgery syndrome, Hardware failure, Lead migration, Spinal cord stimulation, Stimulator

INTRODUCTION

Spinal cord stimulation (SCS) is frequently used to treat failed back surgery syndrome, chronic regional pain syndrome, chronic back pain, neuropathy, ischemic pain, and visceral pain. However, this procedure is associated with some risks that include infection, bleeding, spinal cord injury, and hardware complications.^[1] Here, we present the unusual case of cephalad migration of a thoracic epidural paddle electrode into the cervical region.

CASE PRESENTATION

A 53-year-old male underwent a right L4-L5 microdiscectomy and foraminotomy and was discharged home the same day. With no improvement 6 months after surgery, we offered a trial of SCS, and he experienced significant relief from the back and leg pain. Ten days later, we placed an epidural paddle electrode through a T10–T11 laminotomy [Figure 1]. The lead was secured to the ligamentum flavum with 4-0 NUROLON sutures. When he returned 15 days later, he no longer experienced pain relief and reported consistent stimulation in upper extremities. A thoracic X-ray revealed that the epidural paddle electrode had migrated to the cervical C6-C7 epidural space [Figure 2]. Upon return to the operating room, we were able to retract the paddle electrode to the

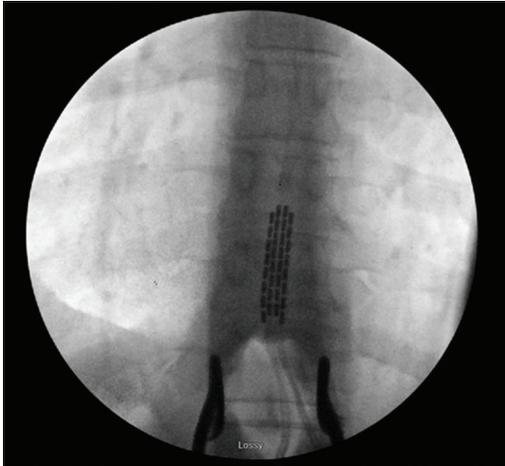


Figure 1: Initial placement of the thoracic epidural paddle at the T10–T11 vertebrae.

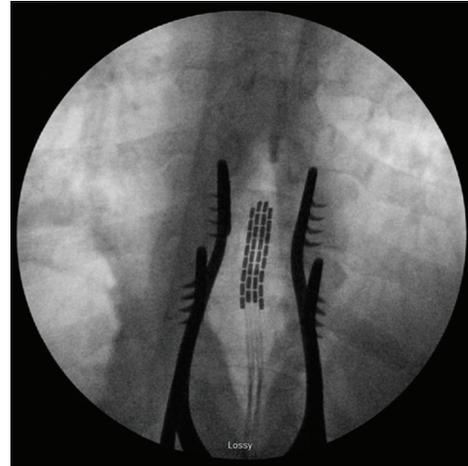


Figure 3: Intraoperative radiograph demonstrating repositioning of the paddle to the T10–T11 vertebral level.

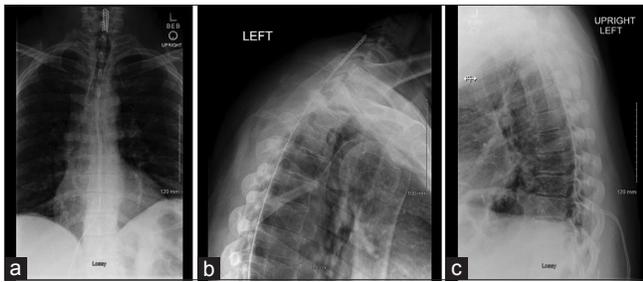


Figure 2: (a) Anterior-posterior and (b) lateral radiographs obtained in clinic demonstrating migration of the epidural paddle to the lower cervical spine. (c) The strain-relief loop has become fully stretched.

level of T5 where we encountered resistance; therefore, we performed a laminotomy at this level to remove the paddle electrode. When placing a new epidural paddle electrode, we encountered significant adhesions in the epidural space requiring additional laminotomies at T8–T9 and T9–T10 to adequately dissect the adhesions and place the epidural paddle electrode [Figure 3]. We then affixed the leads to the T11 lamina using a 16 mm craniomaxillofacial low-profile plate. The patient was discharged home the following day without further sequelae.

DISCUSSION

Lead migration is one of the most common complications occurring in from 2.1% to 27% out of 5000 patients undergoing SCS.^[1] Kumar *et al.* found a lead migration incidence of 21.5%, with a two-fold greater frequency in the cervical versus thoracic spine.^[2] Our standard practice is to secure two leads to the ligamentum flavum with 4-0 NUROLON sutures and to leave a strain-relief loop under the fascia. Here, we uniquely secured the leads to the inferior

lamina utilizing a craniofacial plate anchor (e.g., with 4 mm screws), an option also previously described in the literature.^[3]

CONCLUSIONS

Here, a 53-year-old male demonstrated migration of a thoracic epidural paddle electrode into the cervical spine. This required replacement of the T10–T11 leads and an alternative method of affixing of these leads in place utilizing a craniofacial plating system.

Financial support and sponsorship

None.

Conflicts of interest

There are no conflicts of interest.

REFERENCES

1. Eldabe S, Buchser E, Duarte RV. Complications of spinal cord stimulation and peripheral nerve stimulation techniques: A review of the literature. *Pain Med* 2016;17:325-36.
2. Kumar K, Hunter G, Demeria D. Spinal cord stimulation in treatment of chronic benign pain: Challenges in treatment planning and present status, a 22-year experience. *Neurosurgery* 2006;58:481-96.
3. Tomycz ND, Cameron J, Whiting DM, Oh MY. Cranial plate anchoring of spinal cord stimulation paddle leads: Technical note. *Neurosurgery* 2012;71:22-4.

How to cite this article: Travers SS, Norregaard TV. Spinal cord stimulator failure: Migration of a thoracic epidural paddle to the cervical spine. *Surg Neurol Int* 2019;10:118.