



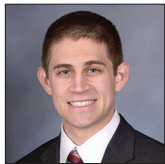
Case Report

Minimally invasive resection of pediatric osteoid osteomas: A report of two cases

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ABSTRACT

Background: Spinal osteoid osteomas (OOs) are common benign bone tumors that most frequently affect the posterior elements. They occasionally (e.g., 10% of the time) necessitate surgical resection for intractable pain. Given their small size and posterior positions, many may be amenable to minimally invasive surgical approaches.

Case Description: We describe two cases of spinal OOs involving patients 11 and 17 years of age with lesions, respectively, at T7 and C4.

Conclusion: Minimally invasive approaches for resection of small bony spinal OOs are safe and technically achievable approaches.

Keywords: Minimally invasive spine, Pediatric spine, Spine tumor

INTRODUCTION

Spinal osteoid osteomas (OOs), representing 12% of all skeletal neoplasms, are benign bone tumors that most frequently involve the posterior elements (68.4–100%) of the subaxial spine. They usually appear in the second decade of life and occur 2–3-fold more frequently in males. Although other studies have demonstrated that pain attributed to these lesions may be controlled in up to 90% of patients with nonsteroidal anti-inflammatories (NSAIDs), others (10%) may warrant surgical intervention.^[1] The scant literature regarding MIS approaches for these OOs demonstrate that they require smaller incisions, decreased operative times, less blood loss, and can be performed at a reduced cost.^[3] Here, we present two cases of OO in children ages 11 and 17. These lesions, were, respectively, located at the T7 and C4 levels, were successfully resected utilizing MIS surgical techniques.

CASE DESCRIPTION

Case 1

An 11-year-old male presented with thoracic back pain of 8 months duration. The MRI showed a left posterior 8 mm, round enhancing lesion involving the base of the left T7 pedicle, consistent with an OO. As his symptoms were not controlled with NSAIDs, the patient underwent a left-

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sided minimally invasive tubular partial resection of the T7 pedicle [Figure 1]. This was performed under microscopic visualization and included a partial medial facetectomy to expose the left T6-7 neural foramen; the OO was readily removed under fluoroscopic guidance. The postoperative CT confirmed gross total resection of the OO, and the pathological analysis confirmed the diagnosis of OO. Within 2 postoperative weeks, the patient was asymptomatic.

Case 2

A 16-year-old female presented with 1.5 years left paracervical pain that was worse at night and frequently awakened her from sleep. A CT of the cervical spine showed an irregularity of the left C4 superior articular process and a 6 mm expansile mass consistent with an OO. Here, surgery utilized a left-sided MIS tubular retractor remove the C4

lateral mass with fluoroscopic guidance [Figure 2]. Under microscope visualization, the overlying inferior articular process of C3 was drilled, and the tumor was removed. The pathology was confirmatory for an OO. Within 2 weeks, the patient was pain free.

DISCUSSION

There is increasing evidence that minimally invasive techniques may be utilized for many routine spinal operations.^[2,5,6] In the pediatric spine, MIS surgery may limit tissue disruption, and postoperative dynamic instability thus reducing other longer-term deleterious consequences.^[4,7] In this case study, two children, ages 11 and 17, benefitted from MIS tubular decompressions of T7 and C4 OO lesions, respectively. MIS tubular surgical approaches may offer adequate resection of focal spinal OO in the pediatric population and should be considered when appropriate.

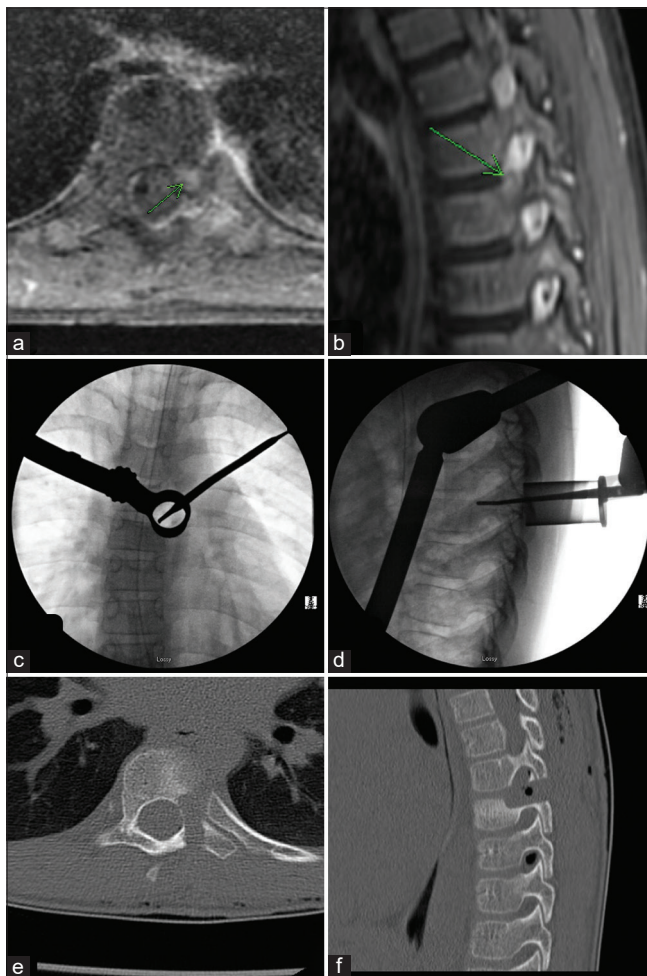


Figure 1: MRI imaging of a T9 lesion with mild contrast enhancement on T1 (a) and hyperintensity on T2 (b) located in the left T9 pedicle (green arrow). Intraoperative fluoroscopy demonstrating tubular retractor location centered overlying the left T9 pedicle (c and d). Postoperative CT demonstrating resection of the left T9 pedicle and 54 partial T8/9 facetectomy (e and f).

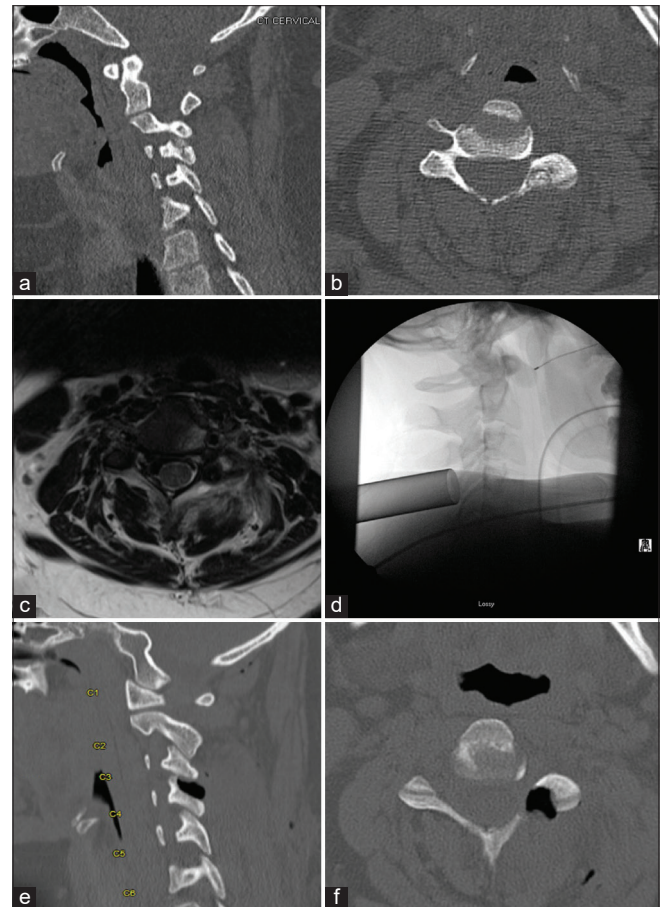


Figure 2: AP and lateral CT images of a subcentimeter mass located in the lateral mass of the left C4 (a and b). Axial T2 MRI imaging demonstrated a T2 hyperintense lesion in the left lateral mass at C4 (c). Lateral fluoroscopy showing the tubular retractor centered on the C3/4 facet joint (d). Lateral and axial CT images demonstrated a gross total resection of the C4 mass with minimal bony resection (e and f).

CONCLUSION

Minimally invasive approaches for resection of small bony spinal OOs are safe and technically achievable approaches. These approaches should be considered when considering surgical resection of osteoid osteomas in the pediatric population.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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