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Case Report

Chronic hypertrophic malunion of C2 Fracture causing cervical quadriparesis; Case report and focused literature review

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ABSTRACT

Background: Pseudarthrosis of Type II C2 odontoid fractures typically leads to displacement and subluxation resulting in canal compression/cervical myelopathy.

Case Description: Here, we present a 43-year-old male who sustained cervical trauma 28 years ago. He now presented with an acute 10-day onset of quadriparesis attributed to a chronic malunion of an unstable type II odontoid fracture. He successfully underwent a circumferential decompression and fusion (e.g., warranting a trans-oral odontoidectomy followed by C1-C3 posterior fusion).

Conclusion: Progressive cervical myelopathy attributed to a chronic malunion of a type II odontoid fracture may require circumferential decompression/stabilization (e.g., an anterior decompression with osteophyte resection and posterior C1-C3 spinal stabilization).

Keywords: Cervical, Fracture, Hypertrophic, Malunion, Myelopathy, Odontoid

INTRODUCTION

Degenerative changes in bone may contribute to reduce bone mass and increase the susceptibility of the base of the odontoid process to fracture. This risk may further be exacerbated by multiple medical comorbidities.

The Anderson and D Alonzo type II fractures involving the base of the odontoid process, are most commonly (>50%) due to ground level falls, are typically unstable, and often require fusion.[7,8] Nonunion of odontoid fractures may result in anterior displacement and spinal cord compression with cervical myelopathy.[2] In this case study, a 43-year-old male who had sustained a traumatic C2 fracture 28 years previously, now presented with a chronic hypertrophic nonunion, and progressive cervical myelopathy warranting circumferential surgery.

CASE REPORT

A 43-year-old male with a history of a C2 fracture sustained 28 years ago, now presented with the 10-day duration of the onset of a severe spastic quadriparesis with sphincter dysfunction. His

motor examination was 2/5 in all distributions, accompanied by hyperreflexia and a C2 sensory level.

Diagnostic studies and treatment

The CT scan of the cervical spine demonstrated a chronic pseudarthrosis of a C2 Type II odontoid fracture. This was accompanied by anterior subluxation and a significant ventral osteophyte, all of which narrowed the spinal canal. The C2 odontoid fracture warranted a two-stage circumferential procedure. The first part included an anterior transoral decompression of the odontoid fragment (e.g., with resection of the ventral osteophyte to achieve anterior spinal cord decompression). The second part performed posteriorly warranted a C1 laminectomy, subaxial decompression, and C1-C2 fusion. Following this extensive circumferential approach, the postoperative course was unremarkable, and the patient was discharged with Philadelphia collar.

DISCUSSION

Conservative treatment of type II odontoid fracture

Type II odontoid cervical fractures have a higher nonunion rate without stabilization.[3] In one study, the incidence of nonunion after nonrigid mobilization with a cervical collar was 88% after 3 months.[1] Among other studies, the most common risk factors for nonunion included advanced age (≥65 years), delayed treatment, fracture displacement (>50%), angulation, posterior displacement, osteoporosis, and osteoarthritis.[4] They further observed that conservative management could include immobilization using rigid (halo) or nonrigid collars, particularly in the elderly, who may go on to form a fibrous union.[5]

In our patient with a 28-year-old pseudarthrosis, we utilized an anterior cervical C2 decompression with a C1-C3 posterior fusion, followed by utilization of a hard collar. Another case cited a similar delayed pseudarthrosis of a C2 Type II fracture occurring 25 years later, successfully treated with a Halo vest.[6]

CONCLUSION

Here, we describe a 43-year-old male, who presented with the acute quadriparesis 28 years after having sustained a C2 type II odontoid fracture that had clearly resulted in a pseudarthrosis. Following circumferential surgery (e.g., anterior decompression/posterior stabilization), the patient adequately recovered.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given his consent for his images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

REFERENCES

1. Iyer S, Hurlbert RJ, Albert TJ. Management of odontoid fractures in the elderly: A review of the literature and an evidence-based treatment algorithm. Neurosurgery 2018;82:419-30.
2. Moskovich R, Crockard HA. Myelopathy due to hypertrophic nonunion of the dens: Case report. J Trauma 1990;30:222-5.
3. Robinson Y, Robinson AL, Olerud C. Systematic review on surgical and nonsurgical treatment of Type II odontoid fractures in the elderly. Biomed Res Int 2014;2014:231948.
4. Ryan MD, Taylor TK. Odontoid fractures in the elderly. J Spinal Disord 1993;6:397-401.
5. Sarode DP, Demetriades AK. Surgical versus nonsurgical management for type II odontoid fractures in the elderly population: A systematic review. Spine J 2018;18:1921-33.
6. Shamji MF, Alotaibi N, Ghare A, Fehlings MG. Chronic hypertrophic nonunion of the Type II odontoid fracture causing cervical myelopathy: Case report and review of literature. Surg Neurol Int 2016;7:S53-6.
7. Watanabe M, Sakai D, Yamamoto Y, Nagai T, Sato M, Mochida J, *et al.* Analysis of predisposing factors in elderly people with Type II odontoid fracture. Spine J 2014;14:861-6.
8. Wold A, Petscavage-Thomas J, Walker EA. Non-union rate of Type II and III odontoid fractures in CPPD versus a control population. Skeletal Radiol 2018;47:1499-504.

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