

Rare manifestation of common disease with an unique method of minimally invasive spine stabilization: Cervical 2–3 facet lesion

ABSTRACT

Cervical granulomatous infections of the posterior elements are very rare, it is often difficult to diagnose due to rarity and variable presentation of symptoms. Any cervical surgical procedure carries a certain morbid risk to the patient. We present a case of cervical 2–3 facet joint lesion which was managed by a minimally invasive technique with a favorable outcome.

Keywords: Cervical lesions, granulomatous lesion, minimally invasive spine surgery

INTRODUCTION

An organized collection of transformed macrophages such as epithelioid cells, matrix, and other inflammatory cells leads to the formation of granuloma. Such granulomatous infections of the spinal elements are rare which may form lesions within these elements causing neural compression and structural instability of the spine. Tuberculosis is the most common etiology of these granulomatous lesions, apart from lesser known conditions such as fungal and other parasite-related conditions, are managed medically or surgically depending on the extent of involvement of the spinous elements.^[1] Site of lesion determines the surgical approach to be either anterior or posterior with or without instrumentation of the spine. Either of these approaches involves substantial tissue dissection and handling until we reach the site of pathology. In this case, we have described a minimally invasive technique through posterior approach, with largely preserving muscular and ligamentous attachments, and a less morbid postoperative course.

CASE REPORT


A 55-year-old female with no comorbidities presented with progressive right-sided neck pain for 6 months with the

aggravation of pain during night, coughing, and movements of the neck. She noticed progressive swaying while walking for 2 weeks. On examination, she had distal weakness of the right upper limb with right upper limb areflexia, sensory gait ataxia. Rest of the neurological examination was unremarkable. The patient was evaluated with a magnetic resonance imaging (MRI) cervical spine which shows a lesion at the right cervical 2–3 facet joint with compression of the spine and computed tomography (CT) C-spine showed an expansile sclerotic lesion of the bone at right C2–C3 facet [Figure 1]. A metastatic workup was done which was unremarkable. Chest X-ray was normal. In view of her progressive weakness and neck pain, the patient was planned for surgical management. C2–C3 facetectomy with tumor

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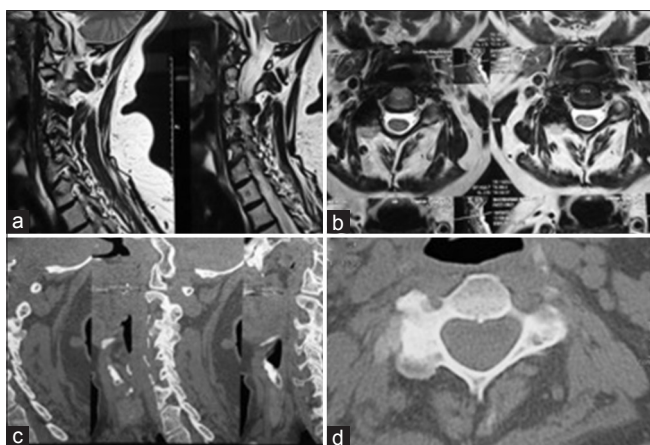


Figure 1: (a) MRI sagittal section with hypointense lesion at the level of C2-3; (b) MRI axial section at the level of C 2-3 with Hypointense lesion and right sided compression on the spinal cord; (c) Sagittal CT scan of cervical spine with C 2-3 facet joint lesion; (d) Axial CT of Cervical spine with right sided expansile sclerotic lesion at C 2-3

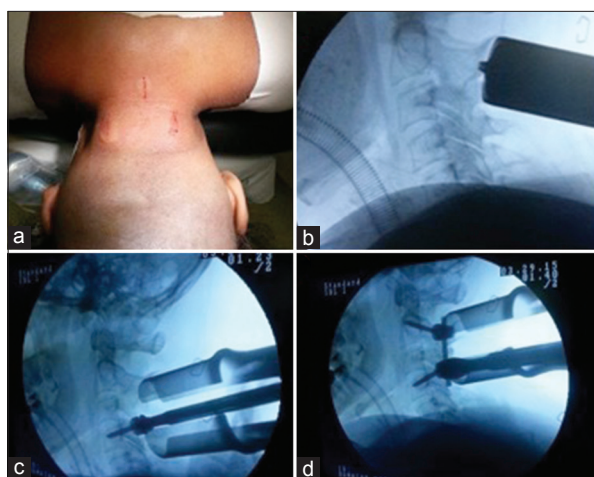


Figure 2: (a) Preoperative patient in prone position under general anaesthesia on head pins and marking of skin incisions; (b) Placement of MetRx 22 Tubular dilators under fluoroscopic guidance; (c) Insertion of C4 pedicle screw by MISS technique; (d) Right sided C2-4 pedicle screw construct by MISS technique

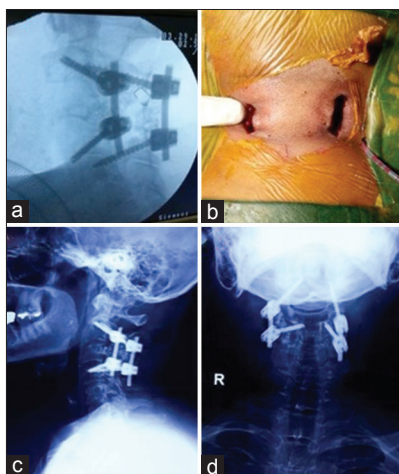


Figure 3: (a) Intra-operative radiograph of C2-4 pedicle screw construct with Rods; (b) Operative site incisions before wound closure; (c) Postoperative radiograph sagittal view; d- Post operative radiograph AP view

decompression was done and stabilized from C2–C4 with pedicle screw by Minimally Invasive Spine Surgery technique. Under general anesthesia, the patient was in prone position on headpins. Right and left paramedian Incision from C2–C4 was localized with c-arm. The right paramedian incision was deepened, and MetRx 22 tube with quadrant system was docked over C2–C3 facet joint. Paraspinal muscles were incised and retracted at the C2–C3 facet joint [Figure 2]. During dissection pultaceous material found was sent for culture and sensitivity. Lesion was involving C2 and C4 facet partially, C3 facet completely. Lesion was compressing the C3 root and cord. Dural tube and the nerve root at C3 were well decompressed. Under C-arm guidance, C2 and C4 pedicle screws inserted and anchored with rods. Similarly, left paramedian incision deepened and MetRx 22 tube docked, C2 and C4 pedicle screws inserted and anchored with rods [Figure 3]. Wounds closed over drains. Pultaceous material was negative for KOH mount, ZN smear, and bacterial culture. Histopathological examination of the lesion revealed granulomatous osteomyelitis. The patient was started on antitubercular treatment and followed up.

DISCUSSION

Tuberculosis continues to be most common granulomatous infection especially in developing countries. Of the patients affected with tuberculosis, 10%–15% have involvement of musculoskeletal system, and spinal infections account for nearly half of these cases. Among the tubercular spinal infection cases, affection of the cervical spine is <10%. However, any pathology involving the cervical spine warrants immediate attention and appropriate intervention due to the potential instability which can cause severe neurological deficit.^[2,3]

Our patient presented with neck pain, which is the most common presentation (71%–100%) in cases of vertebral osteomyelitis.^[4] Her neck pain aggravated and gradually she developed difficulty walking. For these symptoms, patient consulted a Neurologist and was evaluated with MRI Cervical spine. MRI of cervical spine revealed an isolated right sided C 2-3 facet joint lesion. Spinal MRI is the most sensitive and specific method of detection with a sensitivity of 93%–96% and a specificity of 92.5%–97%.^[5]

Most cases of tubercular lesions are managed with antitubercular regimens. Surgical intervention is indicated in acute onset severe neurological deficit, presence of cord compression or an impending spinal cord compromise, presence of instability, large abscess, non-response to chemotherapy, and need for tissue diagnosis due to inconclusive imaging. Posterior surgical procedures for

cervical TB are indicated when neurological deficit is due to posterior epidural compression, isolated posterior element TB with spinal cord compression and deficits, as adjuncts to anterior stabilization procedures. Our patient as described had posterior element involvement of the C2–C3 facet joint complex with posterior cord compression and a probable radiological diagnosis of either a metastasis or tubercular lesion. Hence, it was decided to surgically intervene from posterior approach to decompress the cord and stabilize the spine.

The advantages of a minimally invasive spine surgery over open surgery include a lower risk of infection,^[6] a lower risk of symptomatic cerebrospinal fluid leak, a lower risk of new perioperative neurologic deficit,^[7] and a lower overall complication rate.^[8]

As the lesion was isolated and unilateral, decision was taken to manage the lesion by minimally invasive technique. We could successfully debulk the entire lesion with a C3 complete facetectomy, C2 and C4 partial facetectomy, with adequate cord decompression. Either sides were stabilized with a C2 and C4 pedicle screws anchored over a rod, placed by MIS.

PubMed search of literature threw very little light on this technique; rather the minimally invasive spinal stabilization techniques are more often being used to treat spinal degenerative conditions.^[9-11] Through this case and technique, we attempt to (convey) that minimally invasive posterior cervical stabilization techniques have to be considered more often in individualized cases which are surgically amenable by this technique to make the procedures less morbid and speedy recovery for the patients.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their 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.

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