

# Cervical Spondylodiscitis Revealed by Tracheostomy Infected: A Rare Case Report Management and Outcome

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## Abstract

**Background:** Spondylodiscitis is a spinal infection rare affecting primarily the intervertebral disk and the adjacent vertebral bodies. His diagnosis is difficult and often delayed or missed due to the rarity of the disease. Cervical spondylodiscitis has quite rare findings regarding the common location of spinal abscesses in the lumbar and thoracic regions. To obtain the best patient outcomes, these spinal infections require prompt diagnosis and appropriate treatment. **Case description:** A 44-year-old boy was admitted to the neurosurgery department of our hospital for heaviness in 4 limbs without gait disorders in context infected tracheostomy after staying in intensive care. MRI spine showed a spine deformity with lyse C4C5 epiduritis and spinal cord compressed. Antibiotics intravenous were started for 1 month the patient benefited from a corpectomy with an iliac graft and anterior cervical plate. The anatomopathological examination revealed an inflammation not specific. He was therefore put on antibiotics for 6 weeks. Three months later the neck pain and limb pain resolved after treatment and a complete return of lower extremity strength. **Conclusion:** Cervical spondylodiscitis has increased and become more aggressive. While radical surgical debridement, stable reconstruction together with antibiotic therapy remained a reliable approach to achieve complete healing of the inflammation, anterior alone surgery became more applicable.

## Keywords

Cervical, Spondylodiscitis, Spinal, Tracheostomy, Infection

## 1. Introduction

Spondylodiscitis cervical cancer has the potential to cause significant long-term disability and even death if not properly diagnosed and treated.

Spinal infections account for 2% to 7% of all musculoskeletal infections [1]. Their overall incidence continues to rise, in part due to an increase in susceptible patient populations and improvement [2] [3]. Since one of the major causes of spondylodiscitis includes hematogenous dissemination of an infection from a remote source, infections and bacteria originating from other parts of the body serve as risk factors for spinal infections. Other sources of infection resulting in hematogenous spread to the spine include urinary tract infections, dental infections, pneumonia, and skin infections. Skin and soft tissue may be the most frequent source of bacteremia and can be responsible for up to 25% of spinal epidural abscesses [4] [5] [6] [7]. Recommendations for the treatment of spondylodiscitis remain controversial. Various authors recommend conservative treatment with immobilization and antibiotics in cases with minor destruction, aiming at a spontaneous fusion of the vertebral bodies or at least fibrous stiffness [6] [8] [9] [10]. The purpose of this study is to analyze the behaviour of cervical spondylodiscitis in a single institution over two decades and to discuss the changes that occurred in surgical management over time.

## 2. Case Report

### 2.1. Clinical Presentation

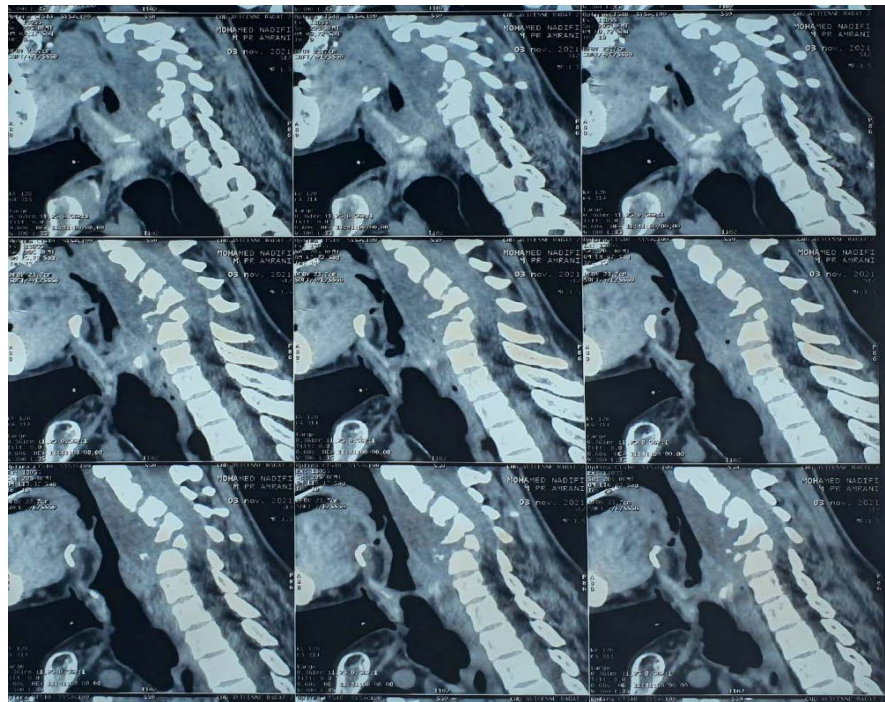
A 44-year-old boy presented to our department complaining of neck pain 3 months after staying in the care unit for brain contusion and a cubital radial fracture and will benefit from a tracheostomy for wearing. He was afebrile and had a tracheostomy infected. Neurological examination revealed neck pain, paresis of the upper left limb 3/5 tetra pyramidal syndrome without clonus no spasticity, and disorders in gait.

### 2.2. Diagnostic Assessment

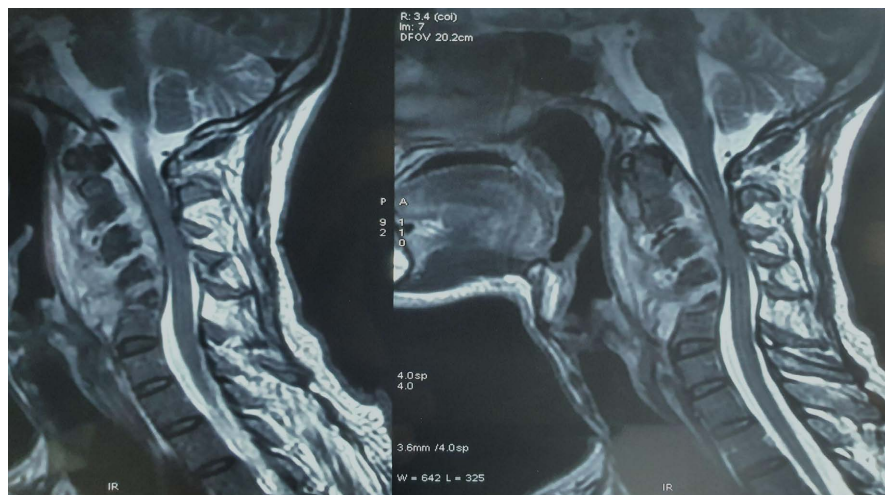
Computed tomography (CT) scan without IV contrast of the cervical spine showed a kyphosis severe with lyse C4 C5 (**Figure 1**). Magnetic resonance imaging with gadolinium enhancement was obtained and revealed C4 C5 lysis associated with a discitis and prevertebral collection hyposignal T1 and hyper T2 heterogeneous and anterior intracanal collection measuring 6,6 mm with spinal cord compression (**Figure 2** and **Figure 3**). His laboratory workup showed a normal white blood cell count (7500/mm<sup>3</sup>), and an elevated erythrocyte sedimentation rate (25 mm/h; normal). His blood cultures revealed *Staphylococcus aureus* species 2 days after admission.

### 2.3. Management

The patient received ceftriaxone, Flagyl, and quinolones intravenous therapy for 4 weeks. The pus taken from the tracheotomy site didn't show any germs. An



**Figure 1.** CT scan cervical showed a kyphosis severe with lyse C4C5.



**Figure 2.** MRI cervical T2 with or without gadolinium showed a pre vertebral collection.

endoscopy of the trachea and digestive system was normal. Methylprednisolone intravenous was started empirically (80 mg/24h) for spinal cord edema management. Oral steroids progressively decreased and stopped after two weeks. The patient underwent a corpectomy of C4 and C5 with iliac graft and anterior cervical plate, discovering a thickened inflamed prevertebral fascia gnawing away at the vertebral with no pus issue. Specimens were collected for culture. Then a reinforced neck brace was applied 2 weeks after the surgery. The anatomopathological examination revealed a non-specific inflammation. The patient was put on intravenous antibiotics therapy for 6 weeks followed by 4 weeks of oral antibiotics oral.

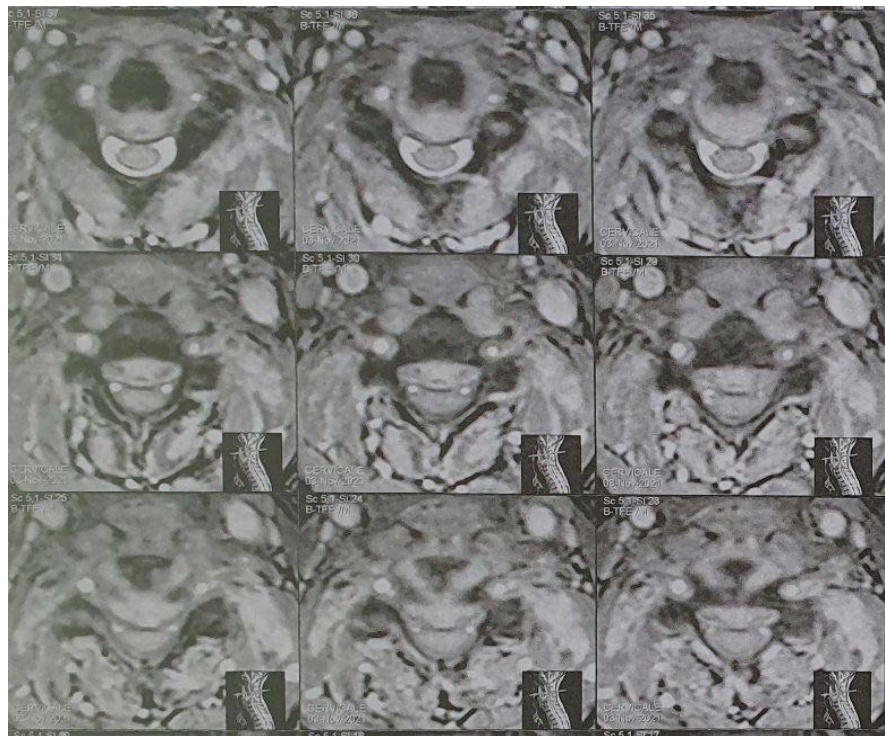


## 2.4. Outcomes

Intravenous an. Spine immobilization for 6 weeks with a semi-rigid cervical collar was recommended to control pain and prevent kyphotic deformity. Postoperative computed tomography (CT) studies were performed to assess the extent of bony resection (**Figure 4**). Functional radiographs were obtained in long-term follow-ups to check the stability of the cervical spine.

## 2.5. Follow Up

The patient was seen in consultation three months later. No complaints were noted and the neurological examination was normal.



**Figure 3.** MRI axial a paravertebral collection.



**Figure 4.** CT scan cervical control showed a reduction of kyphosis with iliac graft.

### 3. Discussion

We report the case of a patient with a history of tracheostomy infection after being admitted for cervical pain and heaviness of upper limbs, ASIA E, Frankel E grading system, and in whom the explorations came back in favour of a cervical spondylodiscitis.

The management of patients with cervical discitis and an underlying tracheostomy infection is particularly challenging. However no systematic review of the management of these coincidences has been published, and no robust evidence is available. Indications for surgical intervention include compression of neural elements, spinal instability due to extensive bony destruction, severe kyphosis, or failure of conservative management [9] [11] [12] [13] [14].

Cervical spondylodiscitis and kyphotic deformity may occur with possible re-traction of necrotic bone and disc fragments, compressing the spinal cord. The choice of and is guided by the results of direct culture when positive. In 40% - 50% of cases where no organism is isolated, broad-spectrum antibiotics should be used. A few cases of spondylodiscitis caused by *E. coli* or salmonella have been identified in the literature and explained by hematogenous diffusion [15]. The time usually for antibiotics is arbitrarily 4 or 6 weeks, followed by oral antibiotics for an additional 4 or 6 weeks. We assume that the spondylodiscitis in our case resulted from the dissemination seen on tracheostomy. Our patient did not have fever or leukocytosis on presentation; these are absent in 50% of cases [7] making the diagnosis more challenging. The route of infection was identified in 52% of cases, with bacteremia as the most common (26%), followed by recent surgery/procedure (21%) and spinal injection (6%) [3]. The vertebral body is primarily a load-bearing structure. The gradual destruction of the vertebral body and intervertebral disc causes local instability and a gradual increase in deformity (kyphosis) [16]. The advantages of corpectomy removal are that it requires a very wide bony opening for drainage of the pus, and it can be tailored intraoperatively to any given situation.

Furthermore, cervical spondylodiscitis does not preclude the possibility of further instrumental fusion. For example, some authors advocated a two-staged procedure, where debridement with or without grafting is performed first; then, this may be followed by a delayed secondary instrumental fusion. Thus, the OC provides the option of a “wait-and-see” approach after decompression.

Surgery and conservative management are treatment options for cervical spondylodiscitis. Surgical procedures should be considered in patients with extensive spine involvement, severe deformity, vertebral body collapse, prevertebral cervical abscess, advanced neurological involvement, and any sign of progressive recovery despite conservative therapy [6]. Our patient underwent a corpectomy of C3 and C4 with an iliac graft and anterior cervical plate. Then a reinforced neck brace was applied for 3 months. The evolution is often favourable when patients are managed as soon as the first symptoms appear.

Outcomes are generally good and antibiotics together.

## 4. Conclusion

Spondylodiscitis of the cervical spine is a rare, but serious manifestation of this disease. Localization at the cervical spine is associated with high morbidity and mortality rates, especially involving neurological deficits. Operative treatment of spondylodiscitis seems to be the preferred therapeutic option by restoring spinal alignment and stability, as well as curation of the inflammatory process. Thus, partial or complete resolution of neurological deficits can be achieved. Operative treatment should address meticulous debridement, bony fusion, restoration of the normal alignment, and stable fixation

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## Patient Consent

Written informed consent was obtained from the patient for publication of the submitted article and accompanying images.

## Declaration of Interest

The authors declare that there is no conflict of interest that could be perceived as prejudicing the impartiality of the research reported.

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