



Technical Notes & Surgical Techniques

A “home made” titanium telescopic mesh for an emergent multilevel cervical corpectomy: A case example of surgical preparedness



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ABSTRACT

We present the case of a 49 years old man operated as emergency for cervical spinal cord compression for a Pott disease. We had planned a limited anterior cervical decompression with plating and a second stage posterior decompression and stabilization, a few days after the first operation in case of residual compression. Unfortunately, because of the extensive and consistency of dural compression we ended up in removing 4 vertebral bodies. We did not have, in house, a such long cage and plate for the reconstruction. We managed to achieve a good fixation making a “home made” titanium telescopic mesh as well as building a long plate too. The patient did extremely well with a prompt resolution of the neurological deficits. We describe how we manage to solve this problem stressing, in the same time, the importance of a careful plan, when possible, for such difficult cases.

1. Introduction

Spinal tuberculosis has the highest prevalence in developing countries, especially South-East Asia and Africa. Due to worldwide travelling and immigration it may be present also in developed countries. The standard treatment is pharmacological but in case of neurological deterioration or fracture instability, decompressive surgery and reconstruction must be considered. Autologous bone grafting has traditionally been used after corpectomies but nowadays titanium meshes are considered good alternatives even in spinal infections. In this report we describe the case of a cervical Pott localization, surgically treated with an unusual “home made” telescopic titanium mesh. As far as we know, there are not such similar reports in the scientific literature.

2. Case history

A 49 year-old-Cameroonian man with a known history of pulmonary tuberculosis on medical treatment was referred to our Emergency Department complaining for neck pain, increasing weakness of all four limbs and acute bladder dysfunction. On examination he was severe tetraparetic and not able to pass water so a catheter was inserted. A cervical MRI revealed an epidural mass localized at the level C5-T1 vertebral body with important mass effect on the spinal cord. The lesion, hypointense on T1, hyperintense on T2 and enhancing (Fig. 1) were very suspicious for Pott disease. Due to the presence of important

neurological deficits, we decided to perform an urgent anterior corpectomy at one or maximum 2 levels with insertion of a titanium expandable mesh and plating. We also had planned a second stage posterior stabilization with screws and rods a few days after the first operation in case we had not achieved a satisfactory decompression or appreciable clinical improvement. Unfortunately, because of the extensive dural compression and the thickness and consistency of the abscess we were unable to simply drain it through a limited access and so we ended up in removing 4 vertebral bodies (C5-T1). When we started the reconstruction phase we realized that our longest titanium expandable available cage was too short for the bony channel we had created. We decided, so, to build our “home made” telescopic titanium mesh cage using two mesh of different size. The smaller mesh was partially nested inside the bigger one and both were fixed to each other with two screws (Fig. 2A). This just made telescopic mesh fit perfectly in the bony defect. Also the longest available plate was too short so we joined together two plates managing to match the screw holes of one plate with the holes of the other (Fig. 2B). Finally we fixed this homemade long plate to the vertebral body of C4 and T2 in the standard fashion. We also inserted four screws through the plate in order to fix the mesh with the plate. The construct seemed to be very solid (Fig. 2C). In consideration the bony defect was quite long we decided to anticipate the posterior fusion. A C3-C6 lateral mass and a T2-T5 pedicle screws were inserted and joined together with two rods. The patient was eventually put in a Halo Jacket for 4 weeks and then in a

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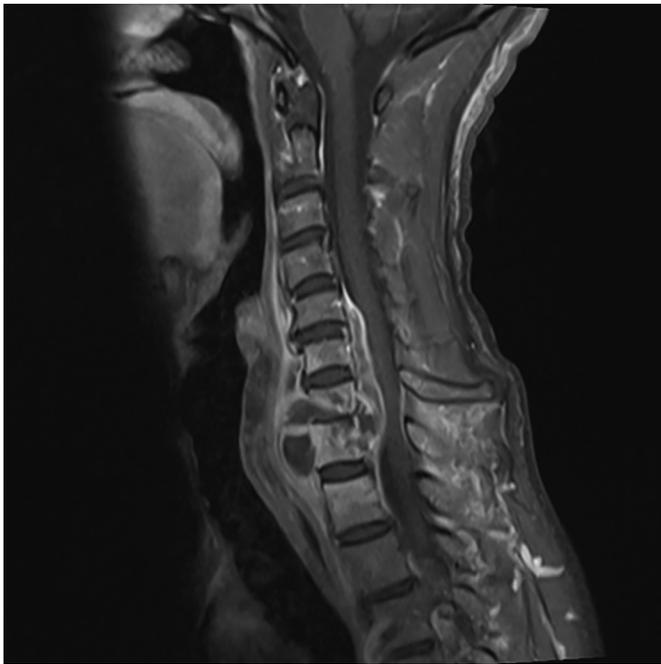


Fig. 1. Preoperative sagittal post-contrast T1-weighted MRI scan.

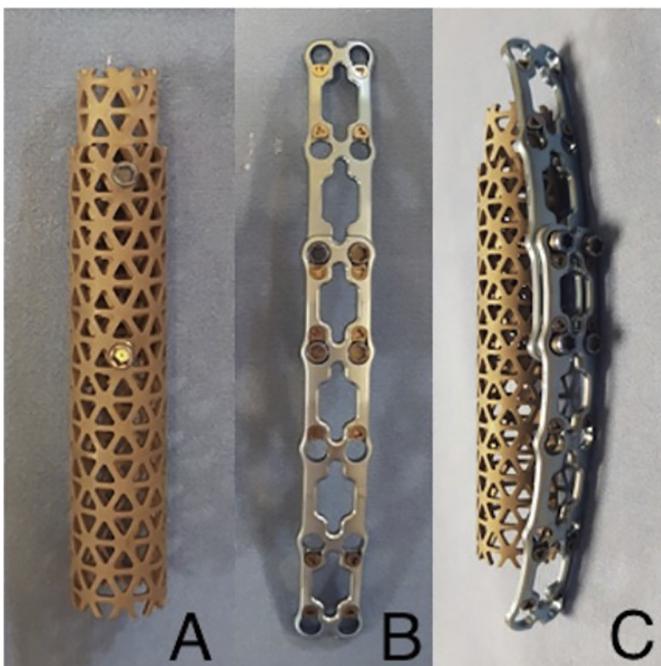


Fig. 2. A: View of the smaller mesh nested inside the bigger one and fixed together.
B: View of the two anterior plates fixed together.
C: View of the telescopic mesh fixed to the anterior plates.

phyladelphia collar for another four. The postoperative course was uneventful and the patients recovered immediately from his neurological deficit and 3 days after the operation he was walking around. The histopathology result showed tissue compatible with tuberculosis. The postoperative neuroimagines showed a good decompression and alignment (Figs. 3 and 4). At 9 months follow there was no evidence of construct failure and the patient was fine.



Fig. 3. Postoperative sagittal cervico-dorsal X-ray.



Fig. 4. Postoperative sagittal T2-weighted MRI.

3. Discussion

Spinal tuberculosis or so called Pott disease has a worldwide prevalence of 2 million of cases. And it is more common in underdeveloped countries. Generally it is managed medically also in the presence of mild neurological deficits. However in some limited cases, such progressive spinal deformity, instability pain, increased neurological dysfunction and resistance to medical treatment surgery must be considered (around 20–30% of cases). The anterior approach is usually reserved for cervical focal localization, while the posterior approach in case of multiple levels of compression or for thoracic and lumbar disease [1]. The aim of surgery is to reach quickly an adequate decompression and a stable reconstruction. Cervical fusion with titanium mesh or expandable cage after corpectomy is very often used in cases of degenerative diseases, tumors, traumas and infections. Historically, autologous bone graft either from iliac crest, rib or fibular strut was the gold standard of treatment for reconstruction of spine especially in case of infection. However, the morbidity linked with the harvesting [2,3] and the availability of bone tissue's bank long graft or other materials cage like PEEK, titanium and carbonium have considerable decreased its use. Moreover in many articles it has been reported good results with the use of titanium meshes or expandable cages, even in case of spinal infection. Their different diameters and the possibility to be adjusted to different heights and end plates angulations have made them very useful for restoration of the bony defect. This construct can be further reinforced by the augmentation of a plating system [4,5]. In this report we wanted to describe an unusual situation we have encountered and the way we have solved it. Undoubtly these complex cases should undergo a very careful presurgical planning and organization in terms of available materials for reconstruction. However, we found ourselves in an emergent clinical situation where we were obliged to operate the patient. Furthermore our initial plan to perform a minimally decompression from the front, had to be abandoned due to the consistency of the abscess as well as to achieve a satisfactory dural decompression. In our opinion the one we encountered was an unusual situation that we

solved well with a good clinical outcome which is important to report because, once in a while, these cases can arrive to any emergency department and not all the Units can afford to keep these expensive hardware materials available in house. The future of these complex reconstruction will be, in our opinion, a 3D specific patient tailored laser made mesh.

Conflict of interest

We wish to confirm that there are no known conflicts of interest associated with this publication and there has been no significant financial support for this work that could have influenced its outcome.

Patient declaration statement

“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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