Editorial

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Ossified Posterior Longitudinal Ligament (OPLL): Evaluation of 'Only Fixation' as Rationale Treatment Option

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Ossified posterior longitudinal ligament can be a relentlessly progressive growing pathological lesion that can compromise the diameter of the cervical spinal canal and lead to symptoms of myelopathy. Frequently, the symptoms can be devastating for the patient. Although, OPLL has been identified throughout the world, reports from Asian countries outnumber those from the Western world. [1, 2]. OPLL has been identified in the entire spine, but cervical spine is more frequently prone to this disorder. Considering that the OPLL is located anterior to the cervical spinal cord and is posterior to the vertebral bodies, any surgical approach and exposure is relatively difficult and is wrought with the potential of serious complications. The 'hard' consistency of the lesion and its involvement of the dura can make resection tedious, difficult and can threaten the neural tissues and dural integrity with consequent effects. Moreover, the OPLL frequently extends over multiple spinal segments. Resection of the bone to obtain a wide window that will circumferentially expose the lesion and will provide an opportunity for dissection and resection of OPLL under direct vision can not only be time consuming and technically demanding but also has the potential for destabilizing the spinal column meriting the need for an additional stabilization operation [3].

Exact cause for formation and maturation of OPLL is not known. Various factors have been incriminated to be the possible cause. These include dietary, hereditary, environmental and infective causes [2, 4]. As the exact cause for OPLL is not known, the treatment is essentially based on observations of radiological imaging. The OPLL can be segmental or continuous and can extend over several spinal segments. The transverse or the horizontal extent can involve the entire anterior surface of the spinal cord. Both CT scan and MRI show the extensions of the OPLL in vertical and horizontal plains and clearly depict the effects on the spinal cord. On imaging, the pathology and its effects can frequently appear ghastly and can pose a formidable surgical problem.

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The described surgical options for OPLL include indirect and direct surgical decompression[3, 5-7]. Either anterior or posterior routes are adopted for indirect decompression of the spinal cord. Anterior decompression involves single or multilevel corpectomy or removal of the vertebral bodies. Posterior decompression involves wide laminectomy. A number of options for both anterior and posterior decompression of the spinal cord have been suggested. Partial corpectomy as described by Goel involves resection of only a part of vertebral body such that decompression can be achieved and stability of the spinal column is maintained [8]. Several authors advise laminoplasty instead of laminectomy [5]. Laminoplasty involves widening of the spinal canal dimensions by fixating the laminar segments with a wide range and types of implants. The aim of laminoplasty is to widen the spinal canal and maintain the stability of the spinal column.

Direct decompression of the spinal cord involves removal of the OPLL. Frequently removal of the OPLL off the dura can lead to dural rents and defects and can lead to postoperative CSF fistula. Some authors suggest that a sleeve of OPLL can be left over the dura in the form of floating tissue that moves with the pulsation of the spinal cord[9]. Several authors believe that direct removal of the OPLL provides the best possibility of long-term cure from the disease. However, the relative ease of a posterior operation makes it a more attractive option.

Essentially, the discussed treatment involves 'decompression' of the spinal cord. These operations essentially are done to increase the spinal canal volume that will accommodate the unwanted intruder. The concept of decompression has been based on the concept that OPLL is a stable anomaly. Some authors have identified that OPLL may be a factor that adds to the stability of the column. Instability becomes issue when decompression by removal of bones is done during surgery.

Goel recently identified that instability of the spinal segments is the nodal point of genesis of OPLL[10]. Single or multilevel spinal instability can lead to varying patterns of OPLL. Instability occurs at the facet joints, the region that is most mobile part or is the part where the entire spinal movements are generated and conducted[11-18]. This fact can be appreciated by imaging when in the presence of multi-segmental OPLL, the facet joints are always active and functional, and the articular cartilage is smooth and active. Conventional imaging does not show the facets or its instability clearly. The focus has thus been on the more obvious lesions seen clearly on CT scan and MRI and plain radiographs. However, modern imaging can show the facets clearly, but still cannot show the instability. Direct manual handling of the spine during surgery can lead to identification of the instability. Goel recently suggested that only fixation of the spinal segments can lead remarkable clinical recovery[10, 15]. Essentially it means that OPLL is a result of chronic instability. In this regard, the pathogenesis of OPLL seems to be similar to pathogenesis of single or multilevel degenerative spinal spondylotic disease. The pathogenesis of osteophytes seems to be on similar lines of formation of OPLL. Stabilization of the spine rather than decompression is the choice surgical treatment. The treatment of OPLL is essentially similar to that of degenerative cervical spondylosis[11-19].

The bone formation does not appear to be a primary phenomenon. Like during embryogenesis, the soft tissues dictate bone formation. In cases with OPLL, instability dictates bone formation and is an attempt by Nature to provide stability to the region. Bone formation in this situation simulates crust formation around the teeth. This crust is an indicator of instability of the involved teeth. Whilst removal of the crust can lead to improvement in cosmesis, it can harm the stability of the tooth. Similarly, in cases with OPLL, it is necessary that stabilization of the involved spinal segment be done. As the facets are the site of spinal movement and activity, direct facetal fixation by transarticular method of fixation provides the best form of stabilization.

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