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Post laminoplasty cervical kyphosis—Case report

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ABSTRACT

INTRODUCTION: Cervical kyphosis is a progressive cervical sagittal plane deformity that may cause a reduction in the ability to look horizontally, breathing and swallowing difficulties, sense of thoracic oppression and social isolation. Moreover, cervical kyphosis can cause myelopathy due to a direct compression by osteo-articular structures on the spinal cord or to a transitory ischaemic injury. The treatment of choice is surgery. The goals of surgery are: nervous structures decompression, cervical and global sagittal balance correction and vertebral stabilization and fusion.

PRESENTATION OF CASE: In October 2008 a 35 years old woman underwent surgical removal of a cervical-bulbar ependymoma with C1–C5 laminectomy and a C2–C5 laminoplasty. Five months after surgery, the patient developed a kyphotic posture, with intense neck and scapular girdle pain. The patients had a flexible cervical kyphosis. Therefore, we decided to perform an anterior surgical approach. We performed a corpectomy C4–C5 in order to achieve the anterior decompression; we placed a titanium expansion mesh.

DISCUSSION: Cervical kyphosis can be flexible or fixed. Some authors have reported the use of anterior surgery only for flexible cervical kyphosis as discectomy and corpectomy. This approach is useful for anterior column load sharing however it is not required for deformity correction.

CONCLUSION: The anterior approach is a good surgical option in flexible cervical kyphosis. It is of primary importance the sagittal alignment of the cervical spine in order to decompress the nervous structures and to guarantee a long-term stability.

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1. Introduction

Cervical kyphosis is a cervical sagittal plane deformity that may cause severe disability. Different treatment options can be considered by surgeons.[1–3]

There are several causes of cervical kyphosis: trauma, degenerative and rheumatoid disease, tumours, post-laminoplasty instability. This deformity is the consequence of the impairment of both the anterior and posterior elements of the cervical spine. Multilevel disc degeneration, tumours or infections seeping and destroying vertebral bodies, pseudoarthrosis following previous anterior surgery approaches cause impairment of anterior elements.[1–6] In the posterior spine, the main injuries are due to the interruptions of the posterior tension band consisting in laminas, articular facets, muscles and ligaments, caused by traumatic and degenerative conditions, and surgical treatments.[1,4,7,8] Symptoms in patients affected by cervical kyphosis are due to structural deformity and spinal cord compression. The pain is related to the articular facet and disc degeneration and to the overstress of the posterior elements supporting the head.[7,8]

The head of patients with cervical kyphosis, in the neutral position, is flexed with the chin slightly tucked on the chest, this can cause a reduction in the ability to look horizontally, breathing and swallowing difficulties, sense of thoracic oppression and social isolation.

Neurological examination and neuroimaging, in particular MRI, may show neural structures, spinal cord and roots compression. The myelopathy may be due to a direct compression by osteo-articular structures on the spinal cord, or even to a transitory ischaemic injury.[4,6]

Cervical kyphosis is a progressive deformity, surgical treatment is the option of choice. The goals of the surgical procedure are: nervous structures decompression, cervical and global sagittal balance correction and vertebral stabilization and fusion. A complete preoperative planning is useful to state the levels of decompression and fusion and the right surgical apporach.[1,4]

Cervical laminectomy is a well-documented iatrogenic cause of cervical kyphosis.[11–13] In the last years, the literature suggested that laminotomy with laminoplasty may reduce this complication, even if the results are still controversial.[11,14–18]

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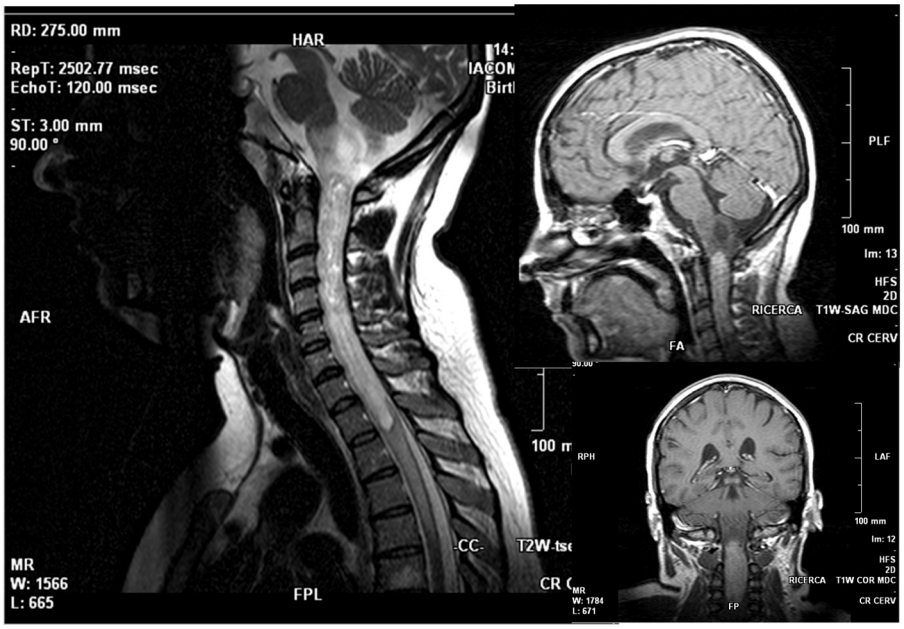

Fig. 1. Preoperative MRI shows cervico-bulbar ependymoma.

We present the case of a 35 years old woman with a sever post-surgical cervical kyphosis, who underwent anterior approach alone, achieving a reduction of the kyphosis and a good long term stability.

2. Case presentation

A 35 years old woman underwent surgical removal of a cervical-bulbar ependymoma in October 2008 (Fig. 1). The surgical procedure included a C1–C5 laminectomy, the lesion removal, and a C2–C5 laminoplasty. Five months after surgery, the patient developed a kypothic posture, with intense neck and scapular girdle pain (Fig. 2).

The neurological examination showed ataxia, four limbs hyperreflexia, bilateral hypoesthesia of the first three fingers and impaired prehension of the right hand. Standard and flexo-estension cervical XR confirmed the severe kyphosis (Cervical Spine Angle = 52.5°), centred on C3 and C4 (Fig. 3). Spinal cord compression was showed by CT (Fig. 4) and MRI on C3–C4 and C4–C5. Preoperatively, the patient underwent X-ray in the supine position and positioning a pillow under her shoulder (in prevision of a traction). The study showed a good reduction of the kyphosis, for the mobility in C3–C4 (Cervical Spine Angle 27.9°). Therefore, we decided not to perform the traction and to proceed with the anterior surgical approach using intraoperative neurophysiological monitoring SEP, PEM and EMG.

The patient was positioned with neck hyperextension, checking the correct reduction of the kyphosis by intraoperatively fluoroscopy. We performed a left anterior retropharingeal approach, and a corpectomy C4–C5 in order to achieve the anterior decompression; we placed a titanium expansion mesh. Postoperative XR (Fig. 5) and CT showed good reduction of the kyphosis (Fig. 6). The 3 and 6 (Fig. 7) months after surgery controls were good too (Cervical Spine Angle 8.4°). The walking and the hyperreflexia improved, while the sensitive and the strength right hand deficit did not show a significant improvement, probably due to the first intervention of the removal the ependymoma.

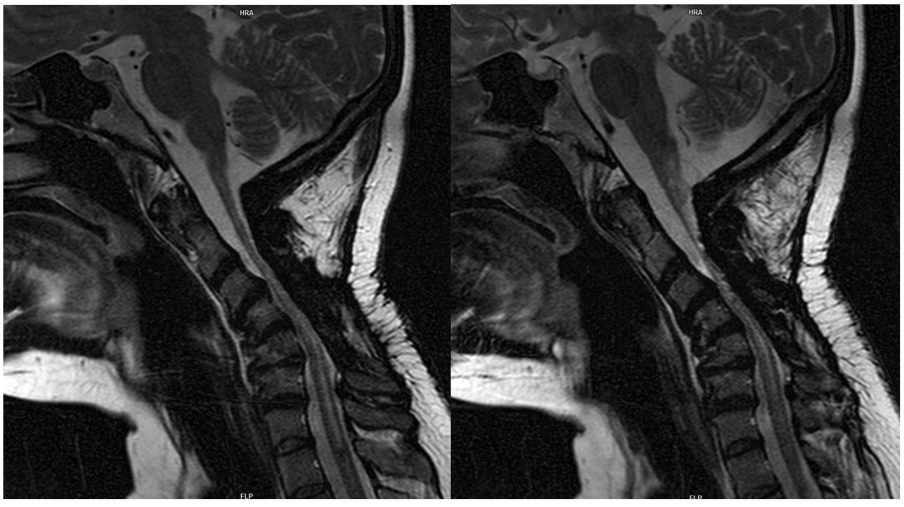

Fig. 2. Postoperative MRI that shows kyphosis developed five months after surgical procedure.

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