

Management of severe fracture-dislocation of cervical spine with Halifax clamps

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INTRODUCTION

Complete fracture dislocation of all the three columns of cervical spine with partial preservation of cord function is relatively rare. An urgent reduction with efficient spinal fixation is highly desirable for restoration of neurological function and stabilization of spine.

CASE REPORT

A 40-year-old serving soldier fell down the stairs from a height of 15 ft in inebriated state in the night. He had only brief loss of consciousness and on awakening; he found weakness of all the four limbs more so in the lower limbs. He was flown from a peripheral hospital to the neurosurgical center Command hospital Kolkata.

Examination revealed a fully conscious patient with stable vital parameters with no respiratory distress. His power in upper limbs was 5/5 in shoulder joint, 3/5 in elbow and wrist, with poor handgrip on both sides. The power in lower limbs was 2/5 on right side and 0/5 on left side. He had urinary retention and was catheterised.

Investigation with MRI cervical spine (Figs -1&2) on the same day of admission showed fracture dislocation of C6-7 including all 3 columns with translation and traumatic prolapsed disc at C6-7 with spinal cord compression. Cervical spine X-ray could not show the lower part of spine satisfactorily. He was put on cervical traction.



FIGURE 1. MR in sagittal section showing severe fracture dislocation with cord compression at C6-7.



FIGURE 2. MR axial cut showing cord compression at C6-7.

On the next day, he underwent anterior cervical microdiscectomy at C6-7 with partial corpectomy of C6&7 using electric drill to achieve decompression of spinal cord. There was a step deformity at C6-7 per operatively with the unreduced dislocation, which was also evident under image intensifier (as in pre-op MR). Then intraoperative manipulation of head and neck was tried to disimpact the dislocation and up to about two thirds of reduction was achieved. Due to the presence of step deformity anterior cervical plate fixation could not be performed. Hence only iliac bone grafting was inserted in the gap and post operatively patient was kept on cervical traction.

Postoperatively patient improved neurologically in all the limbs with power of 4/5. He started passing urine voluntarily. The weight of cervical traction was increased up to 20kgs over a week to achieve satisfactory reduction.

He was then operated upon with posterior approach. Exposure of cervical laminae and facet joints from C5 to C8 was done which were found in alignment. Halifax titanium clamps were inserted on either side over C6 and C7 laminae with intervening H shaped bone graft for permanent fusion. Post operatively he became ambulant within couple of days with cervical collar. Check X-ray (FIG-4) was satisfactory. Repeat MRI cervical spine (FIG5) has shown good alignment of spine and decompression of spinal cord. Small artifact posterior to spine is seen owing to titanium clamps.

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FIGURE 3. Post op X-ray of cervical spine Showing Halifax clamps over C6&7.

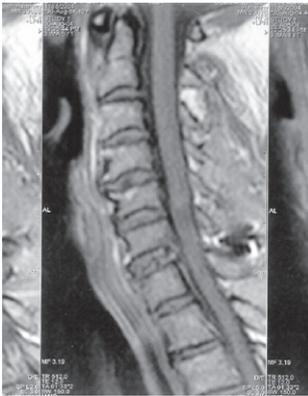


FIGURE 4. Post op MR showing satisfactory decompression of cord and spinal alignment.

DISCUSSION

Surgery offers immense benefit in devastating injury of cervical spine when it involves all 3 columns of cervical spine, which has sinister potential to cause complete loss

of neurological function. Emergency reduction and stabilization is accepted method of treating these patients. Controversies abound regarding the management of cervical spine injuries. Surgical approaches may be anterior, posterior¹ or combined. Even within posterior stabilization many options are available². Anterior cervical plate fixation and fusion with bone graft^{3,4,5} has gained wide popularity of late. However Halifax clamps inserted posteriorly with fusion also provides as good stabilization^{6,7,8}, adequate to make the patient ambulate without wearing prolonged period of orthosis.

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