

## Stab Injury To Lower Cervical Spine And Its Management

M. M. Prabhakar\*, Himanshu Panchal\*\*, Yusuf Bharmal\*\*\*

**Introduction :** Stab injury in cervical spine traumatizing the cord is a rare condition, which results in irreversible spinal cord injury and permanent disability. Hereby we present case paper of a patient having posterior stab injury to the lower cervical spine with good surgical outcome.

**Methods and material :** A patient presented with penetrating spinal injury in nape area from behind. The knife had penetrated the body of C6 and transecting the cord. Emergent surgery was performed. The patient was followed-up for an average of 6 months.

**Result :** The clinical and radiological outcome of treatment of this injury is very good. Patient recovered gradually over period of 6 months. At present patient doing ADL independently

**Conclusion :** Aggressive surgical intervention within stipulated time following cervical spinal cord trauma gives good results. Individualization after proper clinical assessment and radiological examination is mandatory. Operative treatment is relatively safe in properly selected patient with experienced skills. Penetrating trauma to spinal cord usually give irreversible damage but surgical intervention and repair in proper hands may improve the outcome.

**Key Words :** STAB INJURY TO CERVICAL SPINE, HEMI TRANSECTION

### Introduction

Reports of stab wounds which result in spinal cord injuries are infrequent. Majority of the patient present with incomplete paraplegia. Furthermore, half of those with incomplete motor lesions had a Brown-Séguard syndrome, which is a characteristic spinal cord injury syndrome that results from lateral hemisection of the cord<sup>3</sup>. However, only a limited number of patients demonstrate the 'pure' form of Brown-Séguard syndrome. Much more common is the Brown-Séguard-plus syndrome consisting of asymmetric paresis with hypalgesia more marked on the less paretic side<sup>5</sup>. Penetrating injury is the the third most frequent cause of spinal injury in adults, only surpassed by traffic accident and falls<sup>1</sup>. Gunshots wounds and knife stabbing account for the majority of penetrating spinal injuries<sup>2</sup>. Rarer

\* Professor And HOD

\*\* Associate Professor

\*\*\* Resident

Department of Orthopaedic  
B. J. Medical College, Ahmedabad

objects causing spinal injury include a pencil, a wood piece of banister, a glass fragment, and a injection needle. Here we report a case of stab injury to lower cervical spine.

### Case report

A 40 yr old man who was stab in the neck region from behind while he was traveling on a bike. He had bleeding from the site of entry without any watery fluid {c.s.f}. The moment he was assaulted, he felt an electric shock throughout his whole body and suddenly became unable to move both of his legs and weakness in his both arm. At the scene the patient was found to be awake and alert, and in no acute distress. He was taken to the local emergency hospital by ambulance and from there he was referred to higher tertiary centre.



Figure 1 : Since the day of the admission, methylpredonisolone and antibiotics were administered.



Figure 2

Physical examination upon arrival revealed the knife inside the neck entering through the posterolateral right side. The handle was removed at the local emergency center with due care to aid he travelling.

Neurological examination revealed : Tone was decreased {flaccid}, power in both upper limb around 3/5 with hand grip weakness, both lower limbs power 0/5. Deep Reflex of both upper limb and lower limb absent. Babinski sign was positive. Joint position and vibration

modalities were diminished on both sides. There was a right-sided decrease in pain and temperature sensation below the C8 level. Sacral sensation was spared, although he developed urinary retention. A urinary catheter was performed.

Radiological examination : x rays and CT scan were performed.



Figure 3

CT scan revealed the knife passing at the level of C6 vertebra through the right lateral side.



Figure 4

We decided to operate the patient to remove the foreign body because of the possibility of spinal cord injury or hematoma formation in the spinal canal.

Operative procedure : Under G/A patient in prone position an incision was kept in the midline in order to explore the trajectory of the knife and the spinal canal via the posterior approach. Once the knife tip was located, muscle was dissected from around it, and it was stabilized . Additional dissection directly around the knife was carried out, and it was grasped firmly with a Pean and removed in one piece by doing C6 C7 laminectomy.



Figure 5

Cerebral spinal fluid was found, confirming the suspected dural tear. Dura repaired and closure done and patient was given hard cervical collar.

Post operative x-rays revealed no foreign body left in the wound. Postoperative tectography was performed which revealed hemitranssection of the cord.

Proper Post op care taken. Patient in the ward for 2 weeks when active and passive mobilization of all joint was done. Then transferred to physiotherapy hospital for further rehabilitation. On discharge he was taught all related physiotherapy in the form of tilt table activity-



wheel chair activity-standing in frame-standing in parallel bar-gait training with walker-gait training with stick.

The patient was followed up for a total of 6 months and had full neurological recovery. At present the patient is doing his ADL independently. Pt is ambulatory without walker. Tone became normal. Power of all four limbs improved to normal levels. No more hand grip weakness found. proprioception and vibratory sense have recovered. Overall motor function was assessed to be normal at the period of 6 months.

Figure 6



Figure 7

### Discussion :

Management of a retained foreign body in a spinal penetrating injury is often challenging because removal of the object may cause neurologic sequelae. There is no standardized strategy for removal of foreign body through close or open surgery. However in our case, since neurological damage was present, there was definitely a spinal cord injury with dural tear and risk of hematoma formation. So open exploration was opted for concomitant drainage of the compressing haematoma and dural repair as well.

Delayed abscess formation may occur after foreign body injury to the spinal cord. Thus if a foreign body enters the canal, the retrieved foreign body must be inspected carefully to account for all the fragments. If a foreign body is overlooked, chance of delayed infection increases and may occur even years after injury. In our case, the entire foreign body was removed in toto and post op x-ray also did not reveal any left out foreign body.

Lipschitz postulated three mechanisms of SCIs by penetrating injuries<sup>4</sup>: (1) The weapon or bony fragment may damage the cord directly. (2) The vascular supply of the spinal cord may be damaged with resulting edema. (3) Contrecoup spinal contusions or concussions may injure the cord.

This neurological finding indicates that the weapon had passed through the bilateral posterior columns and reached the right corticospinal tract and spinothalamic tract. The recovery of motor function indicates that the corticospinal tract was injured by a contrecoup contusion against the inside wall of spinal canal, rather than by a direct injury.

Although a limited number of cases of stab/knife injuries to the skull, brain, and body are reported in the literature, cervical spine injury due to stab/knife is extremely rare and has not been documented. Universally accepted and of paramount importance are the following tenets of care:

best possible immobilization of patient and arrow before and during transfer, and arrow removal in a surgical setting only where hemorrhage can be controlled. The outcome of our patient was, in part, predetermined by the dedicated team of individuals who were instrumental in his pre-hospital care. During the continuum of our patient's journey from the field to definitive care, all upheld the ethos *Primum non nocere* of the Hippocratic Oath, translated as, "First do no harm."

Last but not the least is aggressive physiotherapy. Aggressive regular step wise physiotherapy is must for neurological improvement in the patient. regaining the power and ADI to almost normal level was due to both emergent surgical intervention and the post operative physiotherapy done.

### Conclusion :

Management of patient with cervical spine injury should be individualized. Initially patient should be stabilized in critical period; investigated properly. Type of management either conservative or operative is decided according to type and extent of injury. Operative treatment is usually safe in properly selected patient in good surgical hands with good clinical and radiological outcome.

### References :

- 1] JalloGI;Neurosurgical management of penetrating spinal injury.surgneuro 47;328-330,1997
- 2] Ramaswamy R, Dow G,BassiS;pencil is migther sword! Peadiatrc neurosurg42;168-170,2006
- 3] Waters RL, Sie I, Adkins RH, Yakura JS. Motor recovery following spinal cord injury caused by stab wounds: a multicenter study. Paraplegia 1995; 33: 98–101.
- 4] Lipschitz R, Block J. Stab wounds of the spinal cord. Lancet 1962; 2: 169–172.
- 5] Koehler PJ, Endtz LJ. The Brown–Sequard syndrome. True or false? Arch Neurol 1986; 43: 921
- 6] Kulkarni AV et al. Delayed presentation of spinal stab wound: case report and review of the literature. J Emerg Med 2000; 18: 209–213.
- 7] Taylor RG, Gleave JRW. Incomplete spinal cord injuries with Brown–Sequard phenomena. J Bone Joint Surg 1957; 39-B: 4