

## Original Article

# Evaluation of Surgery, Complications, and Clinical Outcomes in Patients with Traumatic Spine: An Institutional Based Study

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### ABSTRACT

**Background:** Traumatic spinal cord injury (TSCI) is a life-changing event resulting in serious functional, psychological, and socioeconomic consequences. The present study was conducted to assess surgery, complications and clinical outcomes in patients with traumatic spine.**Materials & Methods:** In the present study, data was reviewed retrospectively for spinal cord injuries. The records of all the traumatic spine patients confirmed by CT scan or MRI over a period of 2 years were investigated. The relevant information was recorded.

**Results:** This study was performed on records of 200 patients, out of which 80 were women (40%) and 120 were males (60%). Surgical interventions were done for 110 (55%) of the patients, respectively. Anterior open surgery was performed in 3.63% cases, posterior open surgery was performed in 95.45% cases and both surgeries were performed in 0.90% cases. In 2.72% cases two vertebrae were fixed and in 97.27% cases three vertebrae or more were fixed. In 4.54% cases complications of hospitalization occurred. In 1.81% cases bed sore and fever occurred respectively. 69.09% of cases had ICU stay. In 88.88% patients good recovered occurred, in 5.45% patients' moderate disability occurred.**Conclusion:** The study concluded that in maximum patients' good recovery was seen in patients with spine trauma. Most of the patients had no complications during their stay at the hospital.

**Keywords:** Spine Trauma, Hospital Stay, Traumatic Spinal Cord Injury.

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### INTRODUCTION

Traumatic spinal cord injury (TSCI) is a life-changing event resulting in serious functional, psychological, and socioeconomic consequences. In 2018, it was estimated that spinal cord injury (SCI) had an incidence estimated at 17,700 new cases annually with an overall prevalence of 288,000 persons living with SCI.<sup>1</sup> Spinal Cord Injury (SCI) is one of the main causes of severe disability and mortality following trauma. SCI mostly occurs in young people.<sup>2</sup> SCI may disrupt sensory or motor control of the trunk, lower and upper limbs, as well as autonomic control. These in turn can interfere with the functions of cardiovascular, respiratory, and sexual systems, temperature, stool and urine control. Statistics indicate that SCI mortality rate in males is approximately 3 times higher than that in women; even so, the severity of SCI in trauma is approximately 5

times higher than in none traumatic occasions.<sup>3</sup> Over the decades, the treatment approach has changed markedly from the use of long-term bed rest to early surgical decompression and stabilization, mobilization, and early transfer to rehabilitation.<sup>4</sup> Early surgical intervention for TSCI (<24 hours) is gradually being more broadly translated into actual surgical practice.<sup>5</sup> The present study was conducted to assess surgery, complications and clinical outcomes in patients with traumatic spine.

### MATERIALS & METHODS

In the present study, data was reviewed retrospectively for spinal cord injuries in the Department of Neurosurgery, Rajendra Institute of Medical Sciences, Ranchi, Jharkhand, India. The records of all the traumatic spine patients confirmed by CT scan or MRI over a period of 2 years was

investigated. Demographic data, types of spinal cord injury, types of surgical interventions, mean time from injury to surgery, number of fixed and fused vertebrae, complications, and outcomes of the patients upon discharge (based on GOS criteria) and other relevant information were recorded. Moreover, Type of complications included CSF leakage, bed sore, and fever.

## RESULTS

This study was performed on records of 200 patients, out of which 80 were women (40%) and 120 were males (60%). Surgical interventions were done for 110 (55%) of the patients, respectively.

Anterior open surgery was performed in 3.63% cases, posterior open surgery was performed in 95.45% cases and both surgeries were performed in 0.90% cases. In 2.72% cases two vertebrae were fixed and in 97.27% cases three vertebrae or more were fixed. In 4.54% of cases complications of hospitalization occurred. In 1.81% of cases bed sore and fever occurred respectively. 69.09% of cases had ICU stay. In 88.88% patients good recovery occurred, in 5.45% patients moderate disability occurred.

**Table 1: Type of intervention, number of fixed vertebrae, complications of hospitalization, type of complications, ICU admission, and patient outcome according to GOS**

Variable	N(%)
<b>Type of intervention</b>	
Anterior open surgery	4(3.63%)
Posterior open surgery	105(95.45%)
Both	1(0.90%)
<b>Number of fixed vertebrae</b>	
Two vertebrae	3(2.72%)
Three vertebrae or more	107(97.27%)
<b>Complications of hospitalization</b>	
No	105(95.45%)
Yes	5(4.54%)
<b>Type of complications</b>	
Bed sore	2(1.81%)
Fever	2(1.81%)
CSF leakage	1(0.90%)
Other	0(0%)
<b>ICU stay</b>	
Yes	76(69.09%)
No	34(30.90%)

**Table 2: Outcome of patients with traumatic spine**

Patient outcome in the operated group	N(%)
Good recovery	97(88.18%)
Moderate disability	6(5.45%)
Severe disability	5(4.54%)
Vegetative state	1(0.90%)
Death	1(0.90%)

## DISCUSSION

This study was performed on records of 200 patients, out of which 80 were women (40%) and 120 were males (60%). Surgical interventions were done for 110 (55%) of the patients, respectively. Anterior open surgery was performed in 3.63% cases, posterior open surgery was performed in

95.45% cases and both surgeries were performed in 0.90% cases. In 2.72% cases two vertebrae were fixed and in 97.27% cases three vertebrae or more were fixed. In 4.54% of cases complications of hospitalization occurred. In 1.81% of cases bed sore and fever occurred respectively. 69.09% of cases had ICU stay. In 88.88% patients good recovery occurred, in 5.45% patients' moderate disability occurred.

Of significance, cervical spine and vertebral fractures increased among both men and women when adjusted for age; however, this was attributable to incidentally diagnosed vertebral fractures in patients older than 75 years.<sup>6</sup>

Wilson et al. showed that although the benefits of early surgery in cervical TSCI have been supported, for the non-cervical regions, the evidence is still debatable.<sup>7</sup> Current guidelines recommend that for TSCI cases presenting with central cord syndrome, decompression within 24 hours should be considered as an option.<sup>8</sup> For all other TSCI cases, early surgery (without a specific time threshold) is suggested as an option to reduce LOS and complications.<sup>8,9</sup> Baram et al. operated 15 patients with dislocation of fractured vertebrae by using an anterior approach and did fixation and fusion with screw and autograft.<sup>10</sup>

De Giacomo et al. reviewed 142 patients operated by an anterior approach of thoracic vertebrae of which 20 patients had traumatic spine.<sup>11</sup>

Xu et al. operated on 21 patients with spine trauma and stenosis. Fixation for 2 vertebrae with 4 screws in 7 patients, 3 vertebrae with 6 screws in 10 patients, 4 vertebrae with 8 screws in 4 patients. Mean of surgery time was 190 minutes. CSF leakage, and delayed surgical wound recovery were seen in 4 patients. Respiratory infection was seen in 3 patients of which one had also urinary infection. One of the patients died due to respiratory failure.<sup>12</sup>

## CONCLUSION

The study concluded that in maximum patients' good recovery was seen in patients with spine trauma. Most of the patients had no complications during their stay at the hospital.

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