

Original Research Article

The clinical outcomes of pedicle screw fixation in unstable dorsolumbar fractures using Denis work scale and pain scale and Frankel's neurology grading

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Abstract:

Background & Method: The aim of present study is to study clinical outcomes of pedicle screw fixation in unstable dorsolumbar fractures using Denis work scale and pain scale and Frankel's neurology grading. All the patients were initially assessed in the outpatient department or casualty according to their presentation and then they underwent a detailed evaluation of their hemodynamics, spine, neurological status and other injuries if associated with trauma. After initial investigations and haemodynamic stabilization, patients were assessed neurologically in detail. The pre-operative neurological status was graded on the basis of Frankel's grading.

Result: In this study fall from height was found to be the most common mode of trauma in 24 patients and road traffic accident as second most common mode in 20 patients. There was statistically significant rise in mean anterior to posterior vertebral height ratio with a p value of less than 0.05. At 6 months of follow up most of the patients returned to their previous jobs with restriction to heavy labour.

Conclusion: Thoracic and lumbar spine fractures are more common in the 3rd and 4th decade of life with male predominance due to more outdoor activities. The commonest mode of injury was fall from a height. Thoracolumbar injuries are associated with high level of disablement due to neurological deficits caused by these injuries. Neurological impairment may be due to injury to the neural tissue as a direct result of trauma or may be in the form of secondary neural injury due to unaddressed compression of cord by bone and soft tissue disruption or by progression of deformity leading to mechanical compression.

Keywords: pedicle, screw, fixation, dorsolumbar, fractures & neurology.

Study Designed: Observational Study.

1. INTRODUCTION

Right on time throughout the course of recent many years, there has been a propensity for back adjustment and instrumentation as the favored treatment methodology for thoracolumbar breaks. As a protected and viable careful choice[1]. It really de-pressurizes the

trench, accomplishes better anatomic rebuilding and rectification of kyphotic distortion relief from discomfort guarantees early preparation and fast recuperation[2].

At first, all spinal distortions were treated with the utilization of supports, footing, or projects. Hippocrates was the primary doctor to treat spinal distortions by utilizing pivotal foothold joined with direct strain. The treatment of spinal disfigurement was extraordinarily worked on by the advancement of radiographic imaging by Roentgen[3].

During the 1950s and 1960s, inferable from the endeavors of Harrington and others, the cycle developed to make the original of current spinal instrumentation. The Harrington bar had the option to address a spinal distortion principally through interruption. It was a significant development in giving a technique to further develop coronal plane distortion[4]. Harrington snare bar build or its changes have been widely contemplated; their fundamental inconvenience is that it traverses 5-6 spinal sections.

There is an absence of exhaustive surveys that consider the verifiable development of pedicle screw frameworks and the reasonings for their application. Pedicle screw obsession gives short, unbending segmental adjustment that permits safeguarding of movement sections and adjustment of the spine without flawless back components, which is unimaginable with non-pedicular instrumentation[5]. Every one of the patients were at first surveyed in the short term division or setback as per their show and afterward they went through a point by point assessment of their hemodynamics, spine, neurological status and different wounds whenever related with injury. After beginning examinations and haemodynamic adjustment, patients were surveyed neurologically exhaustively. The pre-employable neurological status was reviewed based on Frankel's evaluating.

2. MATERIAL & METHOD

This study is a prospective clinical study of unstable thoracolumbar spinal injuries treated by posterior instrumentation (pedicular screw and rod fixation) carried out at Department of Orthopaedics, AIMS, Dewas. In all, a total of 60 cases were evaluated and assessed during the period from Nov 2020 to December 2021. All the patients were initially assessed in the out patient department or casualty according to their presentation and then they underwent a detailed evaluation of their hemodynamics, spine, neurological status and other injuries if associated with trauma. After initial investigations and haemodynamic stabilization, patients were assessed neurologically in detail. The pre-operative neurological status was graded on the basis of Frankel's grading.

Inclusion Criteria:

1. D11,D12,L1,L2 unstable fractures with or without neurologic deficit
2. Adult patients 18-60 years of age.

Exclusion Criteria:

1. Pathological fractures
2. Polytrauma patients with expected delay in primary and immediate fixation.
3. Uncontrolled diabetes, morbid obesity with BMI> 40, Immunocompromised patients, patients on chronic steroid therapy and debilitated patients.

3. RESULTS

Table 1: Age wise distribution

Age groups (years)	Number of patient
18-20	06
21-30	12
31-40	24
41-50	10
51-60	08

In this study 06 patients were in age group 17-20, 12 patients in age group 21-30, 24 in 31-40 years of age group which was the group with maximum incidence of thoracolumbar fractures.

Table 2: Mode of Injury

	Number of patient
Fall from height	24
Fall from stairs	08
Fall of weight	08
Road traffic accident	20

In this study fall from height was found to be the most common mode of trauma in 24 patients and road traffic accident as second most common mode in 20 patients.

Table 3: Mean Vertebral height ratio

	Mean
Preoperatively	0.472
Postoperatively	0.714
At 3 months post operatively	0.793
At 6 months post operatively	0.746

There was statistically significant rise in mean anterior is to posterior vertebral height ratio with a p value of less than 0.05.

Table 4: Denis Work Scale at 6 months post operatively

	No. of Cases
W1	06
W2	28
W3	16
W4	10

At 6 months of follow up most of the patients returned to their previous jobs with restriction to heavy labour.

4. DISCUSSION

In our review 60 % patients are guys and rest females, with a typical age of 39 years (18-60), most generally involved is the third and fourth ten years of life. Gregory F. Alvine et al in their investigation discovered that normal age was 31 years, with a male power. Nasser M.G, et al in their review found 0that normal age was 28.8 years with a male transcendence[6].

In our concentrate most familiar method of injury was tumble from height, 40% and second most well-known mode being RTA, 34%[7]. Nasser M.G, e t al in his review noticed that the primary driver of injury was tumble from a level and street car crash was the second commonest. Gregory F. Alvine, et al noticed that in 52% of patients wounds came about

because of tumble from a level, in 39% patients because of street car crashes and 9% because of fall of weighty goal.

Thoracolumbar fractures are relatively common injuries. Numerous classification systems have been developed to characterize these fractures and their prognostic and therapeutic implications. Recent emphasis on short, rigid fixation has influenced surgical management[8]. Most compression and stable burst fractures should be treated nonsurgically. Neurologically intact patients with unstable burst fractures that have >25 degrees of kyphosis, >50% loss of vertebral height, or >40% canal compromise often can be treated with short, rigid posterior fusions. Patients with unstable burst fractures and neurologic deficits require direct or indirect decompression. Posterior stabilization can be effective with Chance fractures and flexion-distraction injuries that have marked kyphosis, and in translational or shear injuries[9].

5. CONCLUSION

Thoracic and lumbar spine fractures are more common in the 3rd and 4th decade of life with male predominance due to more outdoor activities. The commonest mode of injury was fall from a height. Thoracolumbar injuries are associated with high level of disablement due to neurological deficits caused by these injuries. Neurological impairment may be due to injury to the neural tissue as a direct result of trauma or may be in the form of secondary neural injury due to unaddressed compression of cord by bone and soft tissue disruption or by progression of deformity leading to mechanical compression.

6. REFERENCES

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