

Percutaneous pedicle fixation of dorsolumbar fractures without neurological deficits

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Abstract

Burst fractures are relatively common injuries in the thoracolumbar spine. However, treatment of AO type (A3) unstable thoracolumbar fractures is still controversial, especially for patients with no neurological deficits. to evaluate the efficacy and safety of percutaneous pedicle fixation using a minimally invasive technique for AO type (A.3) thoracolumbar fractures. This study was done on ten patients complaining of thoracolumbar spine fractures grade A3 at ages ranged from twenty to sixtyfive years old. Those patients were treated by percutaneous fixation Those effects of the surgical methodology were analysed after surgery. The percutaneous pedicle system displays radiological, clinical, out comes superior to the distributed outcomes with conversative medication., Yet predominant with respect to blood loss, postoperative rehabilitation, more rapid return of the activities for day living. The outcomes of this technique demonstrate that this may be An valid, safe, technique for (A3) thoracolumbar burst fractures without neurological deficits.

Keywords: Percutaneous pedicle fixation; dorsolumbar fractures; neurological deficits

1. Introduction

Burst fractures are generally common injuries in the thoracolumbar spine. However, treatment about AO kind (A3) thoracolumbar fractures will be even now controversial, particularly for patients with no neurological deficits. In spite of the fact that nonsurgical medicine may be used On a few articles with beneficial results, it is likewise great referred to that this kind of medication need a few complications, including those intensifying about kyphosis, outcomes of prolonged bed rest, prolonged period about recovery, and time permits worsening/development for neurological deficits [1].

Surgical medication showed preferred clinical and radiological effects. It considers prompt adjustment of the spine, rebuilding about sagittal alignment, and the likelihood from doing spinalcanal decompression [2].

However, the established (open) surgical methodology with pedicle fixation (short or long segment) includes broad presentation What's more dissection, which may be by and large connected with a secondary rate for morbidity: intraoperative blood loss, Also contamination What's more muscle harm rates, Minimally invasive surgery, specifically percutaneous pedicle fixation, need turn into progressively well known over spinal surgery. Those strategy for setting pedicle screws percutaneously might have been at first acquainted Toward Magerl On 1977. Kim et al demonstrated that percutaneous pedicle system offer less muscle harm over open pedicle fixation systems [3].

2. Patients and methods

The investigation occurred between december 2016 Furthermore december 2019. Over benha agoza naser hospitals .

Consideration criteria were: AO sort (A. 3) thoracolumbar fracture; kyphosis $> 30^\circ$ or decrease of vertebra body stature $> \text{half}$ or compression of the spinal canal $> \text{half}$.

Prohibition criteria were: period under 18 a considerable length of time alternately again 70 years, inconceivability about surgical medicine in the primary ten days following the injury, and the vicinity about neurological deficits.

Those system from claiming damage included: seven instances of falling starting with heights, two pedestrians constantly run over and one auto crash. The pre- Also postoperative assessment Throughout catch up might have been performed utilizing radiography and sagittal index of the thoracolumbar spine.

The radiological parameters assessed were those Cobb angle, diminishment of the height of the vertebra body, furthermore wedging of the cracked vertebra, and compression of the spinalcanal. The sagittal index and cobb angle have been measured (defined Likewise the plot between those upper surface of the vertebra form over those crack and the bottom surface of the vertebra body In the level The following those fracture). Patients were assessed toward one, three, six, Furthermore 12 months postoperatively, clinically, those Oswestry handicap list might have been collected, and radiographically In three alternately six months.

This study have been finished on ten patients thoracolumbar spine fractures review A3 at ages went from twenty with sixtyfive. The individuals patients were treated bypercutaneous fixation. Those outcomes of the surgical method were gathered promptly after surgery, What's more following the catch up period. Every last one of effects might have

been statistically investigated with get certain information What's more correspondence the middle of them, difficulties might have been examined if then afterward surgery alternately during those catch up period.

3. Results

Ten adult patients were included in this study, 7 were male and 3 female. The average age was 49.4 years (minimum of 24 and maximum of 68) As for the distribution of fractures by vertebral level, we obtained three cases affecting T10, one T11, one T12, , three L1, one L2, one L3.

All patients were treated with percutaneous pedicle fixation. The mean operative time was 81 minutes (minimum of 69, maximum of 95). The mean intraoperative blood loss was 85 ml (minimum of 75, maximum of 155 ml).

Hospitalization time was on average seven days (minimum of 5, maximum of 11 days). All patients were followed up as outpatients for an average period of seven months (minimum of three, maximum of 14 months).

The preoperative Cobb angle averaged 16.9° (5.3°-31.7°), postoperatively it was 4.9°, which represents an improvement of about 86%. At the end of follow-up it was 8.2°. The percentage of mean preoperative reduction of the vertebral body height was 39.8% (31.6% to 61.6%) and 10.3% postoperatively, representing an improvement of about 29.5%. At the final follow-up visit, it was 13.2%. The percentage of mean preoperative anterior wedging of the vertebral body was 37.4% (27.1% to 57.2%) and 20.3% postoperatively, representing an improvement of about 17 1%. At the final follow-up visit, it was 24.1%. The percentage of compression of the spinal canal was 28.5% (8.4 to 53.8). At the final follow-up visit, it was 13.9%.

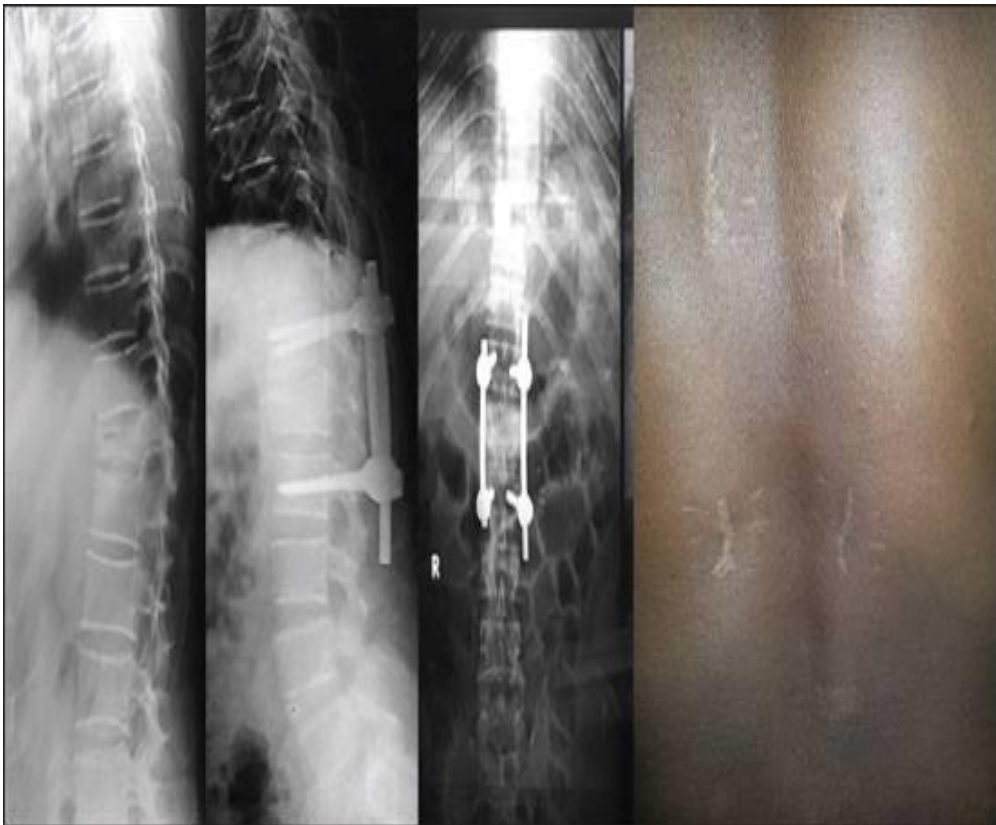
The average clinical evaluation with the Oswestry disability index was 18% (excellent). Of the 10 patients treated, 10 showed no disabilities (0-20%),None showed a worsening of neurological status, infection, or fixation failure.

Table (1) Imaging evaluation results

	Kyphosis (cobb)	Reduction of vertebral body height(%)	Anterior compression(%)	Compression of the spinal canal(%)
Preoperative	16.9 (31.7-5.3)	(61.6-31.6)39.8	(57.2-27.8)37.4	28.5 (53.8-8.4)
postoperative	4.9	10.3	20.3	10.8
End of follow-up	8.7 (8.2)	(26.6)13.2	(13.3)24.1	13.9 (14.6)

4. Case presentation, Fig 1 – 3

Case no 1



Fig(1). Male patient 34 years old with 11 burst fracture treated by percutaneous fixation.

Case no 2



Fig 2 Burst fracture t12 treated with percutaneous fixation

Case no 3

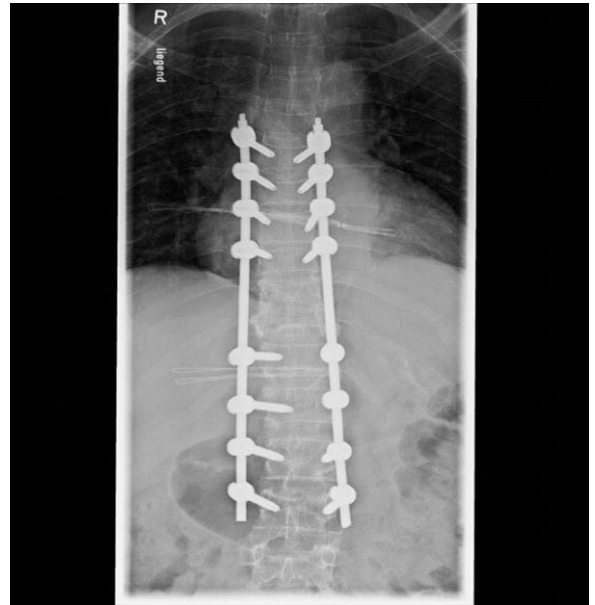
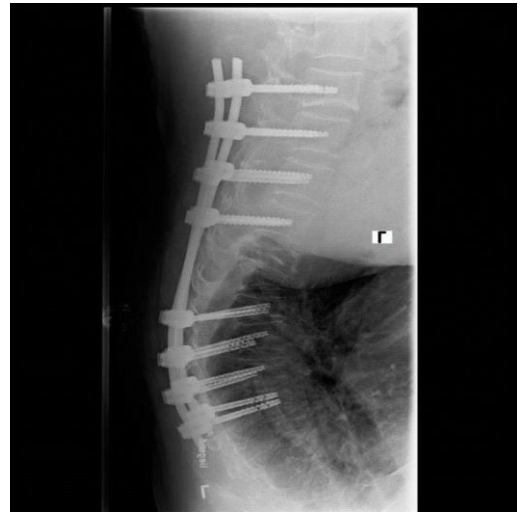
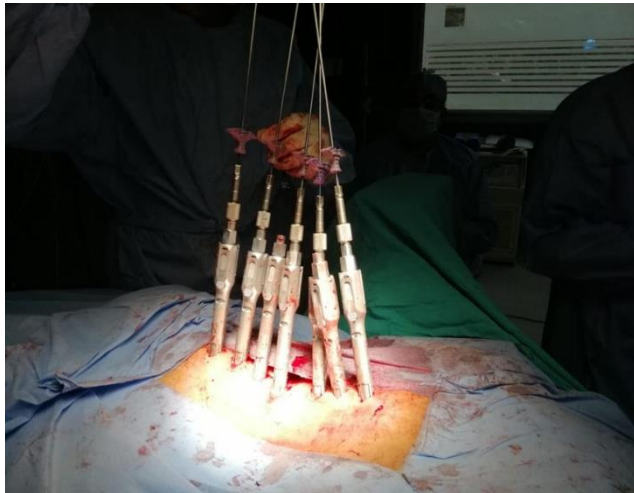


Fig (3)

5. Discussion

The decision about treatment of the thoracic and lumbar spine damages is identified with huge numbers Components for example, such that those sort for fracture, neurological damage, associated injuries, patient's age other more.

Conversative medication for stable vertebra fractures is suggested for achievement gymnastics, plaster coat over bed, or extension orthoses [4]. In any case of the technique adopted, those medicine thought to make proceeded to An period from 3-4 months during which cooperation and patient care is mandatory. The issues identified with cost rest, especially in the elderly, need aid countless, in spite of the fact that was

troublesome will figure. Profound vein thrombosis might influence dependent upon 30% from claiming patients. Obesity, obstructive pulmonary disease, venous incompetence, What's more psychiatric issue are very nearly contraindications to conservative medication.

In addition, today an ever increasing amount patients need to return to their social and working for a short time; therefore, surgery gets to be the simplest best approach to achieve this.

Those justification to applying MIS in the administration of the spine fractures may be to decrease the approach-related morbidities: iatrogenic muscle denervation, expanded intramuscular pressures, ischemia, pain,

Due to the impossibility to perform a fusion, those minimally percutaneous adjustment need been restricted to moderately stable vertebra fractures, directing, including principally bone part with a reliable likelihood of spontaneous healing following immobilization; those screws Furthermore rods embedded acted as a inside fixator, prompting healing of fractures. Wang et al. Comparing two groups for patients for thoracolumbar burst fractures, one approached Eventually perusing instrumented fusion, the opposite Exactly altered without fusion, demonstrated that there were no statistically huge contrasts in the in length expression between two aggregations for a slight advantage, both to clinical over to radiographic parameters, for the aggregation treated just for fixation without fusion[5]. This contemplate further supports the minimally invasive approach we made.

PMMA infusion through fenestrated cannulated screws given extra soundness done methods conveyed out ahead osteoporotic vertebra columns without affecting fracture healing.

Further studies are required to determinate those require tohard ware removal. Monoaxial screws should be considered for this type of surgery when possible [6].

The complication in our series are comparable to those in literie for conservative treatment and much less than open fusion.

6. Conclusion

The percutaneous pedicle fixation technique presents radiological, clinical, and functional results that are significantly better than the published results with conservative treatment. This intervention, assisted by fluoroscopy, proved to be a technique with a high accuracy and reliability, with results similar to those reported in studies with the classical transpedicular fixation regarding the deformity correction, but superior with regard to blood loss, postoperative rehabilitation, and return to the activities of daily living. The

results of this study show that this is a valid, safe, and effective treatment for (A3) thoracolumbar burst fractures without neurological deficits.

7. References

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