

Thoracolumbar Fractures, Posterior versus Anterior Management: A Case Series and Literature Review

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ABSTRACT

Background Data: The management of unstable traumatic thoracolumbar fractures has shifted from more conservative treatment to more operative treatment modalities. Different surgical options have been reported in the literature.

Purpose: To review two surgical techniques, anterolateral and posterior approaches, in management of thoracolumbar fractures and present a brief literature review.

Study Design: A retrospective case series with review of the literature.

Patients and Methods: Thirty patients were managed in the period from October 2012 to November 2016 for thoracolumbar burst fractures. Two patients' groups were identified: Group I underwent anterolateral fixation and included 15 patients, whereas Group II underwent posterior fixation and included 15 patients. Follow-up was done at 3 months, 6 months, and one year postoperative using VAS for pain assessment and ASIA scale for neurological status evaluation. Radiological outcome involved the vertebral height restoration, spinal canal compromise, and kyphus deformity correction. Operative time, operative blood loss, and perioperative complications were all reported for both groups.

Results: The most common spinal level affected in our study was L1 vertebra in 10 patients. Operative time and blood loss were found to be significantly less in the posterior approach. A significant improvement of VAS has been reported in both study groups with more improvement in the posterior group compared with the anterolateral one. 93.3% of anterior group patients within the showed either improved or fixed neurological status according to ASIA scale where, in posterior group, all patients showed either improved or fixed neurological status. The mean canal compromise percentage decreased in Group I from 69.3% preoperatively to 15.62% postoperative, whereas in Group II it decreased from 66.2% preoperative to 18.8%. Kyphotic angle has been corrected in posterior group from 13.42° preoperative to 11° at 6 months and 12.5° at one year, whereas in anterolateral group it has been corrected from 19.42° to 17.57° and 20.9°, respectively, with a statistically significant difference between both groups ($P < 0.01$).

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Conclusion: Our data suggest that both anterior and posterior approach showed no difference in neurological outcome in patients with thoracolumbar fractures. However, anterior approach was superior to the posterior one in spinal canal compromise clearance and kyphotic angle correction. (2019ESJ174)

Keywords: Anterolateral approach, transpedicular, angular deformity, thoracolumbar fractures, spinal canal diameter.

INTRODUCTION

The spinal column injury is considered one of the most catastrophic events in a person's life. The thoracolumbar area (T11, 12, and L1) is considered to be the most common site for spinal column fractures, whereas large range of motions is possible in the lumbar spine and the thoracic spine mobility is restricted by the thoracic cage.² Injuries more commonly occur in both the cervical and thoracolumbar regions as they represent transitional zones between mobile and immobile segments. Although the thoracolumbar junction has a higher risk for fracture, it has important anatomical characteristics that allow for a greater recovery from neurologic injuries compared to more cephalad cord segment injuries.¹³ Motor vehicle crashes and falling from height are by far the commonest causes for spinal column injuries. Interest in the treatment of thoracolumbar spinal fractures has been intensified in the last 15 years.¹⁶

Recently, the management of unstable traumatic thoracolumbar fractures has shifted from more conservative treatment to more operative treatment modalities.^{12,15,20} The decision whether to treat conservatively or surgically is based on clinical and radiological examinations. The distinction between stability and instability and the presence of neurological deficits play an important role in the diagnostic process of spinal fractures. Instability can be defined as the loss of the ability of the spine under physiological loads to maintain the relationships between vertebrae so that there are no initial neurological deficit and no major deformity, and there is absence of severe pain.^{18,22,23} In general, patients with stable fractures without gross deformity are treated conservatively and patients with spinal injury and progressive neurological deficits are treated operatively. The management of

unstable fractures without neurological deficits is still controversial, especially for burst types of fractures.²¹ Optimal surgical approach is still controversial; however, the main goal of treatment remains to be improving neurological function, reducing kyphotic deformity, and stabilizing the fracture.²⁴ Posterior approach, anterior approach, and combined anteroposterior approaches exist as surgical treatment options.¹⁴

Our aim in this study is to overview two techniques, the anterolateral and the posterior approaches, for management of burst thoracolumbar fractures with highlighting the two different treatment modalities regarding their convenience and efficacy together with evaluation of both approaches clinically and radiologically.

PATIENTS AND METHODS

A review of all patients with thoracolumbar injuries, operated at the Departments of Neurosurgery and Orthopedic Surgery, Ain Shams University, by study authors from October 2012 to November 2016, was conducted. Inclusion criteria for this study were patients with thoracolumbar fracture causing anterior compression of the cord by retropulsed vertebral body fragments in the spinal canal, involving both Types A3 and A4 fractures according to the AO classification for spine fractures,^{7,8} with either normal neurological status or incomplete neurological deficits. Patients with other AO grades, complete injury, and pathological or osteoporotic fractures were excluded from the study. A total of 30 patients were found to meet the inclusion criteria and were reported in the study.

Patients enrolled in the study were categorized into 2 groups. Group I included 15 patients who underwent anterolateral corpectomy followed by grafting and instrumentation with dual

rods and screws (N=5) or by plates and screws (N=10), and Group II included 15 patients who underwent posterior decompression either through the transpedicular (N=14) or through the costotransversectomy (N=1) routes, followed by pedicle screws instrumentation and posterolateral fusion. The mean follow-up period for our patients was 12.7 ± 4.4 months.

All patients were thoroughly evaluated clinically preoperatively. The severity of back pain was assessed using the Visual Analogue Scale (VAS). Patients' neurological status was evaluated according to the American Spinal Injury Association/International Medical Society of Paraplegia (ASIA/IMSOP) scale with Grade A referring to complete injury and Grade E referring to normal neurological function.¹ Back examination of the patients was assessed for tenderness, spasm, kyphus deformity, and abrasions/contusions. Associated systemic injuries were assessed by examination of head, chest, abdomen, and long bones thoroughly.

The preoperative radiological evaluation included plain radiographs of the thoracolumbar spine, anteroposterior (AP) and lateral views, and Computerized Tomography (CT) scans of thoracolumbar spines. Magnetic Resonance Images (MRI) of thoracolumbar spines were done for all patients. Data collected from the images included the affected levels, fracture type, and number of columns affected. The vertebral height was determined from lateral plain X-ray. It was expressed as percentage of the mean vertebral height of the adjacent vertebrae. The extent of canal compromise was measured from axial CT scan. It was expressed as percentage of the mean sagittal dimension of the adjacent vertebrae. The kyphotic angle is determined from lateral plain X-ray. It was the angle at intersection of two perpendicular lines drawn along two lines parallel to the inferior end plate of the superior vertebra and superior end plate of the inferior vertebra (Cobb angle). The neural compression involving cord, conus, or roots is determined from MRI images.

Follow-up:

All patients were evaluated both clinically and radiologically during the follow-up visits at 3, 6, and 12 months. VAS for each patient was recorded during each visit together with the ASIA scale grading. In plain X-ray, both AP and lateral views were done postoperatively and in each follow-up visit. CT thoracolumbar spine was done postoperatively for all patients and whenever needed during follow-up. Vertebral height was measured in serial follow-up images to determine further vertebral collapse. Kyphotic angle was measured on lateral radiographs of each visit and was compared with initial angle. The percentage of canal compromise was measured in the postoperative CT and was compared with preoperative one. The occurrence of fusion was determined from two plain radiographs and was verified with CT scan.

Statistical Analysis:

Data were coded, entered, and processed on a personal computer using SPSS (statistical products for the social sciences) software, version 21. The cut-off value for significance was set at $P < 0.05$. Student's *t*-test was used to assess the statistical significance of the difference between two population means involving independent samples. Paired *t*-test was used to assess the statistical significance of the difference between two population means involving matched or paired samples.

RESULTS

During the period from October 2012 to November 2016, thirty patients with thoracolumbar burst fractures were managed in the Departments of Neurosurgery and Orthopedic Surgery, Ain Shams University. We reported on patients who underwent anterolateral approach with neural decompression, interbody bone fusion, and internal metallic fixation (Group I, N=15) and those who underwent posterior transpedicular neural decompression and pedicle screw fixation (Group II, N=15). Patients allocation within either anterior or posterior group was planned at

random fashion. The mean age of our patients was 37.5 ± 12.8 (range 17-62 years). Five patients (16.6%) were ≤ 20 years, 16 patients (53.3%) were between 20 and 40 years, and 9 patients (30 %) were more than 40 years old. Twenty patients were males and 10 were females. The main mode of trauma was falling from height (N=21, 70%) followed by road traffic accidents (N=9, 30%).

The most common spinal level affected in the present study was L1 vertebra (N=10), followed by D12 (N=6) and lastly by D11 and L3 (N=3 each) (Figure 1). Sixteen patients were found to have associated injuries, the most common of which were head injuries (N=8), followed by long bones fractures (N=5) and lastly by chest injuries (N=3).

Preoperative recorded VAS in anterior group (Group I) was of 8.5 (range, 8-10), whereas, in the posterior group (Group II), it was 7.5 (range, 6-9). VAS records showed significant improvement in the postoperative follow-up visits in both groups. In Group I the mean VAS records were 5 (range, 2-7), 4.5 (range, 1-7), and 2.5 (range, 0-5) at 3, 6, and 12 months, respectively. In Group II, the mean VAS records were 3 (range, 1-6), 3 (range, 0-5), and 1 (range, 0-4) at 3, 6, and 12 months, respectively (Table 1). On comparing the two study groups, it was found that pain score was matched at preoperative and at three and six months postoperative but at one year postoperative there was a more significant decrease in Group II than in Group I. There is a marked decrease in focal back pain after stabilization of the injured vertebrae in both groups. Later, follow-up with regard to pain revealed that the patients treated through anterolateral approach had local incisional pain. The difference between the 2 groups at 12 months was still statistically insignificant (P=0.09).

Neurological status was evaluated according to the ASIA scale grading, which was recorded for all patients at 3, 6, and 12 months postoperative (Figure 2). In anterior group (Group I) 5 out of 8 patients with initial deficits showed different degrees of improvement at 3 months. One (6.6%) neurologically deteriorated due to iatrogenic cord injury that did not show improvement throughout follow-up. At 12 months postoperative, 14 (93.3%) patients showed either improved or fixed

neurological status (Grades D and E ASIA) and one (6.6%) patient was still paraplegic. Seven patients out of the 8 patients with initial deficits within Group I showed improvement by an average of 1.6 grades based on ASIA impairment scale. In posterior group (Group II), 5 out of 10 patients with neurological deficits regained full neurological function at 3 months. At 12 months all 15 patients showed either improved or fixed neurological status (Grades D and E ASIA). The neurological function in Group II showed improvement by an average of 1.8 grades based on ASIA impairment scale. Our results revealed that there was no significant difference between the two groups regarding neurological function improvement (P=0.86).

In all patients, radiographic studies were performed at 3, 6, and 12 months of follow-up visits. In all study patients, vertebral height restoration showed an increase in vertebral height early postoperative, but the degree of vertebral height restoration showed a gradual decrease during follow-up imaging. In Group I, an average of 80% vertebral height restoration at 3 months decreased to 77% at 12 months. In Group II, an average of 50% and 38% vertebral height restoration was reported at 3 and 12 months. The difference between both groups was statistically significant in favor of the anterolateral approach (P<0.05).

Comparing the degree of spinal canal decompression between both study groups showed that the mean of canal compromise percentage decreased in Group I from 69.3% preoperatively to 18.72%, 16.23%, and 15.62% at 3, 6, and 12 months, respectively (P<0.05). In Group II, it decreased from 66.2% preoperatively to 33.6%, 32.36%, and 18.88% at 3, 6, and 12 months, respectively (P<0.05). The difference between both groups was in favor of the thoracoabdominal approach; however, that difference was still statistically nonsignificant (P=0.16) (Table 2).

Significant reduction in kyphotic angle in both surgical groups was reported postoperatively and during the follow-up. The mean kyphotic angle improved from 13.42° (range, 0-30°) to 11.5° (range, -20-18°), 11° (range, -10-15°), and $12.5 \pm 9.2^\circ$ at 3,

6, and 12 months, respectively. Total correction of kyphotic angle was 2.42° at 6 months. In Group II, the mean kyphotic angle improved from 19.42° (range, 16-27°) preoperatively to 18.5° (range, of 9-27°), 17.57° (range, 8-25°), and 20.9±13° at 3, 6, and 12 months, respectively. Total correction angle of the kyphosis equals 1.85° postoperatively. The difference between the two groups at 3 and 6 months was not statistically significant (P=0.07), whereas the difference at 12 months was statistically significant in favor of anterior group (P<0.01) (Table 2).

The mean operative time was 300 minutes in Group I and 180 minutes in Group II and that was significantly shorter in transpedicular approach than in the anterior group (P<0.05). The mean operative blood loss was 2000 cc in Group I and 1200 cc in Group II (P<0.05).

In Group I, one patient suffered system loosening on plain X-ray films after having an accidental fall on the ground with no further neurologic

deterioration, and no further intervention was required. Another one had sustained a severe flexion injury with posterior column fracture associated with loosening of the anterior fixation device. The patient developed progressive kyphosis that required an additional posterior stabilization procedure. No one in the posterior group suffered system failure throughout the follow-up.

In Group I, iatrogenic cord injury occurred in one patient and superficial wound infection occurred in 3 patients, which was controlled by antibiotics and frequent dressing. One patient developed early postoperative DVT that was controlled medically. In Group II, two procedures were complicated with dural CSF leakage intraoperatively and were managed by packing gel foam and fat grafting without postoperative sequelae. Three patients had superficial wound infection managed by frequent dressing and antibiotics. One patient had deep wound infection that required later hardware extraction.

Table 1. Back pain VAS records in both study groups.

Group	Preoperative VAS	Postoperative VAS			P value
		3 months	6 months	12 months	
Group I	8.5 (8-10)	5 (2-7)	4.5 (1-7)	2.5 (0-5)	P<0.05
Group II	7.5 (6-9)	3 (1-6)	3 (0-5)	1 (0-4)	P<0.05

Table 2. Radiological evaluation of both study groups.

Parameters	Group I				Group II			
	PreOp	3 mos	6 mos	12 mos	PreOp	3 mos	6 mos	12 mos
Canal restoration	69.3%	18.72%	16.23%	15.62%	66.2%	33.6%	32.36%	18.88%
Kyphus correction	13.42° (0-30)°	11.5° (-20-18)°	11° (-10-15)°	12.5° (0-20)°	19.42° (16-27)°	18.5° (9-27)°	17.57° (8-25)°	20.9° (8-32)°

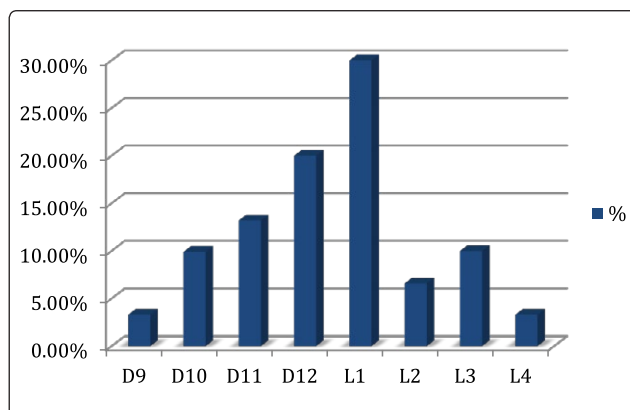


Figure 1. Bar chart showing fractured spinal levels distribution.

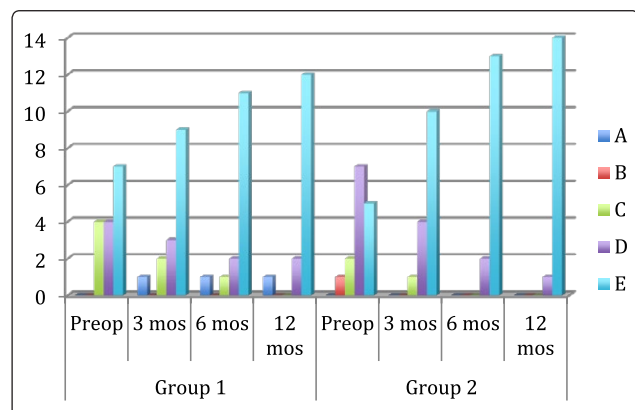


Figure 2. Bar chart showing ASIA scale grading records in both groups, preoperative and at 3, 6, and 12 months postoperative.

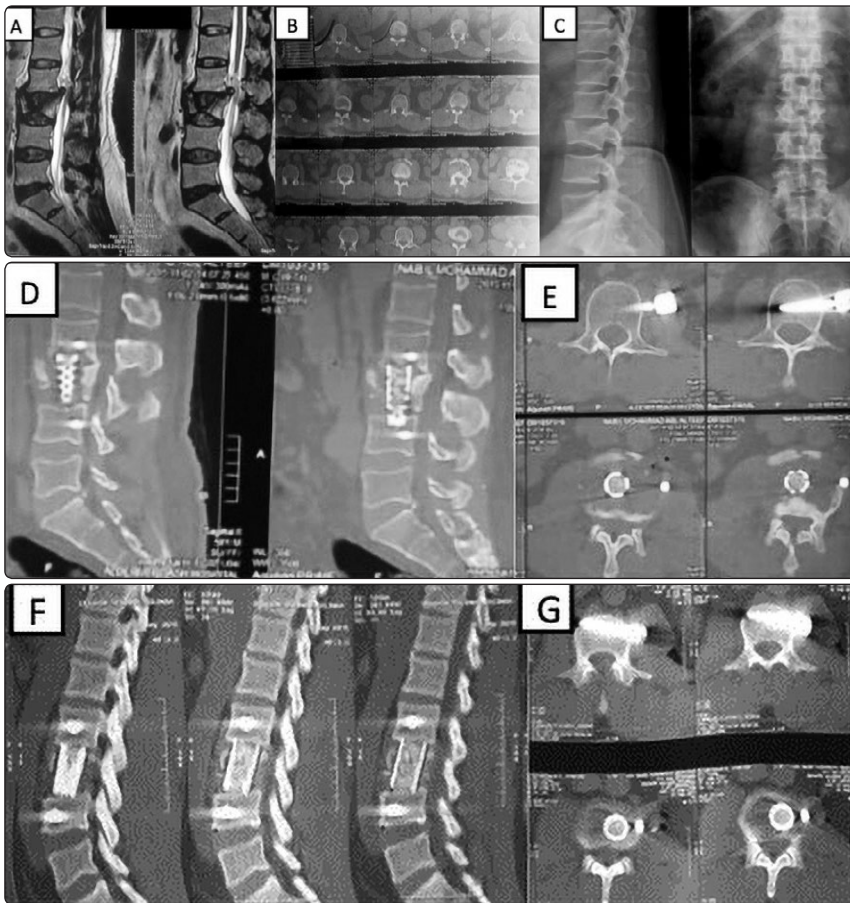


Figure 3. A 45-year-old male with L3 burst fracture after falling from a height. Preoperative ASIA Grade E, VAS 6, and kyphotic angle 6°. Postoperative ASIA Grade E, VAS 2, and kyphotic angle 4°. Patient was operated upon via anterior spine showing L3 burst fracture with retropulsed fragment compressing the spinal canal. (B) Axial CT cuts showing the fracture and compromised canal. (C) Preoperative AP and lateral X-ray showing L3 burst fracture. (D,E) CT scan sagittal and axial cuts early postoperative showing pyramesh, screws, and rod in place. (F,G) CT scan sagittal and axial cuts follow-up after 6 months.

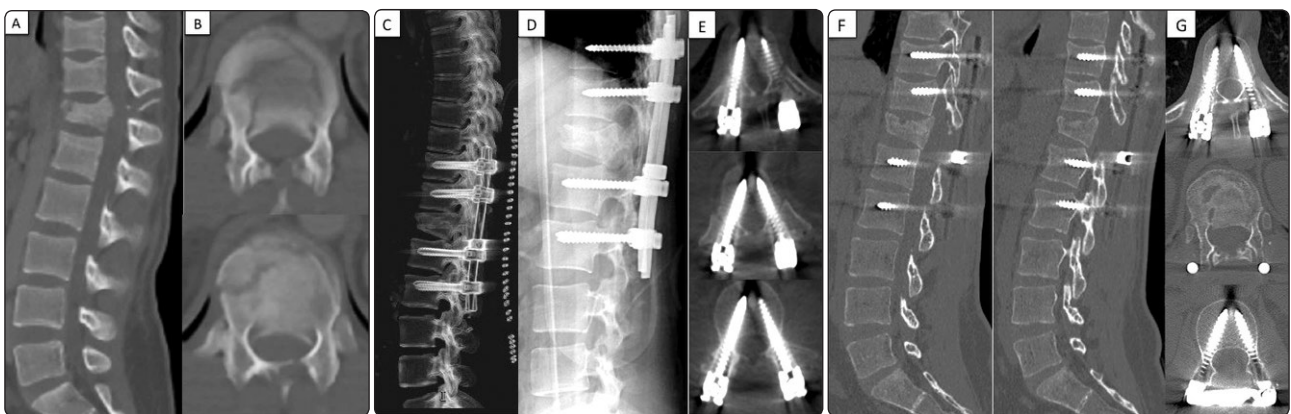


Figure 4. A 20-year-old male patient with D12 burst fracture after motorcar accident. Preoperative ASIA Grade E, VAS 9, and kyphotic angle 12°. Postoperative ASIA Grade E, VAS 2, and kyphotic angle 4°. Patient was operated upon via posterior transpedicular approach. (A,B) Sagittal and axial CT thoracolumbar spine showing D12 burst fracture with retropulsed fragment compressing the spinal canal. (C) Early postoperative 3 D CT thoracolumbar showing the screws in place. (D) Early postoperative X-ray lateral view showing well-positioned system. (E) Early postoperative CT scan axial cuts. (F,G) 6 months' postoperative CT sagittal and axial cuts.

DISCUSSION

The controversy surrounding the optimal treatment for thoracolumbar injuries has changed a little over the past 50 years. Large clinical series have been published advocating both surgical and nonsurgical treatment for similar fracture patterns. Advancement in spinal instrumentation has made surgery for thoracic and lumbar injuries much more common. Despite the modality of treatment, certain basic principles in managing spinal injuries are paramount.¹ The thoracolumbar area is the most common site of vertebral fractures. The majority of thoracolumbar injuries is caused by high-energy trauma as a result of motor vehicle accidents.⁸ In the present study, falling from heights is the most common cause of spinal injuries, followed by motor vehicle accidents.

To identify the advantages of one approach over the other, the current retrospective study was conducted. A total of 30 burst fractures of the thoracolumbar spine from T9 to L4 have been managed operatively in our institute. Fifteen patients underwent anterolateral corpectomy, followed by grafting and instrumentation with dual rods and screws or followed by plates and screws, where the other 15 patients' decompression was achieved via a posterior approach by either transpedicular or costotransversectomy routes, followed by instrumentation and posterolateral fusion. A variety of posterior devices were used, including pedicle screws, hooks, and rods and patients were followed up for an average of 12.7 ± 4.4 months.

Neurologically there was an overall final improvement regarding ASIA grading in all our patients with initial deficits with different degrees except for one patient. There was either improvement or maintenance of motor grading in all patients operated upon through posterior approach, whereas there was a patient with postoperative paraplegia in anterior group who did not show improvement throughout the follow-up. These results run in consensus with those published by Shetty et al.¹⁶ about burst fracture of thoracolumbar spine, where they reported

that the transpedicular approach allows good decompression, fusion, and fixation to be done as a single procedure with minimal morbidity and with excellent neurological outcome. A benefit of the anterior approach is that it permits more direct and complete decompression of the spinal canal, potentially allowing a better neurological outcome.

In another randomized, controlled follow-up study, Lin et al.⁹ found no significant difference between the anterior and posterior approaches for the thoracolumbar fractures in regard to the Frankle scale, the ASIA score, and the radiological outcomes. The intraoperative blood loss and complications were less, the operative time was shorter, and the pulmonary function after operation was better in the posterior approach group.

In a retrospective study conducted by Danisa et al.⁴, they studied 49 nonparaplegic patients who sustained acute unstable thoracolumbar burst fractures. Three treatment groups were studied: the first group of 16 patients underwent anterior decompression and fusion with instrumentation; the second group of 27 patients underwent posterior decompression and fusion; and the third group of six patients had combined anterior and posterior surgery. There were no significant differences between the groups when considering postoperative neurological function, kyphotic correction, pain assessment, or the ability to return to work. Posterior approach, however, takes the least operative time, causes the least blood loss, and is the least expensive of the three procedures.

Schnee et al.¹⁴ conducted a retrospective study of 25 patients with thoracolumbar burst fractures in order to specify the selection criteria for approaches for thoracolumbar burst fractures. Anterior approach was performed in 14 patients with or without neurological deficits when vertebral compression or canal encroachment was at least 40% or kyphosis was 15° or more with a stable posterior column. In nine patients, a combined anterior and posterior approach was performed for similar deformity and three-column instability. Posterior transpedicular approach was used primarily for patients with less than 40%

encroachment and, at most, 40% compression. Satisfactory functional and neurological outcomes were achieved in most patients with thoracolumbar burst fractures after correction of canal compromise, middle column compression, and kyphotic deformity. Their results indicated that anterior decompression and a strut graft are critical for clinical success in patients with significant vertebral destruction.

Stanèic et al.¹⁹ operated on 25 patients with unstable thoracolumbar fracture through anterior decompression and fixation (N=13) or posterior transpedicular approach with posterior fixation (N=12). There was no significant difference between the two groups in neurological improvement (P=0.86) and they concluded that both surgical techniques were equally effective in neurological outcome.

As regards spinal canal decompression, there was a significant reduction in canal compromise and more reduction in canal compression late postoperatively: 66.2% to 32.36% in 6 months postoperatively and to 18.88% at one year in posterior approach group and 69.3% to 16.23% in 6 months postoperatively and to 15.62% at one year postoperative in the anterior group. Thoracoabdominal approach was found to allow anterior decompression better than transpedicular approach. Hashimoto et al.⁶ included 150 patients treated with anterior decompression and stabilization, the mean follow-up was 2 years (range, 1-3), and all patients had neurologic deficits following their injury, with mean preoperative canal stenosis of 70% with range from 60% to 80%. Postoperative spinal canal stenosis measured with computer tomography ranged from 0% to 8%, with a mean of 2%. According to them, many techniques are available to restore the spinal canal from a posterolateral approach; these do not provide the degree of visualization that is possible with anterior approach.

Coleman et al.³ reported that although ventral decompression and stabilization can be accomplished with dorsal approach combined with transpedicular, costotransversectomy, and lateral extracavitary resection, visualization of the ventral surface of the neural element is limited

leading to inadequate spinal canal decompression. All patients in their study reported increase in vertebral height immediate postoperative but the vertebral height restoration in the group which was operated upon thoracoabdominally is higher than the group which was operated upon transpedicularly because of direct visualization of the field.

In our study, we attained a significant reduction in kyphotic angle in both surgical groups postoperatively and during follow-up. Mean of angular deformity in anterior group showed a correction from 13.42° preoperatively to a mean of 11.5° at 3 months and maintained at 11° at 6 months. In the posterior group, preoperatively, the mean kyphotic angle was 19.42°; however, postoperatively, the mean kyphotic angle was 18.5° at 3 months postoperative and was corrected to 17.57° at 6-month follow-up. The kyphus deformity correction was found to be maintained better in the anterior approach (12.5±9.2°) than in the posterior group (20.9±13°) at one-year follow-up. In a retrospective study conducted in Egypt (Benha University) by Farag et al.⁵ on 15 patients with burst and pathological fractures, it could be concluded that anterolateral approach can be an effective means of treating thoracolumbar spine lesions. It allows better safe decompression of neural structures, satisfactory kyphus correction, and restoration of vertebral height.

Reconstruction of the anterior body defect can be done with autografts, allografts, or a cage with supplementation of the graft with anterior internal fixation that helps in restoring body height and prevention of collapse of the vertebral body. In the present study, only one patient who had sustained a severe flexion injury with posterior column fracture had loosening of the anterior fixation device, and the patient developed progressive kyphosis, which required a posterior stabilization procedure.

In the present study, the operative time and blood loss were significantly shorter in the transpedicular approach than thoracoabdominal approach. Coleman et al.³ reported that transpedicular decompression grafting is a simple technique allowing true decompression and reconstruction of

the vertebral body with less blood loss and shorter duration than thoracoabdominal approach.

In regard to perioperative complications, in the present study 15 patients were operated upon through transpedicular approach; the complications included CSF leakage intraoperatively, superficial infection, and deep infection with hardware extraction. Out of 15 patients operated upon through thoracoabdominal approach, one was complicated by iatrogenic root injury and other by transient complications superficial infection and postoperative DVT.

Mark et al.¹⁰ retrospectively reviewed 20 patients who presented with thoracolumbar fractures in whom surgery was performed via a transpedicular approach; two patients were complicated with dural tears and CSF leakage and 2 patients with superficial wound infections. Sin et al.¹⁷ reported on one patient of splenic injury during thoracoabdominal approach in treating thoracolumbar fractures. Rod et al.¹¹ reported that vascular injury to the great vessels is a known and potentially serious complication associated with anterior spinal reconstruction. The authors found that although the incidence is relatively low, there are patients in which venous injury occurred acutely and arterial injury presented in delayed fashion.

There are some limitations in the current study that should be taken into consideration as the small sample size within each study group as well as the retrospective nature of the study. The wide range of available fixation systems and the cost disparity for different types of systems used within the two groups and within each group as well as different surgeons preferences all could have hindered the development of general conclusion of superiority of one approach over the other. The follow-up period (1 year) was also not considered long enough to assess the maintenance of the vertebral height, kyphotic angle correction, and the metallic system stability. Hence, more studies that are preferably prospective and with longer follow-up period and larger sample sizes are needed to be conducted in order to generalize a conclusion as

regards favoring the use of one approach over the other.

CONCLUSION

Thoracolumbar fractures can be managed either via anterior approach or posterior approach. We found no significant difference between anterior approach and posterior approach in terms of clinical and functional outcomes with some residual pain at the incision site of the anterior group. However, the anterior approach was found to be superior in reconstruction of body height and spinal canal with better decompression if compared to posterior approach.

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الملخص العربي

الكسور الصدرية القطنية، التدخل الجراحي الخلفي مقابل التدخل من الأمام: سلسلة حالات واستعراض الأبحاث

البيانات الخلفية: تعد كسور العمود الفقري وطرق علاجها من الموضوعات الشائكة منذ القدم في تاريخ الطب، ولقد تحولت معالجة الكسور الصدرية القطنية غير المستقرة من العلاج الأكثر تحفظًا إلى المزيد من طرائق العلاج الجراحي.

الغرض: في هذه الدراسة يتم مراجعة تقنيتين جراحتين، الطرق الأمامية والخلفية، في علاج كسور العمود الفقري الصدري القطني وذلك عن طريق النتائج الإكلينيكية والأشعة التشخيصية.

تصميم الدراسة: دراسة بأثر رجعي لحالات سريرية ومراجعة الأبحاث.

المرضى والطرق: تم إجراء دراسته بحثية على ثلاثين مريض تم تقسيمهم إلى مجموعتين: المجموعة الأولى تتضمن خمسة عشر مريضًا يعانون من كسور في العمود الفقري عند المنطقة الصدرية القطنية وقد تم إجراء التدخل الجراحي لهم من الأمام.

المجموعة الثانية تتضمن خمسة عشر مريضًا يعانون من كسور في العمود الفقري عند المنطقة الصدرية القطنية وقد تم إجراء التدخل الجراحي لهم من الخلف. وقد تم المتابعة في ٣ أشهر و ٦ أشهر وسنة واحدة بعد العملية الجراحية باستخدام تعداد التناظرية البصرية لتقييم الألم وتعداد ASIA لتقييم الحالة العصبية. تمت متابعة النتائج الإشعاعية التي تنطوي على استعادة ارتفاع العمود الفقري، وإصلاح ضيق القناة الشوكية وتصحيح تحدب العمود الفقري. تم أيضًا قياس وقت الجراحة، و معدل فقد الدم ومضاعفات الجراحة لكلا الفريقين.

النتائج: كانت الفقرة القطنية الدوالي الأكثر إصابة في حالات الدراسة حيث تأثرت في ١٠ حالات. و قد تفوق التدخل الجراحي من الخلف من حيث وقت إجراء الجراحة و كذلك معدل فقدان الدم. كذلك شهد تعداد التناظرية البصرية تحسن كبير في كلتا المجموعتين الدراسيتين مع مزيد من التحسن في المجموعة الخلفية مقارنة بالمجموعة الأمامية. وقد توصلنا من نتيجة البحث للمجموعتين أنه لا يوجد اختلاف بين المجموعتين من حيث التحسن الوظيفي العصبي و التحام الفقرات. ولكن وجد اختلاف بين المجموعتين من حيث إصلاح ضيق القناة الشوكية و ثبات نسبة التحدب في صالح المجموعة التي تم إجراء التدخل الجراحي فيها من الأمام عن المجموعة الأخرى.

الاستنتاج: يعتبر التدخل الجراحي الأمامي لكسور الفقرات القطنية الصدرية أفضل من التدخل الخلفي من حيث اتساع القناة الشوكية وثبات نسبة التحدب ولكنه يحتاج إلى مهارات جراحية وذلك لمنع حدوث مضاعفات للمريض.