ASSESSMENT OF THE OUTCOME OF LONG SEGMENT FIXATION VERSUS SHORT SEGMENT FIXATION IN TRAUMATIC DORSOLUMBAR REGION FRACTURES

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Introduction

The dorsolumbar region is regarded amongst the most critical biomechanical transition zones where the rigid thoracic kyphosis come together with the more flexible lumbar lordosis . Once it is decided that thoracolumbar junction fractures are to be treated surgically, the treatment objective (irrespective of selected method of treatment) is to fix stability of vertebral column, decompress the vertebral canal, manage the patient's pain and fasten patient mobilization . Short segment fixation was improved to have screws inserted bilaterally into the fractured vertebra. This markedly reduced the number of cases that experienced screw loosening, correction loss and screw breakage with this method. Still there is a controversy between utility of short segment versus long segment fixation as some comparative studies are with long segment fixation, and report slightly higher complication rates with short segment compared to long segment fixation. Other comparative studies are with short segment fixation and they demonstrate that long-term clinical results have no significant difference between the two methods.

Aim of the work

The aim of this study is to assess the clinical and radiological outcome of long segment versus short segment fixation in traumatic dorsolumbar region fracture.

Patients and Methods

This study was a prospective interventional study without random assignment of patients to either group. It was carried out in 42 patients with a single level dorsolumbar fracture, 15 female and 27 males with the age range from 18 to 60 years, admitted at the Spine Unit of Alexandria University Hospital and followed up over a period of 6 months.

Patient demographic data, complete history, physical and neurological exam together with visual analogue scale was meticulously recorded. Routine laboratory tests like complete blood count, blood group and cross matching, prothrombin time test, international normalized ratio in addition to liver function tests and kidney function tests were done before surgery. Each patient had preoperative X – ray, CT scan and MRI done before their respective surgeries. They also had intra-operative X – rays performed using C-arm as well as postoperative CT scans.

Results

Table (1) :Comparison between the two groups studied based on visual analog pain (VAS) score.

Visual analog pain (VAS)	Total (n = 42)	Long segment fixation (n = 24)	Short segment fixation (n = 18)
Pre-operative pain			
Min. – Max.	5.0 – 10.0	5.0 – 10.0	5.0 – 10.0
Mean ± SD.	8.20 ± 1.36	8.27 ± 1.24	8.11 ± 1.53
Median (IQR)	9.0 (8.0 – 9.0)	8.50 (8.0 – 9.0)	9.0 (8.0 – 9.0)
3 months post-operative pain			
Min. – Max.	1.0 – 6.0	1.0 – 5.50	1.0 – 6.0
Mean ± SD.	2.45 ± 1.13	2.48 ± 1.16	2.42 ± 1.11
Median (IQR)	2.0 (2.0 – 3.0)	2.0 (2.0 – 3.0)	2.0 (2.0 – 3.0)
6 months post-operative pain			
Min. – Max.	0.0 – 2.0	0.0 – 2.0	0.0 – 2.0
Mean ± SD.	1.19 ± 0.52	1.25 ± 0.53	1.11 ± 0.50
Median (IQR)	1.0 (1.0 – 1.50)	1.0 (1.0 – 2.0)	1.0 (1.0 – 1.0)

Table(2) : Comparison between the two studied groups according to complications.

Complications	Total (n = 42)		Long segment fixation (n = 24)		Short segment fixation (n = 18)	
	No.	%	No.	%	No.	%
Accidental durotomy	3	7.1	3	12.5	0	0.0
Hematoma or seroma evacuated	1	2.4	1	4.2	0	0.0
Superficial infections	2	4.8	1	4.2	1	5.6
Screw malposition	3	7.1	3	12.5	0	0.0

Table(3) :Comparison between the two studied groups according to time of return to work.

Time of return to work/activity of daily living	Total (n = 42)		Long segment fixation (n = 24)		Short segment fixation (n = 18)	
	No.	%	No.	%	No.	%
≤3 months	34	81.0	17	70.8	17	94.4
≥ 3 months	8	19.0	7	29.2	1	5.6

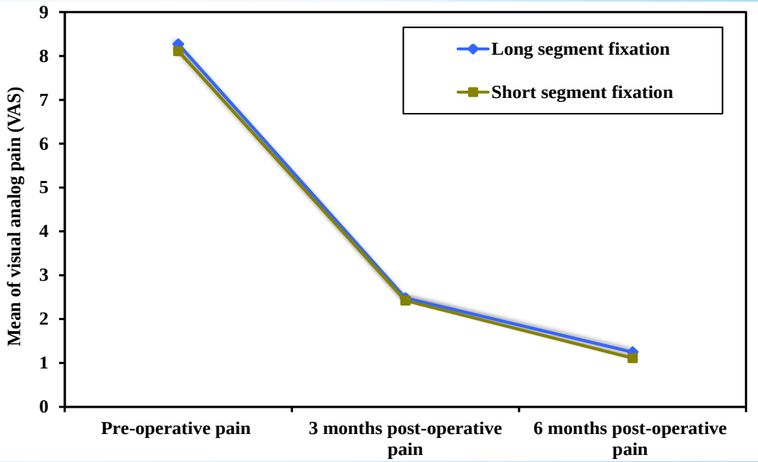

Figure (1):Line Graph showing Comparison between the two groups studied based on visual analog pain (VAS).

Post-operative radiological follow-up

There was no failure of the instrumentation system and development of kyphosis established in any of the cases from both the long segment and the short segment fixation groups within the six months of post-operative follow-up.

Conclusion

There was no significant difference in outcome between short segment fixation with instrumentation of fractured vertebra and long segment fixation as regards clinical and radiological outcome.