

RESULTS OF TREATMENT OF THORACOLUMBAR FRACTURES BY PEDICLE SCREWS (ALICI SPİNAL INSTRUMENTATION)

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ABSTRACT :

In this study, we present 48 thoracolumbar spinal fractures treated by "Alici Spinal Instrumentation" at the Department of Orthopedics and Traumatology, Karadeniz Technical University, Faculty of Medicine, between the dates October 1989 and January 1994. Our cases (32 male, 16 female, the youngest 18, the oldest 61-mean 33.2-years old) were followed up for minimum 16 and maximum 50 months (mean 30 months). Preoperative and postoperative neurological evaluation was performed according to classification of Frankel et al. The assesment of the spinal canal by CT relieved a restoration mean of 48%. We consider that the results of "Alici Interpedicular Screw" fixation system are rather satisfactory because accurate reduction of fracture is obtained by rigid fixation. Another advantage is the fixation of a short segment.

Key Words: Fracture of the Spine, Alici Spinal Instrumentation.

INTRODUCTION:

The wide use of the CT during the last 15 years, the biomechanical studies on the spinal canal and the failure of the conservative treatment has prompted the surgical approaches for the fractures of this region (1, 2, 3). A variety of fixation systems have been proposed to solve the problem.

The aim of our study is to evaluate and discuss the results we have obtained by the pedicle screws (Alici Spinal Instrumentation).

MATERIAL AND METHODS:

Between the dates October 1989 and January 1994, 48 cases with thoracolumbar fractures were treated by "Alici transpedicular fixation" in the department of Orthopedics and Traumatology, Karadeniz Technical University Faculty of Medicine.

There were 32 males (66.7%) and 16 females (33.3%), their ages ranging from 18 to 61 years (mean 33.2 years). The follow up period was minimum 16 and maximum 50 months (mean 30 months). The patients are still being followed up.

The type of factures according to Denis's classification were, 6 compression, 30 Burst, 8 luxation accompanied and 4 seat belt types (Table I).

Table I. Fracture types

Type of Fracture (Denis)	No. of Patients.
Compression	6
Burst	30
Fracture-dislocations	8
Seat Belt tipe	4
Total	48

In ten of the patinets the level of the lesion was at T₁₂, in 2 at T₁₂-L₁, in 22 at L₁, in 2 at L₁-L₂, in 6 at L₂, in 2 at L₃, in 2 at L₃₋₄ and in 2 at L₄ (Table II).

Table II. Levels of injuries

Fracture Level	No. of Patients.
T ₁₂	10
T ₁₂ -L ₁	2
L ₁	22
L ₁ -L ₂	2
L ₂	6
L ₃	2
L ₃₋₄	2
L ₄	2
TOTAL	48

The preoperative and postoperative neurological evaluation of the patients was performed according to the classification of Frankel et al. Thus, 12 of the cases were of A, 2 were of B, 8 of C and 26 were of group E (Table III).

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Table III. Neurologic Status by Frankel Grading System

Frankel Classification	Preop.	Postop.
A	18	12
B	-	2
C	6	8
D	-	2
E	24	26

To four of the patient postero-lateral decompression, to two duraplasty and to all of them posterior fusion was performed. In one of the patients, the transpedicular screw penetrated in to the interdiscal space and in two of them infection occurred. Besides these noother complication was observed. A three point support Brace was performed to the patients for an average period of three months.

RESULTS AND CONCLUSION:

The restoration of the vertebral column was evaluated by the preoperative and postoperative local kyphosis angle and spinal canal CT measurements. Mean local kyphosis angle was preoperatively 21.7° and postoperatively 9.6°. During the follow up period, there was a mean loss of 11.5° in the kyphosis angle of the patients (Table IV).

Table VI. Local Angle of Kyphosis

	Minimum A.	Maximum A.	Mean A.
Preop.	9°	48°	21.7°
Postop.	0	19°	9.6°
Last follow up	0	25°	10.2°

The spinal canal CT measurements relieved a mean narrowing of preoperatively 56.6% and postoperatively 29.3%. The mean of spinal canal restoration was found as 48.3% (Table V).

Nowadays it is generally accepted that in the treatment of the thoraco-lumbar fractures, the transpedicu-

lar screws insert to the corpus vertebra provides a more rigid and stronger fixation than the one fixed to the posterior elements, like the lamina or processus spinosus (2, 3, 4, 5, 6). As a conclusion, due to the fact that the "Alici transpedicular system" provides a strong fixation in a narrow area and because it is more economic compared to its alternatives, we think that it may find a wide use for such purposes.

Table V. The Spinal Canal CT Measurements

	Minimum Narrowing %	Maximum Narrowing %	Mean
Preop.	%6.9	%72.4	%56.6
Postop.	%0	%22.6	%8.4
Mean of Canal Restoration			%48.2

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