

THE TREATMENT BY HARRINGTON RODS OF THORACOLUMBAR FRACTURES

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From 1986 to 1990, 100 patients had open reduction and posterior stabilisation with Harrington rods for traumatic fractures. There were 73 male and 27 female. The average ages were 33 of 15 patients also had inter spinal wiring in addition to Harrington rods. All patients were rehabilitate with semiflexible TLSO for six months postoperatively.

The most frequent complication was urinary tractus infection. In spite of early mobilisation on the 14th. day 58 patients suffered from urinary infection.

Recovery of neurologic deficit in incomplete cases was better than the complete cases. Patients which had complete neurologic deficit rarely showed any improvement.

Key Words : Thoraco lomber fractures, Harrington Rod, Paraplegia

Treatment of thoracolumbar spine fractures associated with incomplete neurologic deficit is still controversial. While some centers advocated conservative treatment, because of early mobilisation and belter stabilisation open reduction and stabilisation is preferred in many centers (1,5).

For decision of stabilisation since the posterior column complex of Holdsworth or the posterior and middle column of Denis and central column fractures has a big influence. They don't always show the instability precisely (7,14).

Open reduction and posterior stabilisation by Harrington rods is widely accepted (17). Luque segmental instrumentation a combination of Harrington distraction combined with compression, Harrington distraction with segmental wiring and fusion alone and recently more stable technique such as Cottrell Dobousset, plates have also been used (4).

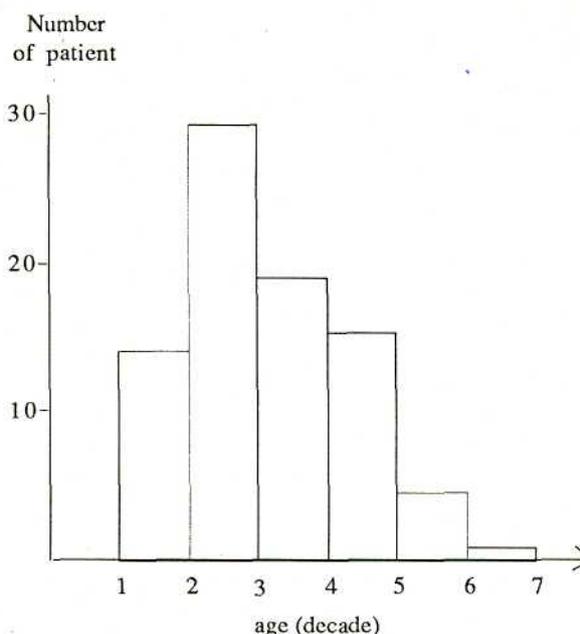
We applied Harrington rods for all traumatic fractures which needed open reduction and stabilisation also to increase the effectiveness of Harrington instrumentation. We wired the processus spinous in severe injuries.

MATERIALS AND METHODS

Between 1986-1990 in the Orthopaedy and Traumatology department of Ege University medical faculty. 100 patients with traumatic thoracolumbar fractures

and fracture-dislocations were treated operatively. There were 73 male and 27 female patients. The average ages were 33 (min: 10, max:79) (Table I). The main cause of the injuries were traffic accidents (Table II). 76 patients had one segmented fracture and 24 patients had more than one segment fractures. 27 patients had multiple extremity fracture beside the vertebral injuries. The most frequent localisation was on the thoracolumbar junction. 52 fractures were flexion-compression, 16 were burst fractures, 7 were chance fractures and 25 were fracture-dislocation. (Table III).

Table I : Relation of age-fracture incidence



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Table II : Etiology

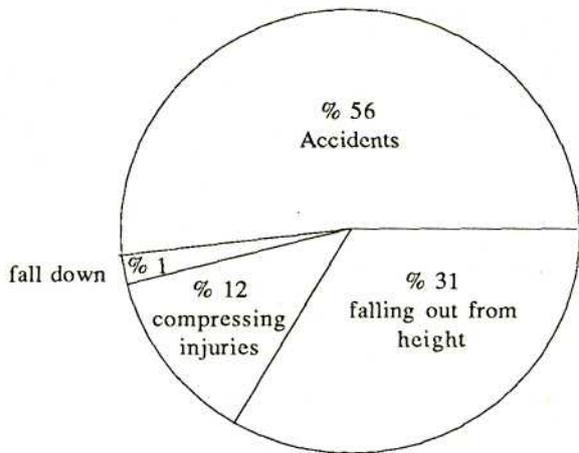
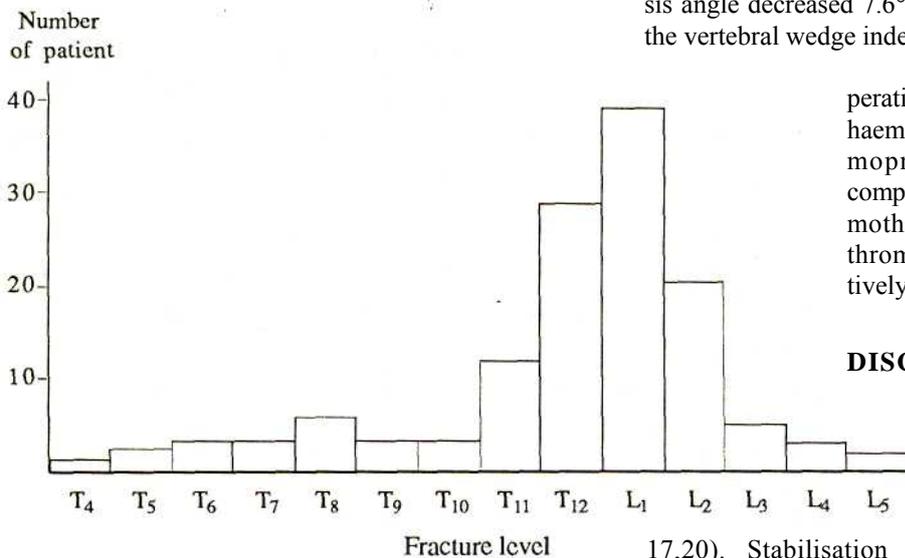


Table III : Distribution of fracture levels



In 15 cases segmental wiring was performed in addition to Harrington distraction rods. 26 patients were operated on within 12 hours of the accident. The rest of the patients were operated on between the first and seventeenth day of their admittance.

The patients were discharged or average 36 days after postoperatively (Min:1, Max: 154 days). After the second week all patients were mobilised with fleksibl thoracolumbosacral orthosis and they were worn 6 months after the injury. The rods weren't removed as a routine in follow-up, if broken rods were detected, they were removed.

RESULTS

The kyphosis, scoliosis and vertebral wedge index determined by Denis and Lauridsen criteria on preoperative, postoperative and follow-up PA and lateral X-Rays (7,16,18). The results are shown on Table IV.

Table IV : Results (Radiologic measurement)

| | Pre - op | Post - op | Follow - op |
|--------------|----------|-----------|-------------|
| Kyphosis | 17,5° | 7,12° | 9,9° |
| Scoliosis | 4,8° | 2,14° | 2° |
| Vert.W.index | 1,87° | 1,29° | 1,45° |

66 cases had neurologic deficits preoperatively and postoperatively 3 patients had healed completely. In 16 cases neurological symptoms decreased.

In the follow-up X-Rays of 32 patients the kyphosis angle decreased 7.6°, scoliosis decreased 2.8° and the vertebral wedge index from 1.87 to 1.45.

Three patients died postoperatively because of one cerebral haemorrhage and two haemopneumothorax. As a complication, 58 cases had haemothorax and 6 cases had thrombophlebitis postoperatively.

DISCUSSION

There is still controversy as to the appropriate treatment of thoracolumbar fractures (2,6,8,11,15, 17,20). Stabilisation by the Harrington rods is advocated by many authors.

We believed that the patients without neurologic deficits had stabil fractures. Because in CT and conventional X-Rays examinations since shows unstability criterias such as 50 percents collaps of corpus vertebrae, narrowing of the spinal canal by more than 50 percent, fractures of all three columns of Denis; in the preoperative period the fracture segment couldn't be determined clearly with inspection whereas, in all cases with neurologic deficits soft tissue and bone lesions in fractured segments were found. For decision we accepted neurologic deficit as a fundamental criteria for instability.

Laminectomy is suggested by some authors but we didn't performe laminectomy (3,10). In the literature the age of the injured was shown to be in the second decade (17). In our series it was in the third decade.

The most frequent segment which had been fractured was the thoracolumbar junction (7,10,13,19), in our series, it was found to be similar the frequent etiology was by traffic accidents similar to the literature.

The patients with the incomplete neurologic deficits shown recovery but we didn't see neurological recovery with complete neurological deficits. The healing of incomplete neurological lesions were not correlated with the initial severity of lesions.

Harrington rods show best results in rotation - dislocation fractures but it didn't succeed in burst fractures (17). Especially in lumbar burst fracture contr rods, rod sleeves and bone grafts showed better result. We didn't performed this techniques with bilateral Harrington rods. We obtained 0.42 point decrease in the vertebral wedge index.

The most important advantage of Harrington instrumente talion is the success in it's reconstruction of vertebral columns (17).

In our cases, the time of the operation took about 80 minutes.

Although there are more stable techniques, we prefer stabilisation techniques by Harrington instruments for treatment of thoracolumbar vertebrae fractures because the operation period is shorter, less implant are applied, this technique is cheaper than the others and when needed the implant is easier to remove.

Although these patients were mobilised in 10 days postoperatively only one of them lost his stabilisation in some of the patients which followed-up it was found that the rods were broken or twisted but there wasn't any progressive clinical find.

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