THE EARLY RESULST OF THORACOLUMBAR FRACTURES WHICH TREATED WITH TSRH SYSTEM

Şadan AY * Umut BEKTAŞ * Hakan UÇAR * Ertan MERGEN *

ABSTRACT:

Between October 1992 and June 1994, 15 patients with thoracolumbar fractures were operated with TSRH system. 11 of these cases were primary and the other 4 cases were pathologic fracture. The mean follow up was 13 months (3 - 22). 11 of these cases were men and the others 4 were women. The mean age was 43.8 years old (16 - 64).

In this study, we want to discuss the early results of the patients with thoracolumbar fractures which were operated with TSRH system.

Key Words: *Thoracolumbar fractures, surgical treatment, TSRH.*

INTRODUCTION

Thoracolumbar vertebra fractures, are serious injuries in respect to the their treatment and complications. Up to now many different treatment methods are used. By many authors, its accepted to use conservative treatment in stable fractures and surgical treatment in unstable ones. Aim of surgical treatment is; to provide the decompression of spinal canal, reduction and stabilization of fracture so that, post traumatic kyphosis, stenosis and neurological pathologies would be evaluated the result prevented.

In this study, we evaluated the results of the cases which we treated with TSRH system.

MATERIAL AND METHOD

Between October 1992 and June 1994, in the Department of Orthopaedics and Traumatology of Ankara University, Faculty of Medicine, thoracolumbar fracture cases were treated surgically with TSRH system by posterior approach. 4 of the patients were female and 11 of them male. Average age was 43.8 years (16 - 64) and average follow-up period was 13 months (3 - 22). 3 of the patients experienced a fall from height, 8 of them had a traffic accident and 4 of them were pathologic. Of the fractures 1 was at T-8, 3 were T-10, 2 were at T-11, 3 were at T-12, 4 were at L-1 and 1 had T-7, T-8, T-9, T-10 levels.

Fractures were classified according to Denis classification. Neurologic situations were evaluated according to Frankel classification. 11 of cases had burst fractures and 4 of them were type A and 7 of them were type B. The others of them were compression type fractures showing more than 50 % height loss. Neurologically 13 the patients were at Frankel E and 2 of them were at Frankel D levels.

Routinly, preoperative and postoperatif direct anteroposterior and lateral roentgenographies and preoperative CT Scanning were taken. Local kyphosis angles were measured with Cobb method. Anteroposterior diameters of spinal canal were measured by CT scans. Postoperatively patients were mobilized in avarage of 4 days (2 - 7) and use Jewett type hyperextension brace during 3 months. In respect to the level of the fracture hook-screw-rod and screw-screw,rod combinations were used.

RESULTS

Kyphosis angles were average 16.6 degrees (5-34) in the preoperative period. In the postperative period avarage kyphosis angle was 8.2 degrees (0 - 18).

In the preoperative period, the narrowing of the anteroposterior distance was 0 - 26 % in 8 cases, 25 - 50 % in 6 cases and 50 - 75 % in two cases. In those last 2 cases neurologic level was Frankel D preoperatively, but reggressed to Frankel E postoperatively.

DISCUSSION

The eyebolt three-points clamp mechanism was logically extended to attach hook or screw rigidly to a rod. The hooks are designed so that the rod can be attached from above (ie, open) for easy assembly of the construct intraoperatively. Because there is small recess on each side of the rod groove in the hook, the eyebolt can be tightened sufficiently to keep to rod

* Department of Orthopaedics and Traumatology, University of Ankara, İbn-i Sina Hospital

seated in the hook, but it is still loose enough to compression, distraction or rotation maneuvers to be performed without additional temporary implants or devices to keep the rod seated during these maneuvers.

Accurate anatomic desing of pedicle hooks maximizes their rotational stability.

TSRH bone screws for use with the spinal instrumentation system have incorporated to the design a large diameter, nonthreaded root of the screw (according to screw length requirements) to minimize stress consentration at site of great vulnerability-the junction between the shank and the rood of the screw where the rod and eyebolt mechanism attaches.

The hooks, screws and cross-links use the same locking mechanism to attach these devices to the rod and eyebolt system, the versatility of the TSRH spinal instrumentation system is perhaps it is greatest advantage over other systems. The eyebolt mechanism makes the system extremely easy to revise. The locking nut loosened, and the system can be immediately disassembled.

Aims of the surgical treatment of thoracolumbar vertebral fractures;

1) Reduction of fracture
2) Decompression of spinal canal
3) To provide a good stabilization.

More than 50 % of the thoracolumbar vertebral fractures are at between T-12 and L-2 levels. In 10 - 12 % of these cases there is also medulla spinalis injury. 8 of our cases had a fracture between T-12 and L-2 levels and 2 of them had a neurologic deficit (Frankel D). In both cases the neurologic situation were regressed to Frankel E level postoperatively.

Up to now, many different surgical techniques and systems were used in the treatment of the thoracolumbar fractures. Distraction systems, compression systems and combined systems were used. Harrington system, Locking hook spinal rod system. External fixateur, Weiss spring, Roy-Camille plates, Luque segmental sublaminar instrumentation, Hartshill system, AO spinal internal fixateur, Cotrel - Dubousset, Isola, TSRH, Alıcı Spinal system were used.

In our clinic we used Harrington, Fixateur Interne, and CD, Isola, TSRH, Alıcı spinal instrumentation systems which were developed for especially surgical treatment of scoliosis but also used in thoracolumbar fractures.

In this study we evaluated only the results of patients who were treated with TSRH system.

Although the number of patients treated with TSRH system is low, when compared with the patients treated with other systems, it's sufficient for canal decompression and stabilization.

In this study, we aimed not to compare the TSRH system with others, but to show that it is a sufficiently applicable system in the thoracolumbar fractures under the light of our findings.

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