

THE EARLY RESULTS OF KANEDA SPINAL INSTRUMENTATION

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Between February 1993 and June 1994, Kaneda anterior spinal instrumentation was applied in 11 patients in our clinic. There were 6 males and 5 females. Mean age was 42.2 ranging between 20 and 60 years. Thoracolumbar Fracture was the commonest cause. Bracing was done for the first 2 weeks postoperatively, and at the third p.o. day patients were allowed to (sit and walk) ambulate.

There was no major complication. In the early postoperative period, Kaneda instrumentation is found to be trustable support for anterior and middle columns.

Key Words: Kaneda spinal instrumentation, thoracolumbar burst fracture, vertebral tumor.

INTRODUCTION

In this study, we aimed to discuss management of the disease that attack anterior and middle column of lower thoracal and lumbar vertebrae and advantages of Kaneda Anterior spinal system.

MATERIAL and METHOD

Between February 1993 and June 1994, Kaneda anterior spinal instrumentation was applied in 11 patients. There was 6 male and 5 female patients whose mean age 42.2 (20-60) in this study. According to the pathology and localization, patients were laid down in appropriate position, and decompression, synthetic or autogenous graft and Kaneda anterior spinal instrumentation applied. After the operation we recommend lumbosacral stabilization brace and with this brace patients were allowed for mobilization after 48 hours after operation.

RESULTS

The 11 patients who applied Kaneda anterior spinal system in our series, 5 of them have thoracolumbar burst fracture. The 3 of these 5 patients had neurologic deficit Frankel A. Other 3 patients had thoracolumbar compression fractures but they are old fractures and tried to manage conservatively but in the passing time their kyphotic deformity increased and neurologic symptoms were recognized. The rest of 3 cases had tumors of this region. 2 of them were metastatic, 1 was osteoblastoma.

Although the number of cases included to our series is limited, there is not a significant complication. 3

patients who were at Frankel A neurologic level, are still under follow up and rehabilitation.

DISCUSSION

Anterior reconstruction interventions of fractures, tumors, degenerative or deformity disorders of vertebrae are getting more important since we meet more often with vertebral column and spinal cord's anterior pathologies. Tumors, either primary or metastatic, tend to invade the anterior vertebral structures because of this region is quite suitable for tumor cell's placement and multiplication. Also, it was found out that, in a traumatic injury of vertebral column the reason of neurologic deficit is usually a free fragment pressing to cord anteriorly (95 %). Conservative follow up thoracolumbar fractures will lead to neurologic problems increasingly by means of osteoporosis.

General indications of anterior approach in thoracal and lumbar regions.

- 1) To decompress the spinal canal anteriorly
- 2) To make anterior stabilization
 - a) Situations in which vertebral column loses its anterior suspension.
 - Tumors,
 - Infections,
 - Degenerative disorders,
 - Congenital disorders, and deformities.
 - b) Situations in which vertebrae loses its posterior.
 - c) Late posttraumatic kyphosis.
 - d) Kyphosis seen after laminectomy

Anterior spinal instrumentation was first applied by Dwyer and colleagues in 1964 for correction of scoliosis, using a cable and screw system. The Dwyer system provides limited stability through the compressive effects of one vertebral body against another. The flexible cable resists only the tension force, and the

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elastic connection of implants may lead to cable or screw failure with subsequent pseudoarthrosis. Furthermore, Kyphosis often develops with this type fixation. Zielke and Pellin and Zielke and colleagues modified the Dwyer system by substituting a compression rod with nuts for the cable, and a derotator was introduced to correct rotation and to prevent kyphosis.

The Zielke instrumentation system was designed for correction and stabilization of scoliosis. The Zielke system, with its small threaded rod, is not designed to withstand the compressive forces in the anterior vertebral column following hemi-corpectomy or total corpectomy of kyphosis. Hall and Micheli have reported a modification of the Dwyer system that uses a solid rod instead of the cable. Kostuik has published extensively on the anterior spinal fixation system using a Dwyer-Hall plate and Harrington distraction rod (anterior Kostuik-Harrington system) in the treatment of spinal fractures with or without anterior decompression. Slot reported a distraction system using a modified Zielke system for anterior correction of kyphosis.

Dunn reported on his original device (Dunn device) for use anteriorly in fracture of the anterior and middle column, particularly for burst fractures. Dunn's work has contributed greatly to development of anterior spinal reconstruction.

Kaneda started using his own anterior spinal fixation device (The Kaneda Device) for stabilization after anterior decompression in the treatment of thoracolumbar burst fracture with neurological deficit. The Kaneda device, when the fixation extended only one vertebral level cephalad and one level caudad to the site of corpectomy, compared favorably with the posterior instrumentations, which required incorporation of two additional motion segments. Also after corpectomy, by achieving stability with an anterior system, an additional posterior procedure is not needed. This reduced the potential morbidity that is associated with the overall treatment. Provided that use of the Kaneda device does not result in a significant reduction in stability before a solid fusion is achieved and that it is not associated with any long-term adverse related to its proximity to abdominal viscera, it may offer distinct advantages compared with other systems in stabilizing the spine after corpectomy.

Kaneda had reported the below complications related with his own system.

- 1) Pseudoarthrosis
- 2) Screw and rod breaking
- 3) Vascular and visceral complication
- 4) Neurologic complication

Kaneda anterior spinal system is a logical approach in anterior spinal canal decompression, discectomy, especially in the treatment of some spinal disorders with neurologic deficit.

Also in the late causes, it provides stability besides spinal alignment. For this reason, it is a good implant in the treatment of median and anterior column pathologies.

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