HARTSHILL FIXATION SYSTEM IN SPINAL SURGERY

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We used Hartshill fixation system in 21 cases (12 males and 9 females). Mean age was 30.5 years (range 7-81 years). Indications for surgery were vertebral fractures in 5, post laminectomy instability in 1, Pott's disease in 2, spinal tumor in 2, degenerative instability in 3, and spinal deformity in 8 cases.

Hartshill rectangles were used with sublaminar wires or pedicle screw bridges in 19 cases. In two cases pedicle screw bridges were used with Harrington distraction rods.

Mean follow-up time was 5.5 months with a range of 3 to 11 months. Results are generally entirely satisfactory. In trauma cases kyphosis angles were reduced from 14° to 3.6° scolioses were corrected from 60.2 degrees (35-100°) to 31.5 degrees (7-55°). Apical rotations were reduced from 35.8 degrees (17.2-52°) to 30.8 degrees (7.2-47°). Mean loss of correction in Cobb's angle was 3.1 degrees at the last follow-up. Complications related to implants were breakage of wires in two cases. There were no neurologic complications.

We think that Hartshill fixation system is easy and versatile that can be used in wide variety of spinal disorders.

Segmental spinal instrumentation which was popalurized by Luque is an established technique (7). In this technique two stainless steel rods are fixed to the spine with sublaminar wires. It provides rigid immobilization, but rod migration, rod overlapping and consequently loss of correction and rotational control are main disadvantages. Dove has developed a welded rectangle (Hartshill rectangle) to overcome these problems (2-5). This rectangle has better rotational control on spine than the original Luque rod. (2). Recently pedicle screw bridges have been developed to link the rectangle to pedicle screws (4).

In this report we will present our experience with Hartshill Spinal Fixation System.

MATERIAL and METHOD

We used Hatshill fixation system in 21 cases between January 1991 and March 1992. There were 12 males and 9 females. Mean age was 30.5 years (range 7-81). Indications for surgery were vertebral fractures in 5, post laminectomy instability in 1, Pott's disease in 2, spinal tumor in 2, degenerative instability in 3, and spinal deformity in 8 cases (neuromuscular scoliosis 4, idiopathic scoliosis 3, juvenile kyphosis 1).

Hartshill rectangles were used with sublaminar wires or pedicle screw bridges in 19 cases. In two cases pedicle screw bridges were used with Harrington distraction rods. Two levels above and below of the lesion were spanned by instrumentation in fracture, tumor, post laminectomy instability and tuberculosis cases.

Anterior fusion were performed as first operation in 8 cases. Of these, 2 were tuberculoısis, 2 were degenerative spondylolisthesis and 4 were deformity cases.

Patients weire mobilized without braces except juvenile kyphosis and thoracolumbar instrumentation cases. In these cases molded plastic braces were used for 3 to 4 months.

RESULTS

Mean follow-up time was 5.5 months with a range of 3 to 11 months. Results were entirely satisfactory (figure 1).

In trauma cases kyphosis angles were reduced from 14° to 3.6°. Scolioses were corrected from 60.2 degrees (35-100°) to 31.5 degrees (7-55°). Apical rotations which measured according to Alıcı method (1) were reduced from 35.8 degrees (17.2-52°) to 30.8 degrees (7.2-47°). Mean loss of correction in Cobb's angle was 3.1 degrees at the last follow-up.

There were no neurological complications. Complications related to implants were breakage of wires in two cases. There was one deep infection that did not necessitate implant removal.

DISCUSSION

Luque technique of segmental spinal instrumentation provides rigid immobilization and good correction of deformities (7). Rod migration, rod overlapping are main disadvantages. Hartshill rectangle overcomes these problems and provides better rotational control (4).

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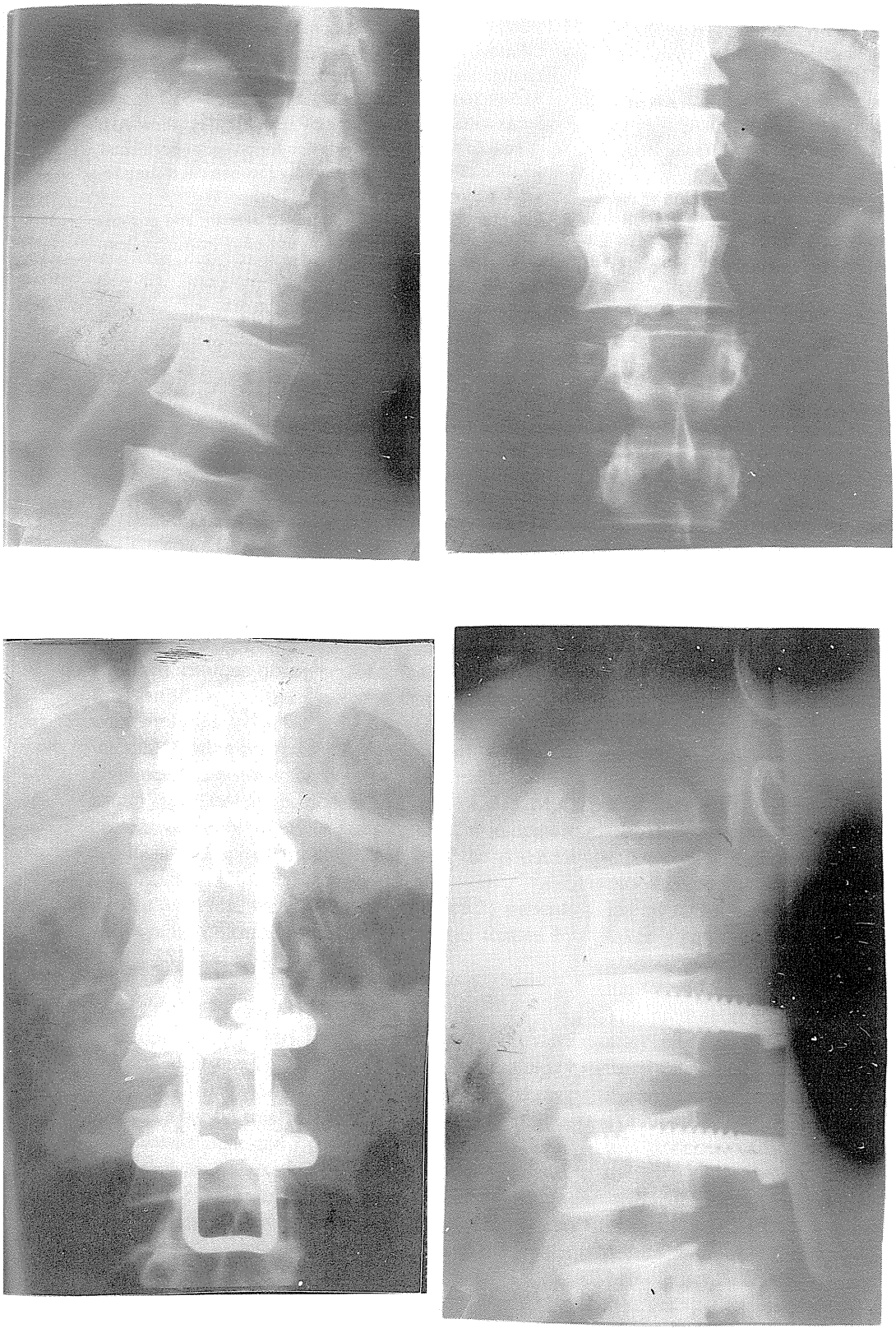
Figure 1: A fracture dislocation case. A, B) Preoperative C, D) Postoperative x-rays.



Hatshill rectangle can be used with sublaminar wires or pedicle screws. AO 6.5 mm cancellous screws are used for pedicular fixation. Screws are linked to the rectangle with pedicle screw bridges. Bridged rectangles are found to be stronger under both rotational and lateral bending forces (4, 9, 11). The bridges and sublaminar wires can be used alone or in combination. It has been reported that it is possible to achieve secure fixation taking only one level above and below of the lesion in the lumbar area (4, 11).

Hartshill rectangle can be used for many spinal disorders. The results of its usage are generally reported as satisfactory as our results (2-6, 8, 10, 11).

The rate of wire breakage in our series was found to be similar to the other reports (2-6, 8, 10, 11).

We think that Hartshill fixation system is easy and versatile that can be used in wide variety of spinal disorders.

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