

THE SURGICAL TREATMENT OF SCHEUERMANN KYPHOSIS

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Scheuermann's Kyphosis which is one of the most common seen thoracic and thoracolumbar structural kyphosis may efficiently be treated and of which progression may be stopped by conservative treatment methods. Nevertheless, pain and cosmetic appearance of deformity refer to orthopaedist to choose surgical modalities.

14 patients (8 males, 6 females) have been treated surgically between dated October 1991 and May 1994 in SSK İstanbul Hospital the 2nd Orthopaedic and Traumatology department. The average follow-up period was 17 months (6-30 months), and average age was 16.8 years (12-36 years).

Occurance of unacceptable cosmetic deformity and pain were the criterias for the surgical treatment in our series. In 9 cases the posterior instrumentation and fusion, in 3 cases the anterior release and posterior instrumentation and fusion, and in 2 cases one or two level posterior wedge osteotomy were performed.

Preoperatively, average kyphosis angle using Cobb method was 78 degrees and average postoperative correction was 38 degrees. Fusion was detected approximately within 26 weeks. More than 10 degrees correction loss was measured in the last follow-up radiographic control of 4 cases. Dislodgment of hooks which is placed in upper end vertebrae in 2 cases, and loosening and pull-out of screws in lower vertebrae in 2 cases who were operated later for revision.

The short term follow-up results showed that in skeletally immature patients, the posterior instrumentation and fusion is sufficient for surgical correction of deformity; in skeletally mature cases, since deformity is rigid, the combined anterior and posterior fusion operations should be performed. When the fusion level is selected, the problems in maintaining and preservation of correction should be kept in mind.

Key Words: *Scheuermann kyphosis, surgical treatment*

In Scheuermann kyphosis which is one of the most common seen thoracic and thoracolumbar structural kyphosis, the main treatment options are conservative methods. These are three groups, electrical stimulation, exercises and bracing (5).

If there are increasing of deformity although the bracing pain, neurological deficit development and unacceptable cosmetic appearance the surgical indication may exist.

The first publication about surgical attention have been made by Berg in 1948 and Ferguson in 1956. After Harrington instrumentation system was started to use, the first publication had the large series were made by Bradford in 1975 and Taylor in 1979 (1, 2, 9).

We intended to report the results of 14 cases who have been treated by the different methods in our department.

MATERIAL AND METHOD

The 2nd Orthopaedic and traumatology department in SSK İstanbul Hospital between dated October

1991 and May 1994, 14 cases (8 males, 6 female) were managed by surgical attention.

The youngest was 12, oldest 36 years old, average age 16.8 years and average follow-up time was 17 months (6-30 months). In 9 cases, the posterior instrumentation and fusion, 3 cases in same session anterior release + anterior fusion, posterior fusion; 2 cases posterior instrumentation and fusion operation following 1 or 2 level posterior wedge osteotomy in apex of deformity were performed. We used CD and Modified Stable Spinal Instrumentation as implant material.

Kyphosis were in Thoracic region in 13 cases (highest T-3, lowest L-2), Thoracolumbar in 1 case (T-9, L-3).

Preoperatively, the average kyphosis angle with used Cobb method was measured as 78 degrees (70-80). There was average a 12 degrees angle deformity, at the frontal projection.

EVALUATION AND RESULTS

Our cases were evaluated by Denis Work - pain scale clinically and radiologically, kyphosis correction and fusion. Of 6 cases who had serious pain preoperatively, 4 cases had had mild pain. In the last examination, in 4 of 8 cases who had preoperative no pain, there were mild to moderate pain. This pain was being

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existing at the excessive activity, but it did not affect the patient's daily life.

Postoperative kyphosis angle was 38 degrees (32-48).

Radiologically, fusion developed in average 26th week (24-36).

More than 10 degrees correction loss was established in 4 cases during early follow-up (10-28), in the other 10 cases, less than 6 degrees correction loss was seen in the last follow-up.

Postoperatively, there were no neurological deficit only 1 case had had superficial infection. This patient improved with antibiotic and local wound care. Of 4 cases, 2 cases had had the hook pull-out at the upper end vertebrae and 2 cases the pedicle screws pull-out in the lower level of fusion. Later these patients had been performed the second operation.

DISCUSSION

In Scheuermann Kyphosis, the surgical treatment indication were not described well, because the pathogenesis could not be explained as clearly as the idiopathic scoliosis, and it shows the big difference in the physiologic contour individually.

According to the committee of scoliosis investigation the curves had the degenerative changes in adults the curving increasing although bracing therapy in the adolescence and curves more than 65 degrees should be managed as surgical. The conservative methods have being sufficient in the cases who do not have these criterias (8).

It should be kept in mind that the postural and Scheuermann kyphosis are different from each other (8). The criterias about this situation have been reported by Sorenson more than 5 degrees wedging in the respectively 3 vertebrae at the apex of deformity is the pathognomic for Scheuermann kyphosis (3).

It is not discussionable that is the which stabilisation method is the best one.

Bradford et al (in 1975) have applied the posterior instrumentation and fusion with the Harrington rods in 22 cases, and they have established more than 5 degrees correction loss in 6 cases during follow-up (1).

Taylor (in 1979) had found more than 5 degrees correction decreasing during follow-up in 15 cases of them who have been treated by him with the posterior instrumentation and fusion methods (9).

According to Reinhardt, the main responsible correction decreasing factor is the fusion (4).

Sturm et al (in 1993); in the series which had 39 cases, after the posterior instrumentation and fusion,

and a average 71.8 months follow-up period have reported 6 degrees correction loss. According to these authors, the posterior instrumentation and fusion is sufficient, if there are no bridging anteriorly. Because, the compression in the posterior region tears the anterior longitudinal ligament (8).

Bradford showed the longitudinal ligaments as the high correction loss in his own series. So, he recommend combined anterior and posterior attemption and provided average 37 degrees correction (2).

Speck and Chopin (in 1986) had treated surgically the 59 Scheuermann cases. He had emphasised the necessity of the combined anterior and posterior fusion for the skeletally mature Risser 4-5 cases, he recommend the posterior instrumentation and fusion in skeletally immature Risser 3-4 (7).

Scuffleberger (in 1988) reported the average 48 degrees correction and minimal correction loss in the cases who have been treated with combined procedure (6).

We established 10-28 degrees correction loss in 4 cases in the early follow-up. In 2 cases of them, the hook pull-out in upper vertebrae and in 2 cases the pedicular screw pull-out in the lower level vertebrae at the fusion zone. We saw to fusion was short at the both upper and lower level. Of these cases, 2 cases the posterior instrumentation and fusion, 2 cases had been performed the wedge osteotomy posteriorly and posterior instrumentation + fusion.

The other 9 cases had the 40 to 58 degrees correction, and the correction loss in the last follow-up was 6 degrees.

We established that our results is harmonious with Sturm and Chopin's results. The minimal correction decreasing is explained as developing of instrumentation material.

Finally, we think that the conservative treatment is necessary in the curves less than 65 degrees, the posterior instrumentation and fusion is sufficient in the skeletally immature patients (Risser 3-4) and the combined procedure gives the best results in the mature cases (Risser 4-5). For the no correction loss, fusion should be short and along all fusion region.

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