

EGG-SHELL PROCEDURE IN THE TREATMENT OF VARIOUS SPINAL PROBLEMS

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ABSTRACT :

Egg-Shell procedure is performed in the treatment of most kyphotic deformity and some scoliosis cases. Since 1993 we performed the Egg-Shell procedure in 8 cases. Patients can be classified in 3 groups. Group 1; Kyphosis due to old tuberculosis infection. It's a sequela of spinal tuberculosis. There were 3 patients in this group. Group 2; Congenital kyphosis. 1 patient. Group 3; Failed back syndrome with epidural fibrosis and loss of lumbar lordosis. There were 4 patients in this group. Mean follow up was 20, 6 months.

Results; In group 1, all three patients were corrected in one stage posteriorly without any complication. In group 2, patient with congenital kyphosis is corrected without any complication in one stage. In group 3, four patients with severe back and leg pain due to epidural fibrosis as a result of previous operations were treated with egg-shell method. Lumbar lordosis is reestablished, and spinal cord is relaxed due to shortening of the posterior column. Patients are completely satisfied with this procedure. There were no back and leg pain post-operatively.

Conclusion; Egg-Shell method a reliable and useful method which every spinal surgeon should be aware of it. It can be used with different purposes with special indications.

Key words: Egg-Shell procedure, kyphosis, spinal tuberculosis.

INTRODUCTION

Kyphosis is one of the most important concerns of spinal surgery. Rather than a single appropriate method, treatment is individualized and based on the primary cause (10). Pott's tuberculosis is still a significant cause in the etiology of kyphosis especially in some countries (2). In the treatment of Pott's tuberculosis, although healing is almost always achieved, residual kyphosis remains as the major problem despite several different methods of treatment (2, 3, 9).

There are a lot of causes of kyphosis, like congenital, traumatic, postlaminectomy, etc (10). Additionally, Egg-Shell procedure is used in the treatment of scoliosis and mostly kyphosis, particularly congenital scoliosis with hemivertebra (6). Egg-Shell procedure is retractor system evacuation of the vertebral body, re-

secting the posterior elements and compression of upper, and lower segments to each other in correcting the kyphosis or scoliosis (5, 6).

We, here present a method which high degree curves of kyphosis and failed back patients were corrected and treated with the "Egg-Shell" procedure.

MATERIALS AND METHOD

Since 1993, Egg-Shell procedure is performed in 8 cases. Patients can be classified in 3 group according to the etiology.

Group 1: Kyphosis due to old tuberculosis infection. It is a sequela of spinal tuberculosis. There were three patients in this group. Group 2: Congenital kyphosis (1 patient). Group 3: Failed back syndrome with epidural fibrosis and loss of lumbar lordosis. There were 4 patients in this group.

Mean follow-up was 20.6 months.

All patients were operated on "Relton-Hall" frame in prone position.

Single stage posterior operation is performed in all patients where as anterior approach were performed in no patients.

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In the operation, first pedicles were found with Kirschner wires and C-Arm evaluation. Pedicles were enlarged and spongy bone was evacuated from the body. Following the evacuation, posterior wall of the vertebral body and posterior vertebral elements were excised.

In Group 1 and 2; Patients were operated with transpedicular evacuation of vertebral body and shortening of the posterior column with the help of the spinal instruments. After that posterior rigid fixation and fusion was performed. The aim of this procedure was to correct the kyphotic deformity.

In Group 3; The aim of the operation was to restore the physiologic lordosis of the lumbar spine and relaxation of tethered durae due to epidural fibrosis. There were chronic and continuous back and leg pain and restlessness in all patients.

Patients were multiply operated patients. The diagnosis of epidural fibrosis were done in all patients in the previous operations. All patients were followed at least one year with conservative treatment in the pain clinic. All patients were resistant to conservative treatment.

In all patients a good relaxation of the spinal cord and lordosis were achieved.

Egg-Shell procedure was performed in all patients just above the segment of epidural fibrosis.

A good spinal fusion was achieved in all patients in 6-8 months. Patients were mobilized with a LSO or TLSO brace in the first week.

There was no considerable complication.

In failed back patients all symptoms of dural tension were disappeared in early postoperative period. There was no recurrence in the follow up. Results were considered good or excellent.

DISCUSSION

It should be noted that postoperative residual kyphosis following simple eradication of the disease focus presents an important social and functional problem for the patient with Pott's disease (2, 3, 4). Moon (9) was the first to attract attention to this fact. He noted that hunchback patients live a secluded life; they are isolated from social activities, and their professions are mostly sedentary jobs. Up to now the following methods have been used to correct the kyphosis (9, 10).

a: One-stage operation (posterior closing wedge osteotomy according to Galvestone)

b: Two-stage operation (anterior release with bone graft, followed by posterior rodding)

c: Three-stage operation

d: Multi-stage operations (osteotomy, halopelvic device, posterior rodding and fusion)

In the lumbar region any amount of kyphosis is intolerable. It causes severe balance disturbance in sagittal plane and resultant back pain. Secondary arthritic changes follow this deformity (10).

In the kyphotic adult patient, distraction should definitely be avoided during correction. The "Egg-Shell" procedure which was described by Heinig (5) permits a satisfactory correction posteriorly. In this procedure the posterior column is shortened and the cord is slackened.

While anterior strut grafting is necessary in conventional methods, this is not necessary in the "Egg-Shell" procedure, because of the spongy bone surfaces that are compressed against each other after anterior excavation of the wedge shaped vertebrae. Upper and lower segment discectomy is not necessary (6).

Patients with epidural fibrosis are multiply operated patients. There is always kyphosis or loss of lordosis due to laminectomy (1). In addition there is tethering of the durae due to fibrosis and kyphosis increases the tension on it. We know from the literature that excision of the fibrotic tissue does not solve the problem. Recurrence above 6 months is inevitable (7, 8).

Epidural steroids and transcutaneous nerve stimulation (TENS), bracing and patient education are common used treatment methods (1). But unfortunately there is no treatment method which heals the problem completely. Therefore we have planned to perform that operation.

All patients with epidural fibrosis were followed more than six months (6-24 months) without any recurrences.

CONCLUSION

The objective of the performance of this method for the correction of different types of kyphosis is to avoid further anterior surgery which is necessary to achieve anterior fusion and to decrease the operative morbidity. This is a safe method for correction because of the lack of distraction on the spinal cord.

Egg-Shell type of posterior wedge osteotomy is useful in treating the failed back patients due to epidural fibrosis.

Despite the small number of patients, our results are encouraging.

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