Thoracic Laminoplasty Using Spinous Processes
—Technical Note—

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Abstract

A simple method of thoracic laminoplasty using spinous processes is described. The procedure involves reshaping the spinous processes which have been removed during laminectomy and suturing these back into position to provide a cover for the dura. The procedure was carried out in five patients with good results. Laminoplasty using spinous processes appears to be a simple and safe alternative, using otherwise discarded tissue and requiring no sophisticated instrumentation, prosthetic material, or technically complex maneuvers.

Key words: laminoplasty, spinous process, thoracic spine

Introduction

Laminoplasty is usually advocated to prevent postoperative instability and deformity, and to avoid local scarring. The exact usefulness of this procedure has occasionally been challenged, but laminoplasty has recently found increasing favor. Various methods of laminoplasty have been described and successfully used. Laminoplasty at the cervical level has been more frequently performed than at the thoracic or lumbar levels. Indications for laminoplasty in the thoracic spine are further limited as the rib cage provides good stabilization, so laminectomy will not create instability unless coupled with a destructive process in the vertebral bone or pedicle.

We describe a laminoplasty procedure with spinous processes following thoracic spinal surgery.

Materials and Methods

Thoracic laminoplasty was performed using spinous processes in five patients, three males and two females aged from 23 to 34 years. Two of these patients were treated by syringostomy and the other three had spinal tumors. Laminoplasty was performed for two levels in three patients, three levels in one, and four levels in one.

The procedure is clearly shown in the line drawings (Fig. 1). The spinous processes were cut at the base using a regular laminectomy bone cutting instrument. To obtain a longer length of the spinous
process, the laminectomy may be done adjacent to the spinous process, so preserving a larger segment of its base. After termination of the operation, the spinous processes at two levels were placed side by side after adequate shaping with a micro-drill. The spinous processes were then attached to one another and to the edges of the laminectomy with silk sutures. For laminoplasty of three or more levels, the lamina is shaped by appropriately placing the spinous processes against each other (Fig. 2).

**Results**

The follow-up period in these patients ranged from 3 to 18 months. Radiography demonstrated persistence of the spinous process segments in all patients. Three-dimensional computed tomography (CT) performed 3 months after surgery in one patient showed the spinous processes were fused together (Fig. 3).

**Discussion**

Most described procedures for laminoplasty using local bone recommend linear cuts made over the laminae on both sides using a micro-drill, then removal of the spinous process and lamina complex in one piece and replacement at the end of the operation. Acrylic and ceramic cement has been used.\(^1\)\(^2\) We calculated the dimensions of the spinous processes and laminae from dry bone specimens and averaged with the data available, showing that the alignment of the spinous processes as described is suitably broad and long to form a flat posterior element.\(^7\) After adequate molding of the spinous processes, a similar laminoplasty could be performed in the lumbar spine. The principal advantage of this procedure is that it is technically simple, safe, and quick to perform. Moreover, the procedure makes use of tissue which is otherwise disposed of.

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**References**

Commentary

Although various methods of laminoplasty especially in the cervical spine are widely used these days, Dr. Atul Goel has reported an ingenious idea and an excellent alternative method in thoracic laminoplasty, using prominent spinous processes which would otherwise be discarded.

As mentioned, this rather simple procedure can be performed easily even by less experienced surgeons without the need for expensive instruments or complex technology and will be of great help in avoiding scar formation and establishing reasonable stability.

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