ABSTRACT

We report 2 cases of transforaminal lumbar interbody fusion for failed Graf ligamentoplasty. Both patients had residual or recurrent low back pain and leg pain after Graf ligamentoplasty, caused by lumbar segmental instability or narrowing of their intervertebral foramen. The pain improved markedly after the revision surgery. We recommend transforaminal lumbar interbody fusion for failed Graf ligamentoplasty, as it provides rigid interbody bony fusion and obviates complete exposure of the dural sac or dural tube.

Key words: lumbar vertebrae; lumbosacral region; reoperation; spinal fusion

INTRODUCTION

The Graf system is a device used to restrict intersegmental motion of the lumbar spine in flexion, thus re-establishing lumbar lordosis and preventing disc degeneration. It has good early results, but mid- or long-term complications including radicular pain, screw breakage, and sensory deficits have been reported. Revision surgery for failed Graf ligamentoplasty includes posterolateral fusion, anterior spinal fusion, and posterior lumbar interbody fusion (PLIF). We report 2 patients who underwent transforaminal lumbar interbody fusions (TLIF) after failed Graf ligamentoplasties.

CASE REPORTS

Case 1

In September 2004, a 46-year-old woman presented with low back pain and left leg pain when walking, and sensory disturbances in both feet. She had no other neurological deficits or muscle weaknesses. When she was in a decubitus position or using a frame corset, the leg pain disappeared but the numbness remained in both feet.
In 1996, she underwent disectomy for L4/5 lumbar disc herniation. In December 2003, she underwent a L5/S1 PLIF and L4/5 Graf ligamentoplasty to avoid adjacent disc degeneration for L5/S1 disc herniation. The pain improved but the numbness remained.

Plain radiography showed excellent bony fusion at L5/S1 with no loosening or malposition of the pedicle screws (Fig. a) and slight narrowing of the L4/5 disc space with no instability. No dural or root compression was visible on magnetic resonance imaging.

In May 2005, the Graf system was removed and an L4/5 TLIF performed. Postoperative radiography showed an increase in the intervertebral space by 2 mm and unchanged alignment of the lumbar spine (Fig. b). At the 3-year follow-up, the pain had disappeared, but her feet remained numb.

Case 2

In January 2002, a 40-year-old man presented with pain in the lower back and left thigh. The pain was reduced when he wore a frame corset.

In 2000, he underwent an L4 and L5 laminectomy with a Graf ligamentoplasty at L3/4 and L4/5 for lumbar spinal canal stenosis and disc degeneration. The pain was relieved, but recurred 2 year later, secondary to progressive arthritis.

Plain radiography showed no evidence of screw loosening or rupture of the artificial ligaments. The L4/5 disc height was markedly reduced. Computed tomography revealed that an osteophyte at the left L4 pedicle was compressing the nerve root.

In May 2002, he underwent removal of the Graf system and osteophyte, and an L3/4, L4/5 TLIF via a left extreme lateral approach. He was pain-free at the 5-year follow-up.

DISCUSSION

Graf ligamentoplasty involves stabilisation of the lumbar spinal segments without fusion, constraining each motion segment in maximum extension. It is used to provide a firm but flexible posterior constraint to restore lumbar lordosis and stabilise the facet joints in extension, and avoids adjacent disc problems.

The spinal instability seen in radiographs does not always correlate with clinical symptoms. Clinical symptoms of lumbar instability are not always associated with abnormal movements seen on flexion-extension radiographs. There are few methods available for functionally diagnosing lumbar instability. It is important to examine patients with instability both radiologically and clinically.

In our patients, instability was suggested clinically despite no radiographic evidence of instability, as the pain was reduced by fitting the patients with frame corsets and placed them in a decubitus position. The pain disappeared after TLIF, suggesting that alteration of the intervertebral space led to passive foraminal decompression, or that the circumferential fusion stabilised the affected segments and thus improved the symptoms.

Spinal instability is a cause of low back pain and leg pain, and spinal fusion can stabilise the spine and improve these symptoms. TLIF achieves interbody fusion via the posterior approach; it enables wide lateral insertion of interbody spacers and graft bone and obviates the need to explore the dural tube. This procedure has an advantage over PLIF in patients with previous posterior lumbar surgery. We recommend TLIF over PLIF because of the excessive root retraction and unnecessary bone and soft tissue resection required during a PLIF.
REFERENCES


