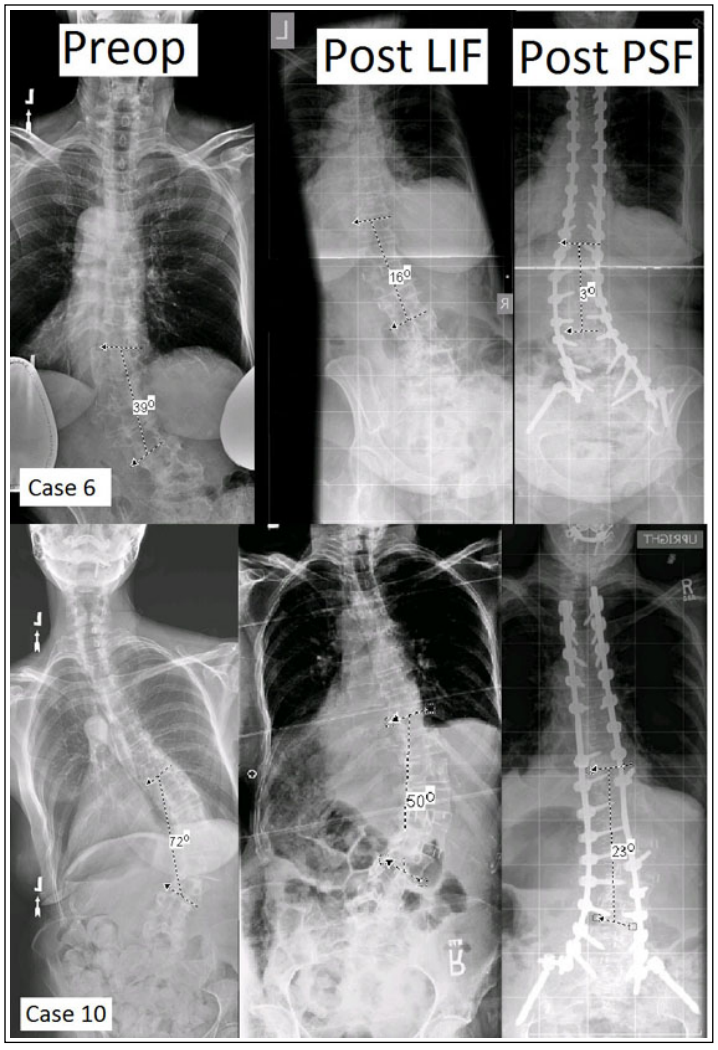
The Utility and Limitations of XLIF for Adult Scoliosis

Sassan Keshavarzi MD; Christopher P. Ames MD; Gregory Mundis MD; Behrooz A. Akbarnia MD; Vedat Deviren MD
University of California, San Francisco, CA, USA
San Diego Center for Spinal Disorders, La Jolla, CA, USA

CONGRESS OF NEUROLOGICAL SURGEONS
2011 ANNUAL MEETING
WASHINGTON, DC
OCTOBER 1-6, 2011

Introduction

Minimally invasive lateral retroperitoneal transpsoas interbody fusion (LIF) is a surgical approach that is gaining popularity both as a standalone and in conjunction with other surgical techniques to treat adult degenerative scoliosis. It has been shown to minimize tissue destruction, blood loss and length of hospital stay. The technique and degree of correction accomplished by this approach has not been described.



Results

Two hundred and one patients underwent LIF and 26 patients matched the inclusion criteria. The mean age for the 26 patients was 64 years (range 37-80 years). The mean preoperative curve magnitude was 47.7°, which improved to 28.0° (mean correction of 42.8%) post-LIF and to 13.1° (mean correction of 31.2%), after the second stage. The final mean curve magnitude was 13.1°, for a total mean correction of 34.6° and 73.8%. The preoperative mean L1-L5 lordosis was 32.4° and post LIF it was 49.1°, with a mean increase of 16.6 °. Nineteen of the twenty-six patients had worsening coronal balance after LIF and prior to posterior instrumented fusion. The coronal balance consistently shifted to the side of the convexity in all patients with a 1cm or greater shift in balance. Eight patients had severe decompensation ranging from 3cm to 6.4cm. Fifteen of the nineteen patients with post LIF decompensation of their coronal balance had a partial correction after the second stage of surgery. Mean back pain VAS improved from 7.4 to 2.9 with a mean improvement of 4.5.

Conclusions

Interbody fusion through a minimally invasive retroperitoneal transpsoas approach is a powerful procedure to release the anterior and middle columns, and improve lordosis, major curve and coronal balance. Unlike the adolescent patients, adult deformity patients have a rigid fractional lumbosacral curve that does not spontaneously correct with the major curve. Hence, major curve correction may lead to coronal decompensation on a subset of patients with rigid fractional curves as demonstrated in this series. Although this decompensation can be corrected during the second stage, the authors recommend weight bearing scoliosis x-rays to evaluate these patients between stages and inform the patients of the possibility of coronal decompensation following LIF.

Methods

Patients who underwent a minimally invasive retroperitoneal transpsoas interbody fusion at our institution between 2006 and 2009 were reviewed. Inclusion criteria were having full length standing scoliosis radiographs preoperatively, after LIF with interbody grafting and after open posterior spinal fusion. All patients were approached on the concavity for efficiency of access. Clinical outcome, complications and radiographic findings were reported. Visual Analog Scale (VAS) for leg and back pain as well as Oswestry Disability Index Scores were utilized to evaluate patients' clinical status.