

Available online at [www.sciencedirect.com](http://www.sciencedirect.com)

ScienceDirect

journal homepage: <http://www.elsevier.com/locate/poamed>

## Original Research Article

# Stand-alone XLIF: 22 consecutive patients with degenerative scoliosis and foraminal stenosis in a 2-year follow-up



Emil Jesper Hansen \*, Ane Simony, Stefan Hummel, Carsten Ernst, Mikkel Osterheden Andersen

Sector for Spine Surgery and Research, Middelfart Hospital, Denmark

## ARTICLE INFO

## Article history:

Received 2 September 2014

Received in revised form

21 October 2014

Accepted 9 March 2015

Available online 20 April 2015

## Keywords:

XLIF

Degenerative scoliosis

Spine surgery

Pain

## ABSTRACT

**Introduction:** Adult thoracolumbar degeneration is an increasing challenge in the aging population. With age the progressive degeneration of the discs leads to an asymmetric collapse and a thoracolumbar coronal plane deformity, a degenerative scoliosis (DS).

**Aim:** To evaluate the complication rate and clinical/radiological results in 22 patients treated with XLIF procedure for DS or degenerative disc disease (DDD).

**Material and methods:** 22 consecutive patients with DS underwent surgery with the XLIF stand-alone procedure, with follow-up of 24 months. Clinical outcome scores were collected. Complications were recorded.

**Results and discussion:** 22 patients, mean age of 65 years (48–81), underwent surgery on 49 levels (1–4) between L1 and L5. VAS for leg pain improved from 5.94 to 3.5 ( $P < 0.05$ ) and back pain from 5.91 to 3.7 ( $P < 0.05$ ). EQ 5D-3L improved from 0.29 to 0.62 ( $P < 0.05$ ). Seven patients (31.8%) underwent revision surgery. Fusion was achieved in 53% (25/49) at 1-year follow-up. Anterior thigh pain was reported in 12 patients postoperatively, and in 2 patients at 1-year follow-up.

**Conclusions:** The XLIF stand-alone procedure improves clinical outcome scores significantly after 1- and 2-year follow-up, with a 31.8% revision rate. Due to the high revision rate we recommend supplementary posterior instrumentation, to achieve a higher fusion rate. When considering XLIF-stand-alone procedure for DS or DDD without supplemental posterior instrumentation, only single-level disease should be advised, taking sagittal parameters into account.

© 2015 Warmińsko-Mazurska Izba Lekarska w Olsztynie. Published by Elsevier Sp. z o.o. All rights reserved.

\* Correspondence to: Sector for Spine Surgery and Research, Middelfart Hospital, Østre Hougvej 55, Middelfart 5500, Denmark.

Tel.: +45 22 13 67 20; fax: +45 63 48 42 81.

E-mail address: [emiljh@mail.dk](mailto:emiljh@mail.dk) (E.J. Hansen).

---

## 1. Introduction

Adult thoracolumbar degeneration is an increasing challenge in the aging population. With age the progressive degeneration of the discs leads to an asymmetric collapse and a thoracolumbar coronal plane deformity, a degenerative scoliosis (DS).<sup>1</sup>

DS in the aging population is a surgically demanding problem since the patients are suffering from chronic back pain, neurogenic symptoms and a loss of body control which lead to poor balance in both standing and walking positions. The cumulative incidence of DS has in a recent study from Japan been estimated to be 17%, predominantly in females, and increasing with age.<sup>2</sup>

Previously the surgical solution to this problem was posterior spinal fusion with pedicle screws and a correction of the sagittal balance, with different osteotomy techniques combined with anterior support. The patients in this age group are vulnerable, suffers from osteoporosis and medical multimorbidities which often lead to severe bleeding during the surgery and a high risk of complications and reoperations.

The introduction of the XLIF procedure, with an extreme lateral approach through the psoas muscle to the concave side of the spine, was an attractive alternative to more extensive fusion techniques used previously on patients with DS. The advantages are described as promising, the reported risk of bleeding is limited, the procedure is relatively short and the reported hospital stay is shorter than with traditional techniques.<sup>3,4</sup>

The concept with a large footprint cage in the disk space should provide a stable construction that allows the load forces to be spread over the entire endplate and the surgeon achieves an indirect decompression of the foraminal space after insertion of the cage. The cages are provided in different sizes and angulations, which allow the surgeon to correct the coronal deformity, during the procedure. This novel technique was first introduced in 2006.

In an attempt to solve a major surgical challenge in treating patients with DS, this technique was introduced in February 2011 in the Sector for Spine Surgery and Research in Middelfart.

In total 22 patients were treated with this procedure for DS. This is a case series with the results of our first 22 patients treated with the XLIF procedure, after 2-year follow-up.

---

## 2. Aim

The purpose of this study is to evaluate the complication rate and clinical/radiological results in 22 patients treated with XLIF procedure for DS or degenerative disk disease.

---

## 3. Material and methods

### 3.1. Study design

The study is a case study of patients with adult DS treated by a total of 4 surgeons at a single surgical center. During the study

period, 22 consecutive patients underwent XLIF stand-alone procedure. Validated clinical outcome scores, X-rays and/or CT-scan were obtained preoperatively and at 1-year follow-up. Complications were recorded.

### 3.2. Subjects

The study group (22 patients) was followed for 2 years. Inclusion criteria were back pain and/or symptoms of foraminal stenosis according to MRI, and DS detected on standing X-rays. The patients were included if traditional decompression surgery was not sufficient, or if conservative treatment had failed. Exclusion from the study was prior spinal fusion surgery, instrumented or uninstrumented, history of malignancy or motor-weakness in the lower extremities.

### 3.3. Surgical technique

Patients were placed on the operating table in a true lateral decubitus position, and the surgical table was flexed to increase the distance between the lower ribs and the iliac crest. The patient's legs were placed on top of each other, with the hips and knees flexed, to achieve relaxation of the psoas muscle. Under fluoroscopic guidance, the levels were marked before the skin incision was made and the spine was always approached from the concave side of the scoliosis. The retroperitoneal space was reached, after a blunt dissection through the border between the erector spinae muscles and the abdominal oblique muscles, without perforating the peritoneum. When passing through the psoas muscle nerve monitoring was performed, to avoid damage to the lumbar nervus plexus, and a dilator was used to minimize the damage to the muscles. When the disk level was reached, the dilator was placed and removal of the disk was performed. The posterior structures were left intact, and a spreader was used to ensure space mobility for the implant. The cage was prepared with bone allograft, and inserted in the disk space. No bone enhancing products were used in this study. After placement of cage, X-rays were taken, before the insertion was closed. No drains were required in our 22 patients. A total of 49 levels from L1 to L5 (range 1-4 levels) were treated with the XLIF procedure.

### 3.4. Clinical outcome scores

Validated clinical outcome scores were collected preoperatively, at 12- and 24-months follow-up. EQ 5D-3L and visual analog score (VAS) for back and leg pain were obtained. Complications during surgery were recorded. During follow up osseous fusion and subsidence were assessed at the 12-month follow-up on X-rays and/or CT-scan.

### 3.5. Statistical analysis

Patient demographics and treatment variables were characterized with frequency statistics. Clinical outcome scores were evaluated with paired t-tests as the data were normally distributed. We used STATA version 13 as the statistical analysis tool. Results are presented in box-and-whisker plots. Statistical significance was defined as  $P < 0.05$ .

Download English Version:

<https://daneshyari.com/en/article/2680573>

Download Persian Version:

<https://daneshyari.com/article/2680573>

[Daneshyari.com](https://daneshyari.com)