The Use of “Flexible” Bars with Pedicle Screw Fixation for the Surgical Treatment of Lumbar Degenerative Diseases

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Starting Point

The elimination of motion produced by spinal fusion may have consequences:

1. overloading juxtaposed spinal motion segments (**functional consequences**);
2. leading to degenerative changes at adjacent levels (**organic consequences**).

Background

Adjacent segments degenerative disease to instrumented levels has sparked increasing interest over the last years.

For minimizing degenerative disc changes at segments adjacent to fused levels several techniques have been developed, including **pedicle screw fixation with flexible bars** (*semi-rigid dynamic rods*).

Ouf "flexible" series

30 cases (10/2009 - 7/2013)

12 segmental instability with LBP
11 severe lumbar stenosis
3 stenosis with instability
3 A1-A2 lumbar fractures (associated to degenerative disease)
1 mild listhesis with instability

Learning Objectives

Try to reduce the lumbar degenerative adjacent disease

Osteoporosis

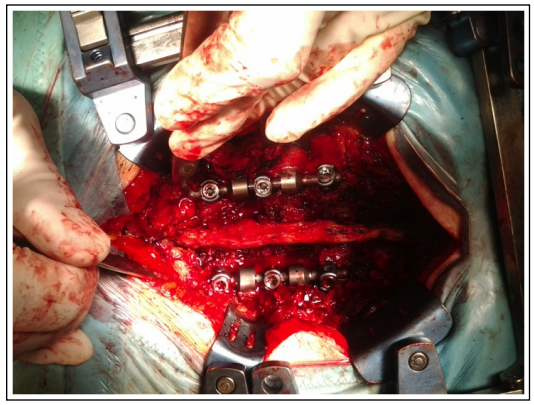
The incidence of screw loosening increases significantly in patients with T-score < -2,5.

Biomechanical tests have shown that pedicle screws expanding within the vertebral body can substantially improve fixation in the presence of osteoporosis.

Technique in 12 osteoporotics

- decompression: laminectomy and/or foraminotomy
(except for the fractures)
- two or three-level stabilization with

expandable pedicular screws (Osseoscrew)
&
semi-rigid dynamic rods (Isobar Evolution) (Scient'x-Alphatec)



Technique in 18 non-osteoporotics

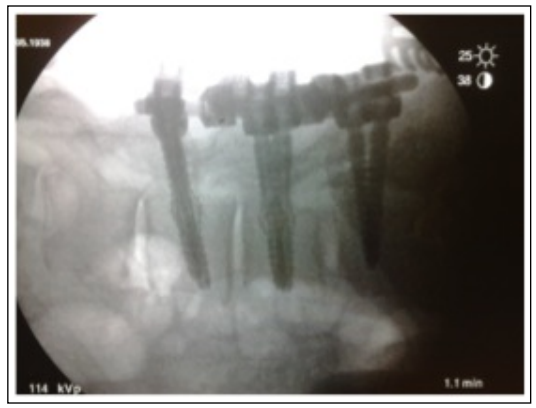
- decompression: laminectomy and/or foraminotomy (except for the fracture)
- two or three-level stabilization with

pedicular screws & **semi-rigid dynamic rods**

(Blackstone, Scient’x-Alphatec, Spinevision)

Complications

Three cases of incidental CSF leakage (unrelated to the devices), in patients with severe stenosis and lysthesis, healed after prolonged subfascial drainage



Final consideration

The raise of intradiscal pressure at the adjacent levels consecutive to a rigid instrumented segment can be reduced when the fixation is augmented with a flexible stabilization device, using semi-rigid dynamic rods.

“**Less *(rigid)* is more**”…