Vertebrectomy and Reconstruction of Vertebral Body using an Expandable Cage via Single Posterior Approach:

A Retrospective Analysis of 20 Thoracolumbar Spine Burst Fractures

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Vertebral Body Reconstruction (VBR)

- Several surgical strategies for reconstruction of the anterior column of the T-Lx spine in spinal trauma, tumor, and infection:
  - Strut Grafts from rib or iliac crest: increased morbidity & complications at the donor site
  - VBR with Meshed Cage: the size cannot be adjusted
  - Additional Lateral Plate/Rod System: Z-Plate, Kaneda, etc.

  ➔ still remains controversial!

- Expandable cage for VBR in the thoracolumbar spine has several advantages over other non-expandable implants.
Patients Population

- 20 vertebral bodies reconstructed in 20 burst Fx during May 2009 – Aug 2010
- 13 males + 7 females
- Lesion level: T12 – L5
- Age: 29 – 72 Yr (Avg 50.0)
- F/up period: 13 – 27 Mos (Avg 20.3 Mos)
Surgical Indications and Procedures

- **Burst Fx:** 20
  - Thoracic spine 1
  - Lumbar spine 19

- Single level Vertebral Body Reconstruction (VBR) through the Transpedicular route using a Synex™ Expandable Cage (Synthes; Stratec Medical, Oberdorf, Switzerland)

- No Sacrifice of Nerve Root!
Initial Neurologic Status according to Frankel Scale

- Grade E (15 pts, 75.0%)
- Grade D (1 pt, 5%)
- Grade C (4 pts, 20.0%)
Clinical Outcome according to Frankel Classification

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<th>B or A</th>
<th>C</th>
<th>D</th>
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Stability (17): 85.0%, Improvement (3): 15.0%, Worsening: 0%
Surgical Results

• Single-level Vertebrectomy in 20 burst Fx at T12 – L5

• No neurological deterioration after surgery in Frankel Classification.

• Surgery-related Complications: Intraop dural tearing in 2 pts
  • Cage retropulsion/implant failure/other implant-related Cx: 0

  • Cage subsidence: 1 in a severe osteoporotic pt (T= -4.3)
  • Reduction of kyphotic deformity: well accomplished in all pts
  • Failure of correction or reduction: negligible

• Avg operation time: 446 min (330 - 555 min)
• Avg blood loss: 3,300 cc (500 - 6,000 cc)
L4 Burst Fracture

Park GS (M/62)
C/C: Back Pain (Fall down)
Single Posterior Approach, Pedicle Screw Fixation L3, 5, Corpectomy L4, VBR with Synex™ Expandable Cage.
Complications

dural tearing: 2 patients (10.0%) → Simple Repair

cage subsidence: 1 patient w/ severe osteoporosis (T= -4.3)

neural injury: 0

intractable bleeding: 0

hardware displacement: 0

implant failure/other implant-related Cx: 0

infection: 0

reoperation: 0
Conclusions

Vertebral Body Reconstruction (VBR) using Synex™ Expandable Cage via Single Posterior Approach

- **Stable**: the in situ expansion of the implant offers a tight press-fit of the end plates of the vertebrae to Synex

- Relatively safe and easy to manage

- Offers an immediate & strong stability of the spine to the patient.

- A recommendable option for VBR in T-Lx spine burst fractures
  
  “without” additional skin incision or sacrifice of nerve root!

- Clinical and Radiological outcomes appear very promising.
Disclosure

None of the Authors Has Any Potential Conflict of Interest.