

### Introduction

The incidence of screw loosening increases significantly in elderly patients with severe osteoporosis. We investigated the clinical efficacy of expandable pedicle screws, standard pedicle screws augmented with PMMA and standard pedicle screws after osteoporotic vertebral fractures.

### Methods

Fifty-six consecutive patients with posterior fusion using pedicle screws after osteoporotic vertebral fractures were included in the study. Patients were divided in three groups : those with posterior fusion with titanium expandable screws (Osseoscrew, Scient'x- Alphatec) (group E), those with standard pedicle screws augmented with PMMA (group C), and those without PMMA augmentation (group NC).

Pre-operative DEXA BMD examination showed a mean T-score of -3.2. Patients were observed for a minimum of 24 months. Outcome measures included screw loosening, Visual Analogue Scale, Oswestry Disability Index, and complications.

### Conclusions

Expandable pedicle screws can decrease the risk of screw loosening and achieve better fixation strength and clinical results in osteoporotic spinal fusion. Long term f.u. studies are needed to compare expandable screws and reinforcement of screws with PMMA in poor bone quality spine.

### Results

With the exception of osteoporotic status, there were no significant differences in the baseline status between the three groups. Twenty-four months after surgery, the VAS and ODI were markedly improved in the E and C groups. There were no complications related to the PMMA in the cement group and to the expansion in the expandable screws group. At 12 and 24 months follow-up, there were no instances of screw loosening or pull-out, and the screw-bone interface was good in the E and C group. On plain radiographs and spinal CT, there were no signs of radiolucency around the pedicle screws (group E) while the incidence of clear zones around the screws in the NC group was higher. Dynamic x-rays, revealed non- motion of the screws and no movement between the fused vertebral segments in the E and C groups. Implant failure occurred in one patient of NC group.

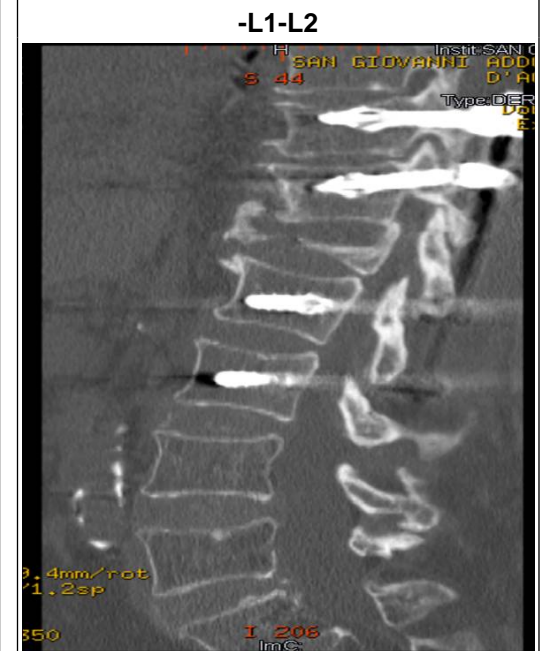
### T12 Fracture



### Learning Objectives

By the conclusion of this session, participants should be able to describe the importance of the selection of the appropriate screw fixation system (expandable screw, screw augmented with cement, screw without cement) for the treatment of osteoporotic spinal fracture, and identify and choose the most appropriate fixation treatment in osteoporotic patients

### Posterior fixation with Expandable pedicle screws (Osseoscrew) at T10-T11



### Spinal CT showing the expansion of the screws inside the vertebral body

