Titanium expandable pedicle screws for the treatment of ostoporotic thoraco-lumbar spinal diseases: a clinical study.

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Introduction

Osteoporosis is a major global health problem. Due to increasing life expectancy, the number of elderly patients with osteoporosis affected by degenerative and traumatic spinal diseases will increase even further. Low bone quality can reduce the strength of pedicle screw and negative bone remodelling can cause delayed bone fusion. Pedicle screw instrumentation of the osteoporotic spine carries an increased risk of screw loosening, pull-out and fixation failure.
Our study aims to investigate the efficiency of expandable pedicle screws in the treatment of thoraco-lumbar spinal diseases in osteoporotic patients.

Methods

This is a prospective study. All osteoporotic patients with degenerative and traumatic spinal diseases performed a preoperative spinal X-Ray and MRI or CT. Preoperative clinical assessment of patients were based on VAS scale and ODI questionnaire.
46 patients were treated with expandable pedicle screws performing open or percutaneous approach.Post-operative clinical and radiological assessment of patients were based on VAS and ODI scale questionnaire and CT and X-Ray respectively at 6 months and 1 year follow-up.

T12 fracture

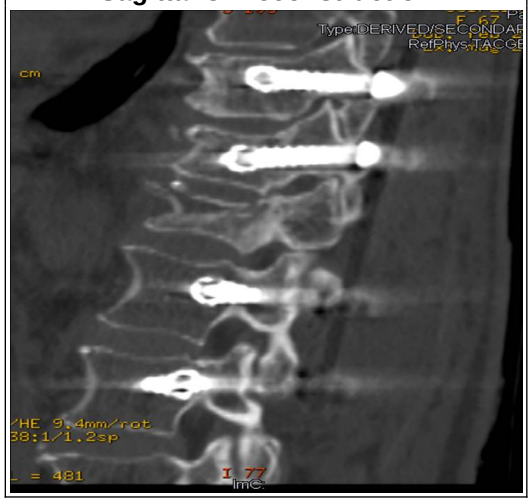
Results

46 patients, mean age 68 y.o. Levels treated: 11 lumbosacral , 19 lumbar and 16 thoracolumbar. Mean Preoperative VAS 86.There was no failure of the device, all the screws expanded in the vertebral body. Mean postoperative VAS 34. Complications: we had three cases of CSF leak not related to the implant, one treated with lumbar drain for five days, the latter two with CSF tapping. In one case extension of the posterior fixation at the lower lumbar level was performed 1 year after first surgery secondary to disc degeneration at the adjacent segment.

Conclusions

Expandable pedicle screws may improve pullout strength as compared to standard pedicle screws in osteoporotic patients with degenerative and traumatic spinal diseases.

Osseoscrew Fixation (T10-T11-L1-L2) Sagittal CT reconstruction



Learning Objectives

By the conclusion of this session, the

partecipants should be able to

describe the importance of

expandable pedicle screws in

decreasing the risk of screw

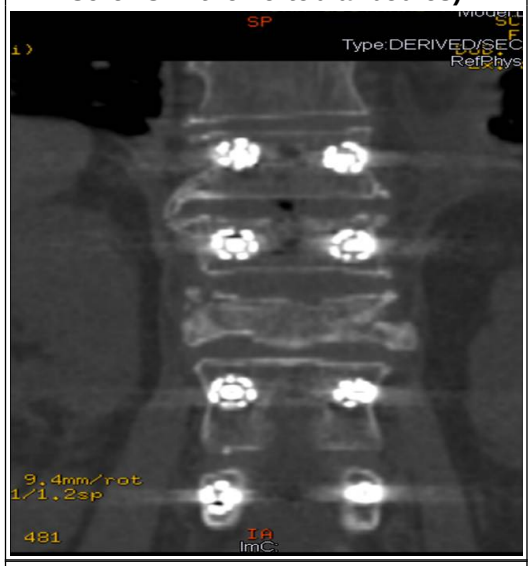
loosening, achieving better fixation

strength in osteoporotic spinal fusion.

References

Gazzeri R, Roperto R, Fiore C.Titanium expandable pedicle screw for the treatment of degenerative and traumatic spinal diseases in osteoporotic patients: preliminary experience.Surg Technol Int. 2012 Dec;22:320-5.

Coronal CT scan (expansion of the screws in the vertebral bodies)



Axial View of the expandable screws in thoracic vertebra