

## Introduction:

Incomplete burst fracture (A3.1) of the thoracolumbar junction have always been and still are fractures, whose treatment has been discussed controversially. Conservative therapy represents a viable alternative to different surgical options. Even though surgery is preferred and strongly encouraged nowadays, a standardized surgical approach is not yet established.



## Materials and Methods:

Retrospective Analysis of 90 patients (39 female, 51 male, age between 28 and 73 years) with a traumatic incomplete burst fracture of the thoracolumbar junction (thoracic vertebral body 11 to lumbar vertebral body 2). Osteoporotic fractures were excluded. 70 out of 90 patients were treated by two-stage dorsoventral surgery. Patients having no considerable disc involvement in MRI (12 patients) were treated by a pure dorsal procedure (fixateur interne only). Only patients, who refused an operation, were treated conservatively (8 patients). The bisegmental Cobb-angle was evaluated initially and after 12 month. Secondary endpoints were clinical outcome residual pain, return to work, fusion rate after one year, hospitalization period and complication by surgery.

## Results:

All of the conservative treated patients showed a progressive kyphosis with bony consolidation but misalignment. The median Cobb-angle amounted to  $-7^\circ$  initially (kyphosis) and  $-17^\circ$  after 12 months. The dorsal stabilized patients showed a preoperative median Cobb-angle of  $-15^\circ$  which changed to  $-6^\circ$  directly after surgery. After 12 months bony consolidation was complete in all cases, but kyphotic misalignment (median Cobb angle  $-23^\circ$ ) was present as well. After a dorsoventral procedure a lasting correction of the fracture related kyphosis could be shown, even though a secondary collapse was detected. The initial median Cobb angle amounted to  $-7.4^\circ$ . After dorsoventral surgery the restoration of lordosis amounted to  $+4^\circ$ . After one year  $+1^\circ$  lordosis remained. The difference of final restoration was significant in Fisher's exact test between dorsoventral and dorsal procedures ( $p = 0.002$ ), as well as conservative treated patients ( $p = 0.031$ ). There were no significant differences in regard to pain and return to work between all three groups ( $p > 0.05$  in Fisher's exact test respectively). As expected, the dorsoventral treated patients were longer hospitalized (average dorsoventral: 16 d vs. dorsal: 10 d and conservative: 6 d).



Conservative, initial



Conservative after 1 year



Fixateur interne initial



Fixateur interne postoperative



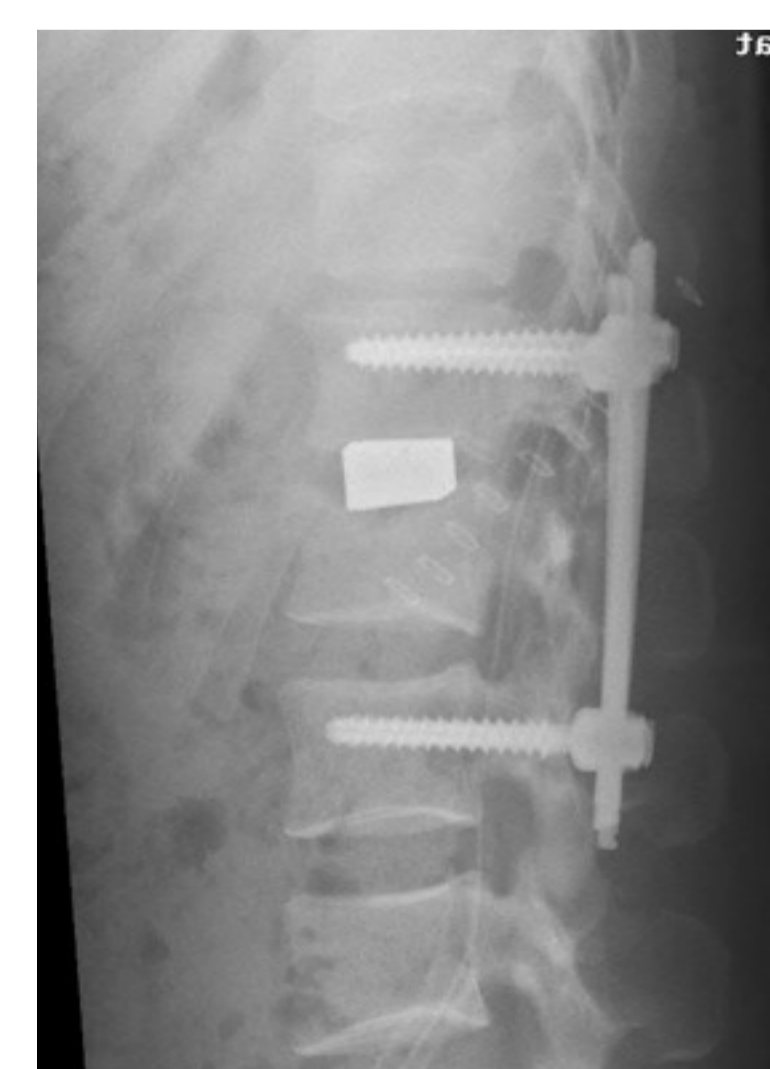
Fixateur interne after 1 year



Dorsoventral initial



After dorsal procedure



After dorsoventral procedure



After 1 year

## Conclusion:

The overall better and lasting restoration of the spinal axis by the dorsoventral surgery meets well with already published results. Our data doesn't show significant differences in relation to clinical outcome and return to work, even though there still remains a tendency to a better clinical outcome after dorsoventral treatment.