

deficits (27%, n=11) on follow-up. Four patients (10%) in the surgical group deteriorated, and two patients (6%) eventually died. There was no significant difference in the neurological outcome, depending on the type of treatment ($p=0.412$), the utilized surgical technique ($p=0.277$), or the patient-specific risk factors ($p=0.544$).

CONCLUSION: Our experience and the systematic review suggest that (skip) laminotomies/-ectomies and washing out of the abscess combined with antibiotic therapy leads to neurological improvement in 44% of cases. Conservative management might be an option in selected cases with mild neurological deficits.

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Radiographic progression and spinal deformity in pyogenic spondylodiscitis: A retrospective analysis of MRI data from 59 conservatively managed cases

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OBJECTIVE: Pyogenic spondylodiscitis management often excludes surgical intervention, yet the risk of spinal deformities is unclear. This study explores the radiographic progression of spinal deformities in conservatively treated cases and identifies predictive factors.

MATERIAL/METHODS: This retrospective study analyzed MRI data from patients with conservatively treated pyogenic spondylodiscitis. Deformities were categorized into four progression types reflecting severity: Type 1 (progressive vertebral body edema/endplate erosion), Type 2 (Type 1 plus disc space collapse), Type 3 (vertebral body destruction/mild translation), and Type 4 (significant kyphosis $>20^\circ$ /severe translation). The study aimed to identify radiographic predictors of deformity advancement, such as translation, fractures, and fusion.

RESULTS: Among 59 patients, 66% exhibited progressive deformity over a mean follow-up of 10.75 months. The distribution of progression types was: Type 1 in 2 cases (3%), Type 2 in 7 cases (12%), Type 3 in 13 cases (22%), and Type 4 in 17 cases (29%). Progression of deformities included a 92% increase of cases with segmental kyphosis $>20^\circ$ and a 167% increase for segmental translation. Risk factors for significant kyphosis included $>50\%$ destruction of a vertebral body ($p<0.01$) and the presence of an epidural abscess at baseline ($p<0.05$). Furthermore, lumbar region involvement significantly reduced the likelihood of spinal fusion at follow-up ($p<0.05$). Fractures at follow-up were significantly associated with the presence of a paravertebral abscess at baseline ($p<0.05$).

CONCLUSION: This study underscores the importance of screening for radiographic risk factors upon treatment initiation. Additionally, it highlights the need for closely monitoring patients with conservatively managed pyogenic spondylodiscitis for progressive spinal deformities and suggests considering early surgical intervention in cases with a high risk of radiological progression.

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Wound drainage decreases early revision rate in posterior spinal fusion surgery - A prospective randomized multicenter study

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INTRODUCTION: The benefit of wound drainages after posterior thoracolumbar spinal fusion surgery remains uncertain. Consistent data regarding the avoidance of patients with revision surgery and regarding differences in the length of stay (LOS) are lacking. We examined a collective of posterior thoracolumbar spinal fusion surgery up to 4 segments to analyze whether wound drainages would have a significant impact on the revision rate and the LOS.

MATERIAL AND METHODS: Multicenter, prospective randomized study including 314 patients over a period of 29 months with a follow-up of 3 months. Inclusion criteria were any indication for an open, posterior instrumented, thoracolumbar spondylodesis with pedicle screws over 1-4 segments with or without history of previous surgery at the affected levels. Exclusion criteria were infections (e.g. spondylodiscitis), inflammatory diseases and tumours, multiple injuries, polytrauma, unstable fractures, pregnancy, known coagulation disorders, cognitive impairment and no possibility for follow-up examination. Two drainages (one subfascial with and one subcutaneous without negative pressure) were placed and later removed after a minimum of 2 and a maximum of 4 days, depending on the amount of drain volume. Categorical variables were analyzed with the Chi-Square test and Mann Whitney-U-test after exclusion of a normal distribution in the Kolmogorow-Smirnow-Test. Linear regression analysis was performed in order to detect factors modifying LOS.

RESULTS: 281 patients (89.5%, mean age 63 ± 13.3 , m: 45%, f: 55%) could be evaluated. The revision rate was significantly higher in the group without drainage (32 of 143, 22.4%) comparing with the patients with drainage (15 of 138, 10.9%) in the Chi-Square test ($p=0.010$; OR 2.364; 95% CI 1.2159 – 4.5959). Reasons for revision surgery were implant related (17 %) infections (79 %) or hematomas (4%). Multivariate analysis (logistic regression analysis) proved the usage of a drainage ($p=0.013$; OR 0.448; 95% CI 0.239-0.843) and a low body mass index (BMI) ($p=0.024$; OR 1.064; 95% CI 1.008-1.124) as significant predictors for the avoidance of revision surgery. The application of a wound drainage had no significant impact on the length of stay (Mann Whitney-U-test; LOS no Drain $11.62d \pm 6.849$ (SD); LOS with drain $11.16d \pm 5.940$ (SD); $p=0.903$). Factors significantly predicting LOS in multivariate regression analysis were revision surgery ($p<0.0001$) and surgery of 3 or 4 segments ($p<0.0001$) but not the usage of a drainage ($p=0.164$).

CONCLUSION: The use of wound drainages significantly decrease the early revision rate while not increasing the LOS in posterior thoracolumbar spinal fusion surgery up to 4 segments.

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Reliability of DEXA-based T-scores of lumbar spine, hip and femur in correlation to CT-based Hounsfield Units

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BACKGROUND: Dual-energy X-ray absorptiometry (DEXA) and the resulting T-score are currently still considered the gold standard for bone density measurement and diagnosis of osteoporosis. In this study, we investigated the reliability of DEXA-based T-scores of the lumbar spine, hip and femur in comparison to CT Hounsfield Units (HU) in patients with manifest osteoporosis.

METHODS: From 2019 to 2024, we evaluated 350 patients with osteoporotic fractures of the spine. All patients received CT imaging of the lumbar spine. 170 patients also received a DEXA scan. Only patients who had both examinations were included. The T-score of the lumbar spine, hip and femur in the DEXA scan were compared with the HU values (of 3 non-fractured lumbar vertebrae each) of the lumbar spine CT. The HU was assessed axially in three non-fractured vertebral bodies of the lumbar spine. The HU cut-off value for an osteoporotic fracture was set at <90 based on the new modified AO score for osteoporotic fractures. Descriptive statistics and the chi-square test were used to analyse the data.

RESULTS: Complete DEXA and CT scans were available in 113 patients. The average age was 80 years (72-84; 68% F, 32% M). Most fractures were in the thoracolumbar junction (19%). 88% of the patients had an HU value <90 and thus osteoporosis on CT, whereas only 33% of the T-scans for the lumbar spine, 26.8% of the T-scores for the femur and 24.1 % of the T-scores for the hip showed