

sample sizes have systematically analyzed the risk factors for TOLF. In the present study, we retrospectively collected clinical data from 530 inpatients diagnosed with TOLF, summarized their demographic characteristics, and focused on the relationship between body mass index (BMI) and TOLF. The purpose of this study is to identify independent risk factors for TOLF, specifically the association between BMI and TOLF.

**Materials and Methods:** A total of 856 individuals consisting of 326 controls without ossification of spinal ligaments and 530 TOLF inpatients who underwent thoracic spine decompression surgery at our hospital between January 2013 and September 2020 were included. All subjects were classified into 4 grades: Grade 0) control; Grade 1) single-segment TOLF; Grade 2) multi-segment TOLF; Grade 3) TOLF combined thoracic ossification of the posterior longitudinal ligament (T-OPLL). Logistic regression analysis was performed to identify the risk factors for TOLF. The TOLF index was calculated to assess the severity of TOLF and its relationship with BMI was investigated by correlation analysis.

**Results:** Overall, TOLF patients are most numerous in the 50-59 age group. Age and gender were considered as independent risk factors for Grade 1 and 2. BMI was identified as an independent risk factor for TOLF. Furthermore, BMI was significantly higher in Grade 1 (26.1 VS 24.5 kg/m<sup>2</sup>, P = 0.0001), Grade 2 (28.2 VS 24.5 kg/m<sup>2</sup>, P < 0.0001), and Grade 3 (29.1 VS 24.5 kg/m<sup>2</sup>, P < 0.0001) than Grade 0. Notably, in TOLF patients without combined T-OPLL, BMI was positively correlated with TOLF index; while BMI was negatively correlated with age in younger individuals.

**Conclusion:** BMI is a crucial risk factor for TOLF. It highlights the necessity of close follow-up of asymptomatic TOLF patients with high BMI to detect and treat their TOLF progression promptly.

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#### VERTEBRAL BODY REPLACEMENT FOR TREATMENT OF SPINAL INFECTIONS. A RETROSPECTIVE SINGLE-CENTER STUDY OF 100 CASES

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**Introduction:** Operative treatment strategies for spinal infections are still controversial. Vertebral body replacement in cervical, thoracic or lumbar spine is a common treatment modality but recommendations are missing due to limited data concerning feasibility and complication profile in this particular pathology.

**Materials and Methods:** A retrospective review in a single center department identified 100 consecutive cases between 2015 and 2022, who underwent vertebral body replacement for treatment of spinal infection.

**Results:** Out of 360 consecutive cases treated for spinal infection, 100 patients were treated with vertebral body replacement (VBR). Mean age was 68 years (range 28-89years); 44% were female. Main location of the infection was lumbar region (L2-L5) with 43 cases, followed by thoracolumbar junction (T11-L2) with 23, cervical (C1-7) with 12, main thoracic (T1-10) with 9 cases and lumbosacral (L5-Sacrum) with 1 case. 12 cases had multilocal infections. Pathologic fracture was seen in 27% and deformity (ne novo kyphosis or scoliosis) in 18% of cases, due to the infection. 52% were primary pyogenic infections, 37% were secondary infections, 1 was fungal and 1 parasitic. Follow up time was 9-2509 days (mean 509 days), 79% were followed more than 3 month, 31% more than a year. Follow up was clinical and radiologic (X-Ray 85%, CT 45%, MRI 28%). In 58% of cases dorsal decompression was performed. The cervical cases received in 75% additional dorsal instrumentation. 59 patients received single level (bisegmental) VBR, 37 two level (trisegmental), 2 cases three level VBR and 1 case of four-level-VBR. Mean overall sagittal correction achieved was 10° (range 0-54°), 17° for the cervical and 13° for the thoracic spine, 16° for thoracolumbar junction and 8° for the lumbar spine. 31 of 100 patients needed revision surgery (25 dorsal only, 5 ventral only, 1 dorsal and ventral). General complications like wound healing disorder or hematoma were the most common (dorsal 9%, ventral 3%), followed by implant failure (pedicle screw loosening 8%, cage subsidence 3%), relapse of infection or adjacent disc infection (8%), aseptic adjacent disc

disease (6%), and neurologic impairment (1%). In 8 % of cases shortening or removal of the dorsal instrumentation was done after healing of infection. 3 patients died after 43 – 86 days (mean 53 days).

**Conclusion:** Our retrospective study results show that vertebral body replacement for treatment of spinal infections is highly effective in regard of correction of sagittal imbalance. Reinfection rate was equal to other surgical studies while overall survival in our study group is high. The risk profile of the ventral surgery itself is safe and we hardly see any implant associated complications.

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#### PREDICTIVE FACTORS FOR BONE CEMENT DISPLACEMENT FOLLOWING PERCUTANEOUS VERTEBRAL AUGMENTATION IN KÜMPELL'S DISEASE

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**Introduction:** To investigate the independent influencing factors of bone cement displacement following percutaneous vertebral augmentation (PVA) in patients with stage I and stage II Kümmell's disease.

**Materials and Methods:** We retrospectively reviewed the records of 824 patients with stage I and stage II Kümmell's disease treated with percutaneous vertebroplasty (PVP) or percutaneous vertebroplasty (PKP) from January 2016 to June 2022. Patients were divided into the postoperative bone cement displacement group (n = 150) and the bone cement non-displacement group (n = 674) according to the radiographic inspection results. The following data were collected: age, gender, body mass index (BMI), underlying disease, bone mineral density (BMD), involved vertebral segment, Kümmell's disease staging, anterior height, local Cobb angle, the integrity of anterior vertebral cortex, the integrity of endplate in surgical vertebrae, surgical method, surgical approach, the volume of cement, distribution of cement, the viscosity of cement, cement leakage, and postoperative anti-osteoporosis treatment. Binary logistic regression analysis was performed to determine the independent influencing factors of bone cement displacement. The discrimination ability was evaluated using the area under the curve (AUC) of the receiver operating characteristic (ROC).

**Results:** The results of logistic regression analysis revealed that thoracolumbar junction (odds ratio (OR) = 3.23, 95% confidence interval (CI) 2.12-4.50, p = 0.011), Kümmell's disease staging (OR = 2.23, 95% CI 1.81-3.41, p < 0.001), anterior cortex defect (OR = 5.34, 95% CI 3.53-7.21, p < 0.001), vertebral endplates defect (OR = 0.54, 95% CI 0.35-0.71, p < 0.001), cement distribution (OR = 2.86, 95% CI 2.03-3.52, p = 0.002), cement leakage (OR = 4.59, 95% CI 3.85-5.72, p < 0.001), restoration of local Cobb angle (OR = 3.17, 95% CI 2.40-5.73, p = 0.024), and postoperative anti-osteoporosis treatment (OR = 0.48, 95% CI 0.18-0.72, p = 0.025) were independently associated with the bone cement displacement. The results of the ROC curve analysis showed that the AUC was 0.816 (95% CI 0.747-0.885), the sensitivity was 0.717, and the specificity was 0.793.

**Conclusion:** Thoracolumbar fracture, stage II Kümmell's disease, anterior cortex defect, uneven cement distribution, cement leakage, and high restoration of the local Cobb angle were risk factors for cement displacement after PVA in Kümmell's disease, while vertebral endplates defect and postoperative anti-osteoporosis treatment are protective factors.

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#### FACTORS FOR PREDICTING INSTANT NEUROLOGICAL RECOVERY OF PATIENTS WITH MOTOR COMPLETE TRAUMATIC SPINAL CORD INJURY

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**Introduction:** The objective of this study was to analyze the factors affecting the instant recovery of neurological function in patients with motor complete traumatic spinal cord injury (TSCI) treated in hospital.

**Materials and Methods:** A retrospective analysis of 1053 patients with TSCI