

misplacement after using an intraoperative computed tomography (iCT) guided navigation for Screw insertion.

**Methods:** A retrospective analysis of all patients following iCT navigated spinal pedicle screw placement between October 2015 and March 2022 was performed. Navigated drilling of the pedicle was followed by screw placement (with and without via K-wire). Screw position was checked by a further iCT scan. Screw position was assessed according to the Gertzbein-Robbins classification and the rates of screws actually revised intraoperatively were calculated.

**Results:** 256 consecutive patients were identified (50,39% male, 49,61% female). A total of 1471 Screws were implanted. Median age was 67 years. The all-over revision rate was 4,49%. Screws were placed in all spinal regions. Degenerative spine disease was the most common diagnosis (43,44%). No significant differences in revision rates were found for gender and age. Lumbar spine (6,25%), thoracic spine (5,86%), tumor (6,40%) and infection (7,98%) diagnosis were associated with highest revision rate. We also found significantly increased revision rates for overweight (BMI 25 to 30) and obesity (BMI > 30) at 4,17% and 7,38%.

**Conclusions:** The all-over revision rate was 4,49%. The highest revision rates were observed for tumor (6,40 %), infection patients (7,98 %), lumbar spine (6,25 %) and thoracic spine (5,86 %). Overweight and obesity also seems to be a significant risk factor for screw misplacement (BMI<25: 0,46%; BMI 25 to 30: 4,17%; BMI>30: 7,38%). None of the patients suffered from any neurovascular damage. No secondary operation to revise the misplaced screws was required.

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An International Multicentric Evaluation of Septic Patients with Primary Spondylodiscitis – The 2SICK Study of the EANS Spine Section

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Spinal Infections (Spine Parallel Session), October 14, 2024, 5:20 PM - 6:50 PM

**Background:** The management of septic spondylodiscitis presents a clinical challenge, with debates surrounding the timing of surgical intervention. The 2SICK study addresses the gap in knowledge concerning the efficacy of early surgery versus conservative management in these critically ill patients.

**Methods:** A multicentric, international retrospective cohort study encompassed cases from 2015-2022. Inclusion criteria were a CRP level >200 mg/l and a septic state upon admission. Patients were stratified by treatment modality (early surgery within 3 days of admission, delayed surgery after 3 or more days of non-surgical stabilisation, and conservative therapy). Chi-square tests, univariate analyses, stepwise and regularization-tuned multivariate regression analyses were used to examine outcome differences in mortality.

**Results:** A total of 189 patients, with a mean age of 69 years, were evaluated. Among these, 36 underwent conservative therapy, 79 underwent early surgery, and 74 received delayed surgery. The subgroup undergoing delayed surgery exhibited the lowest mortality rates, with 4.1%. In comparison, the mortality rates for early surgery and conservative therapy were 28.2% and 27.8%, respectively. The ideal time frame for delayed surgery, in terms of mortality, was found to be between 10 and 14 days from admission. Accounting for confounders, delayed surgery was found to be significantly associated with decreased mortality ( $p<0.01$ ) compared to conservative therapy, and early surgery with increased mortality compared to conservative therapy ( $p<0.05$ ). Positive predictors of mortality were found to be age, reduced GFR, raised creatinine, multiple organ failure, cervical location of the infection, erosion of endplates, presence of psoas abscess and tachycardia at admission ( $p<0.05$ ). Negative predictors were days between admission and surgery and the presence of epidural abscess ( $p<0.05$ ).

**Conclusions:** Delayed surgery was found to be associated with significantly less mortality compared to early surgery and conservative therapy in patients with septic spondylodiscitis. The likely optimal window for surgery is 10 to 14 days

from admission. The strongest predictors of death were early surgery within 3 days of admission, vertebral endplate erosion, and multiple organ failure.

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The role of Vitamin D for incidence of and mortality after aneurysmal subarachnoid hemorrhage

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Aneurysms (Vascular Parallel Session), October 14, 2024, 5:20 PM - 6:50 PM

**Background:** Aneurysmal subarachnoid hemorrhage (aSAH) has been described as an inflammatory disease. Vitamin D has systemic anti-inflammatory properties and may therefore reduce the risk of development and rupture of intracranial aneurysms (IA). We aimed to investigate the association between vitamin D and the incidence and mortality after aneurysmal subarachnoid hemorrhage (aSAH) using the UK Biobank.

**Methods:** We retrieved data from the UK Biobank, a prospective population-based cohort study of 502,411 participants, initiated in 2006. Serum 25-hydroxyvitamin D [25(OH)D] levels were analyzed between participants with ruptured IA and the general population. 25(OH)D levels were classified as sufficient (> 50nmol/L), deficient (<50nmol/L) and severely deficient (<30nmol/L). Multivariate logistic regression analysis and Cox regression were performed and adjusted for demographic characteristics and vascular risk factors.

**Results:** During the 16-year follow-up period (April 2006 - May 2022), 1,447 aSAH were reported. Compared to the general population, aSAH patients had a female preponderance (60.23% vs. 51.71%,  $p<0.0001$ ) with a higher prevalence of smoking (67.09% vs 60.40%,  $p<0.0001$ ) and higher systolic blood pressure (142.7 mmHg vs. 140mmHg,  $p<0.0001$ ). Participants with vitamin D deficiency (<50nmol/L), had a higher incidence of SAH than participants with sufficient 25(OH)D levels (> 50nmol/L; odds ratio (OR) 1.448, confidence intervals (CI) 1.036 - 2.2026,  $p=0.0303$ ). This association was more pronounced in patients with severe vitamin D deficiency vs. sufficient 25(OH)D levels (OR = 2.052, CI = 1.278 - 3.294,  $p=0.0029$ ). Vitamin D insufficiency (hazard ratio (HR) 0.940, CI 0.638 - 1.386,  $p=0.7534$ ) or severe vitamin D insufficiency (HR 0.982, CI 0.565 - 1.815,  $p=0.9517$ ) were not predictive for mortality after aSAH.

**Conclusions:** Individuals with vitamin D deficiency and severe vitamin D deficiency have a higher risk of aSAH than those with sufficient vitamin D levels, but vitamin D deficiency did not influence mortality outcome after aSAH. Future studies might investigate potential benefits of Vitamin D supplementation in preventing rupture in IA.

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Intra-Operative Neurophysiological Monitoring (IONM) Role During Aneurysm Surgery: a Technological Support for a Better Outcome

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Aneurysms (Vascular Parallel Session), October 14, 2024, 5:20 PM - 6:50 PM

**Background:** This observational retrospective study analyzes the value of the Intra-Operative Neurophysiological Monitoring (IONM) during aneurysm surgery. The aim is to identify the correlation between post-operative deficits and IONM.

**Methods:** Adult patients with unruptured aneurysms treated from September 2019 to August 2023 were included in the study. IONM comprised Motor Evoked Potentials from transcranial (tcPEM) and direct cortical (dcPEM) stimulation with cortical strip. The monitoring was continuous during surgery, and the