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## TRANSPEDUNCULAR APPROACH FOR SEPARATION SURGERY IN SPINAL METASTASIS: A SAFE AND QUICK APPROACH FOR CIRCUMFERENTIAL DECOMPRESSION. ANALYSIS OF A MULTICENTRIC SERIES

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Spinal Tumors / Infections (Spine Parallel Session v.3), September 27, 2023, 8:30 AM - 10:00 AM

**Background:** Spinal metastasis surgery undergone multiple transformations in terms of surgical technique in recent years. Separation surgery has become one of the main objectives to be achieved for local control of the disease, due to the advances in stereotactic radiosurgery and targeted therapies. The transpedicular approach represents a valid and safe approach to reach the ventral aspect of the dural sac and achieve circumferential decompression with reduced risks compared to costotransversectomy or anterior approaches. The objective of this study is to evaluate the clinical and radiological outcomes of a surgical series of transpedicular approaches.

**Methods:** Adult patients with diagnosis of thoracic or lumbar metastases requiring epidural decompression surgery were included. Data regarding surgical technique, clinical, radiological and surgical information, intra- and post-operative complications, follow-up were collected. The Neurology-Stability-Epidural (NSE) score has been the main reference for multidisciplinary management.

**Results:** A total number of 79 patients underwent surgery with a pure transpedicular approach at the authors' institutions (73% thoracic, 27% lumbar) from January 2018 to April 2022. Circumferential decompression was achieved in all cases, as well as proper separation between the tumor and spinal cord, as confirmed by postoperative imaging. Axial pain always improved - when present - after the procedure as well as neurological functions, when impaired before surgery, with statistical significance ( $p < 0.05$ ). The mean hospital stay was 4 days after surgery with early mobilization. The mean follow-up was 19.2 months. Only 3.9% of patients experienced neurological worsening during follow-up. The complication rate included one case of postoperative hematoma, 2 wound infections, 2 wound dehiscence, and a single case of hardware failure. In 12 cases the procedure was assisted by the 3D endoscope, in 3 cases by the exoscope.

**Conclusions:** The transpedicular approach in separation surgery appeared to be safe and effective in obtaining correct circumferential decompression. These results confirm the possibility of reducing the use of more invasive approaches such as thoracic costotransversectomy or anterior approaches to the lumbar spine when body replacement is not necessary.

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## CONSERVATIVE OR SURGICAL TREATMENT OF PYOGENIC SPINAL INFECTION. A RETROSPECTIVE MULTICENTER BINATIONAL RETROSPECTIVE COHORT STUDY.

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Spinal Tumors / Infections (Spine Parallel Session v.3), September 27, 2023, 8:30 AM - 10:00 AM

**Background:** The optimal treatment of patients with spinal infections remains a controversial topic. While there is some consensus regarding the indication for surgical intervention in infections with neurologic deficit, significant deformity or progressive disease, other situations remain controversial. Within Europe, fundamentally different therapeutic concepts are found. Therefore, the aim of this study was to compare the outcome of patients who received surgical vs. antibiotic treatment alone for primary pyogenic spondylodiscitis in an international cohort analysis.

**Methods:** The retrospectively compiled databases of tertiary high-volume spine centers served as the baseline for this study. All documented cases of primary spondylodiscitis treated surgically and conservatively in the period of 2017-2022 were included and grouped according to the therapeutic concept: conservative vs. surgical treatment. Independent investigators collected the relevant clinical and radiological data. The primary endpoint of this study was mortality rate; secondary endpoints were relapse rate and persisting neurological deficit.

**Results:** A total of 392 patients were included in the analysis (155 females and 237 males with a mean age of 68 years). Of these, 95 cases were treated conservatively (CoT) and 297 cases were treated surgically (SuT). Most of conservatively treated patients were treated in the United Kingdom (CoT 81/ SuT 7), while most of the surgically treated cases were treated in Germany (CoT 14/ SuT 290). There was no significant difference ( $p < 0.01$ ) related to patient's disease characteristics:

Lumbar was the main location ( $n=240$ , CoT 58/ SuT 182,  $p=0.97$ ) followed by thoracic ( $n=70$ , CoT 24/ SuT 46,  $p=0.03$ ) and cervical ( $n=47$ , CoT 7/ SuT 40,  $p=0.11$ ) region. A multilobar spinal infection was present in 32 patients (CoT 3/ SuT 29,  $p=0.04$ ). 181 cases (CoT 36/ SuT 145,  $p=0.06$ ) presented with an epidural abscess. Neurological deficits were recorded in 100 cases (CoT 26/ SuT 74,  $p=0.63$ ), and septic conditions in 88 cases (CoT 26/ SuT 62,  $p=0.19$ ). Pre-existing conditions like Diabetes (CoT 20/ SuT 71,  $p=0.57$ ), renal failure (CoT 19/ SuT 60,  $p=0.97$ ), hepatopathy (CoT 4/ SuT 26,  $p=0.15$ ), malignoma (CoT 9/ SuT 38,  $p=0.39$ ) or i.v. drug abuse (CoT 5/ SuT 15,  $p=0.93$ ) did also not differ between the groups.

The mortality rate of all conservatively treated was 24.2% (23 cases) and 6.7% (20 cases) in all surgically treated patients ( $p < 0.001$ ). A follow-up of  $\geq 6$  weeks was available in 289 cases (CoT 83, SuT 206). In this subset of patients relapse of infection occurred in six (7.2%) and 23 (11.2%) cases in the conservative and early surgical treatment group, respectively ( $p=0.69$ ). Persisting neurological deficit was recorded in 21 (25.3%) of conservatively treated and 51 (24.8%) of surgically treated cases ( $p=0.92$ ).

**Conclusions:** Whereas relapse rates and persisting neurological deficit were not found to differ significantly, the results of this international data analyses, with their respective limitations, clearly support the growing evidence of a significantly reduced mortality rate after surgical therapy for primary pyogenic spondylodiscitis when compared to conservative treatment regimen.

## Optional Image

