

Objective Spinal metastases may present with different degrees of mechanical instability. The Spinal Instability Neoplastic Score (SINS) was developed to assess spinal neoplastic-related instability. Few have validated it clinically. This study aimed to compare the progression of a pathologic fracture due to spinal metastases between a conservative treated group and a group treated according to the SIN-Score. Methods A retrospective analysis of patients with a pathologic fracture due to a spinal metastasis between January 2018 and December 2018 was performed. We selected patients with a minimum follow-up of 12 months and analyzed them according to the SINS criteria. All patient in this group did not underwent any spinal surgery. For the interventional group, we selected all patient with initial diagnosis of spinal metastasis in 2020. For the further analyzation we collected all patient, which underwent a spinal surgery by our department of neurosurgery in 2020 and a minimum follow-up of 12 months. For both groups were the primary endpoint the progression of vertebral body fracture following radiotherapy. Results In the conservative group 332 Patients were identified. Median age was 68 SD +/- 10,3. 38% were Female. Median follow-up was 26 months (range 12-29). 30, 283 and 19 Patients presented with low (0-6), moderate (7-12) and high (13-18) SINS, respectively. Fracture progression following radiotherapy was seen in 30%, 30% and 42% in cases with low, moderate, or high SINS (P = 0.522), respectively. (Forty-four percent of progression cases in the low group progressed to the moderate group without neurological deficits. Seventeen percent of the progression cases in the moderate group developed neurological deficits.) In the interventional group 35 patient were identified. Median age was 66 SD +/- 14,17. 60% were female. Median follow up was 12,2 months (12-21). 3, 24 and 8 Patient presented with low (0-6), moderate (7-12) and high (13-18) SINS, respectively. Fracture progression following radiotherapy was not seen in any case. In twenty-one case we performed 360° stabilization. In seven cases only a laminectomy was necessary by intraspinal tumor cuff and low / moderate SIN-Score. In other seven cases we only performed a dorsal stabilization without a corpectomy. In all cases we did not see any secondary alignment disorder or hints for an instability like loosening-hem. The overall survival was, at the follow-up, 59% in the conservative group and 75% in the interventional group. Analyzing the quality of life, we choose the walking ability as a main feature. Ninety-two percent in the interventional group are still able to walk, in contrast 86% in the conservative group. Conclusion A treatment according to the SINS-Score show a satisfying result with conservation of the walking ability. Furthermore, there are hints, that a corpectomy is not always necessary due to the secondary strengthening of the vertebral body by radio oncology.