**Tables**

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| Table 1. Eligibility criteria |
| **Inclusion criteria**  Full-text article:  1) Study population consisting of patients with spinal metastases or model simulating spinal metastatic disease  2) Describing the radiographic signs and/or classification and/or (clinical) definition of neoplastic related spinal instability\*  3) Using the SINS as study variable\* |
| **Exclusion criteria**  1) Non-homogenous study population (>25% of the patients with a diagnosis other than spinal metastatic disease)  2) Sample size <10 cases.  3) Not describing, defining or classifying spinal instability  4) Systematic reviews, meta-analysis, case reports and conference abstracts |
| **\*** Either adherence to criteria 2 or 3 |

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| **Table 2. SINS score according to Fisher et al. [3]** | **Score** |
| **Location** | |
| Junctional (occiput-C2, C7-T2, T11-L1, L5- S1)  Mobile spine (C3-C6, L2-L4)  Semi rigid (T3-T10)  Rigid (S2-S5) | 3  2  1  0 |
| **Pain\*** | |
| Yes  Occasional pain but not mechanical  Pain-free lesion | 3  1  0 |
| **Bone lesion** | |
| Lytic  Mixed (lytic/blastic)  Blastic | 2  1  0 |
| **Radiographic spinal alignment** | |
| Subluxation/translation present  De novo deformity (kyphosis/scoliosis)  Normal alignment | 4  2  0 |
| **Vertebral body collapse** | |
| > 50% collapse  < 50% collapse  No collapse with > 50% body involved  None of the above | 3  2  1  0 |
| **Posterolateral involvement of spinal elements†** | |
| Bilateral  Unilateral  None of the above | 3  1  0 |
| \* Pain improvement with recumbency and/or pain with movement/loading of spine  † Facet, pedicle, or costovertebral joint fracture or replacement with tumor | |

**Table 3**. **Hazard ratios and 95%CI for VCF risk.**

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| --- | --- | --- | --- | --- |
| **Authors** | **Sample size** | **Study design** | **Risk factors** | **[HR, 95%CI]** |
| Cunha et al. [50] | 90 | R | Spinal alignment  Lytic lesion | [0.09, 0.024-0.33]  [0.082, 0.017-0.386] |
| Sahgal et al. [51] | 252 | R | Spinal alignment  Baseline VCF  <50% collapse  No VCF but >50% involved  Lesion type  Dose per fraction  >24Gy  20-23Gy | [2.99, 1.57-5.70]  [8.98, 4.48-18.0]  [4.46, 2.08-9.57]  [3.53, 1.58-7.93]  [5.25, 2.29-12.01]  [4.91, 1.96-12.28] |
| Thibault et al. [53] | 37 | R | Baseline VCF  Single fraction SBRT | [9.25, 1.64-52.31]  [5.03, 1.19-21.28] |
| Finnigan et al. [54] | 34 | R | Overall SINS score\* |  |
| Lee et al. [55] | 79 | R | SINS score (>7)  Age | [5.63, 2.41-13.13]  [2.15, 1.07-4.32] |

\* no hazard ratios reported