

Surgical management of spinal metastasis: retrospective analysis of prognostic factors, surgical techniques, clinical outcome and survival time in a series of 279 patients from 1992-2009

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Introduction: The treatment of symptomatic spinal metastases remains controversial^{1,2,3}. Surgical treatment is indicated to decrease pain, improve or preserve neurologic function, and for spinal stabilisation. Improved palliative medical treatment of cancer with prolonged survival may increase the demand of surgical interventions for spinal pathologies. The aim of this study was to analyze epidemiology and concept of surgical treatment of spinal metastasis in a single trauma center over a long-term period.

Methods: Retrospective analysis of 279 patients who underwent surgery for spinal metastasis between 1992 and 2009 using hospital charts and data of the Cancer Registry Zürich. We analyzed the prognostic value of epidemiologic and surgery related parameters such as age, sex, tumor type, indication for surgery, time from diagnosis to surgery, co-morbidities and adjuvant treatment modalities. Kaplan-Meyer and log-rank analysis were performed to identify prognostic factors and survival time.

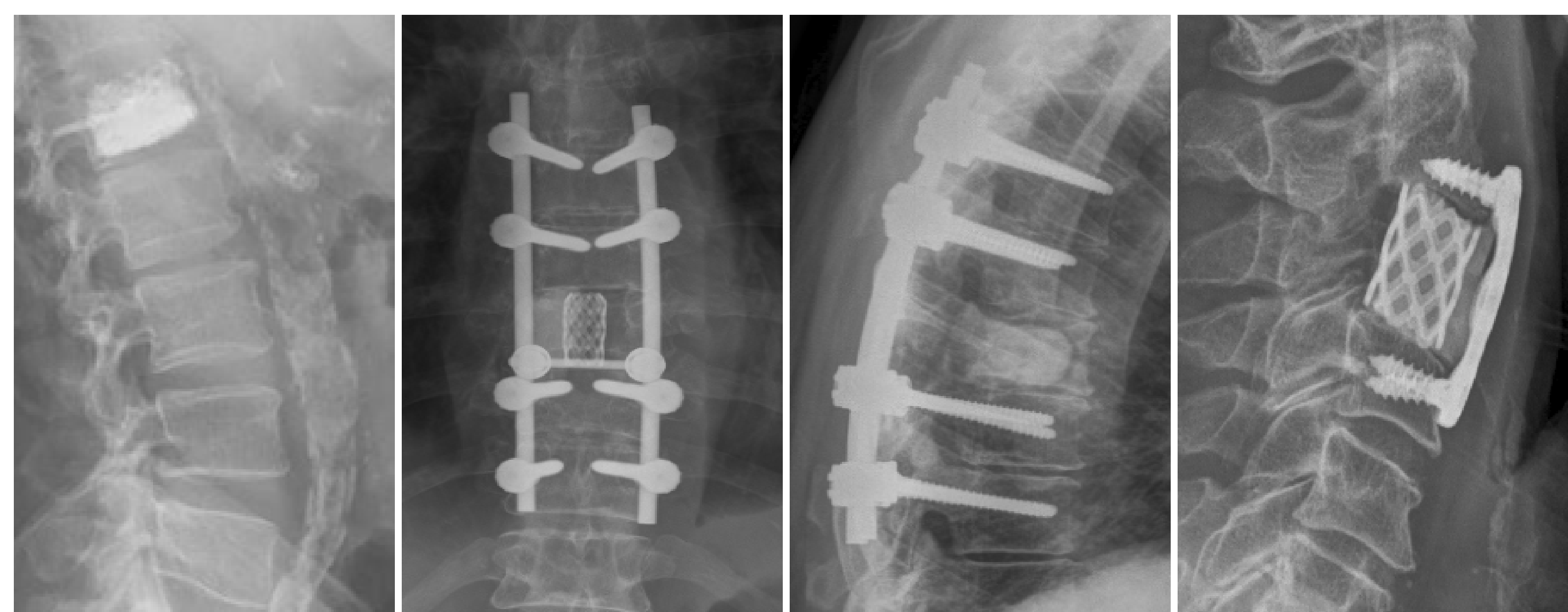
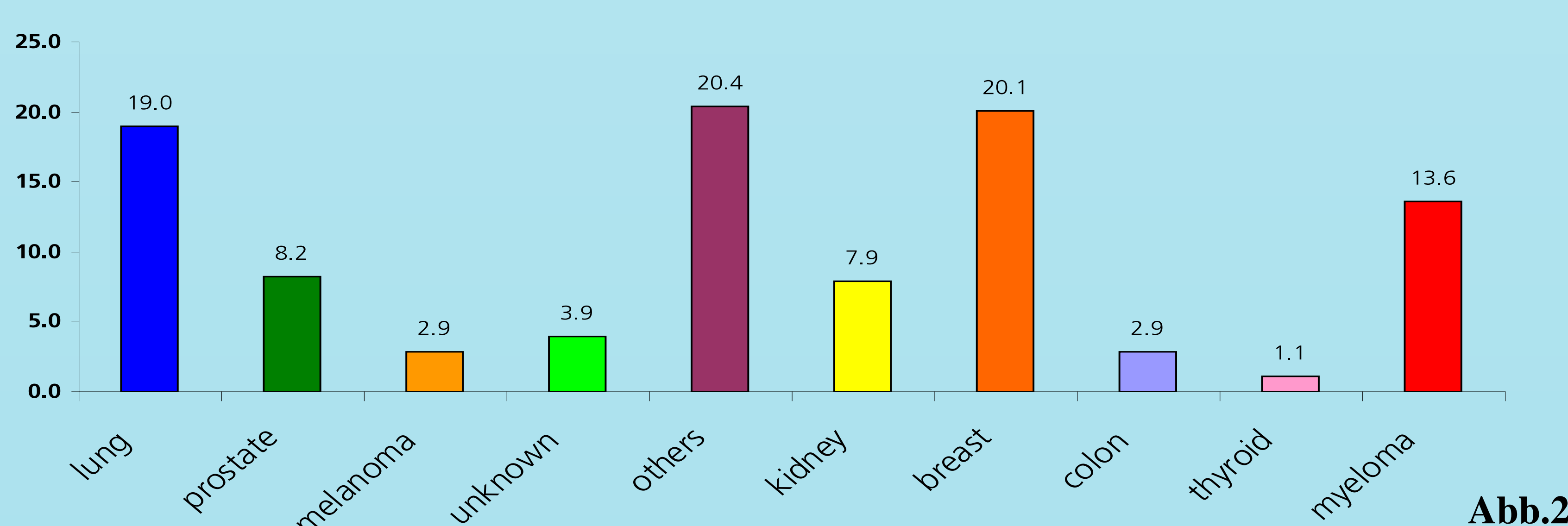


Abb. 1 Surgical procedures for metastatic disease of the spine: (from left to right) vertebroplasty, combined anterior/posterior instrumentation with rods and cage, cement reinforced instrumentation after tumor debulking, combined plate/cage instrumentation.

Results: A total of 391 operations were performed in 279 patients including one or more of the following procedures: 205 decompressions with or without anterior (60), posterior (117) or anterior-posterior (45) instrumentation, 35 vertebroplasties, 78 plate instrumentations, 74 cages or autologous bone graft replacements after corpectomy and 133 cement reinforced instrumentations.

primary tumor types (%)



Regardless of primary tumor type, the most frequent location of spinal metastases was the thoracic spine, followed by the lumbar and cervical spine. The mean age at the time of diagnosis was 56.3 years and 58.6 at the time of surgery. The primary disease was diagnosed a mean of 2.3 years before spinal surgery. The median postoperative survival for all patients was 212 days, varying mainly according to primary tumor type. The number of surgical interventions increased continuously during the observation period.

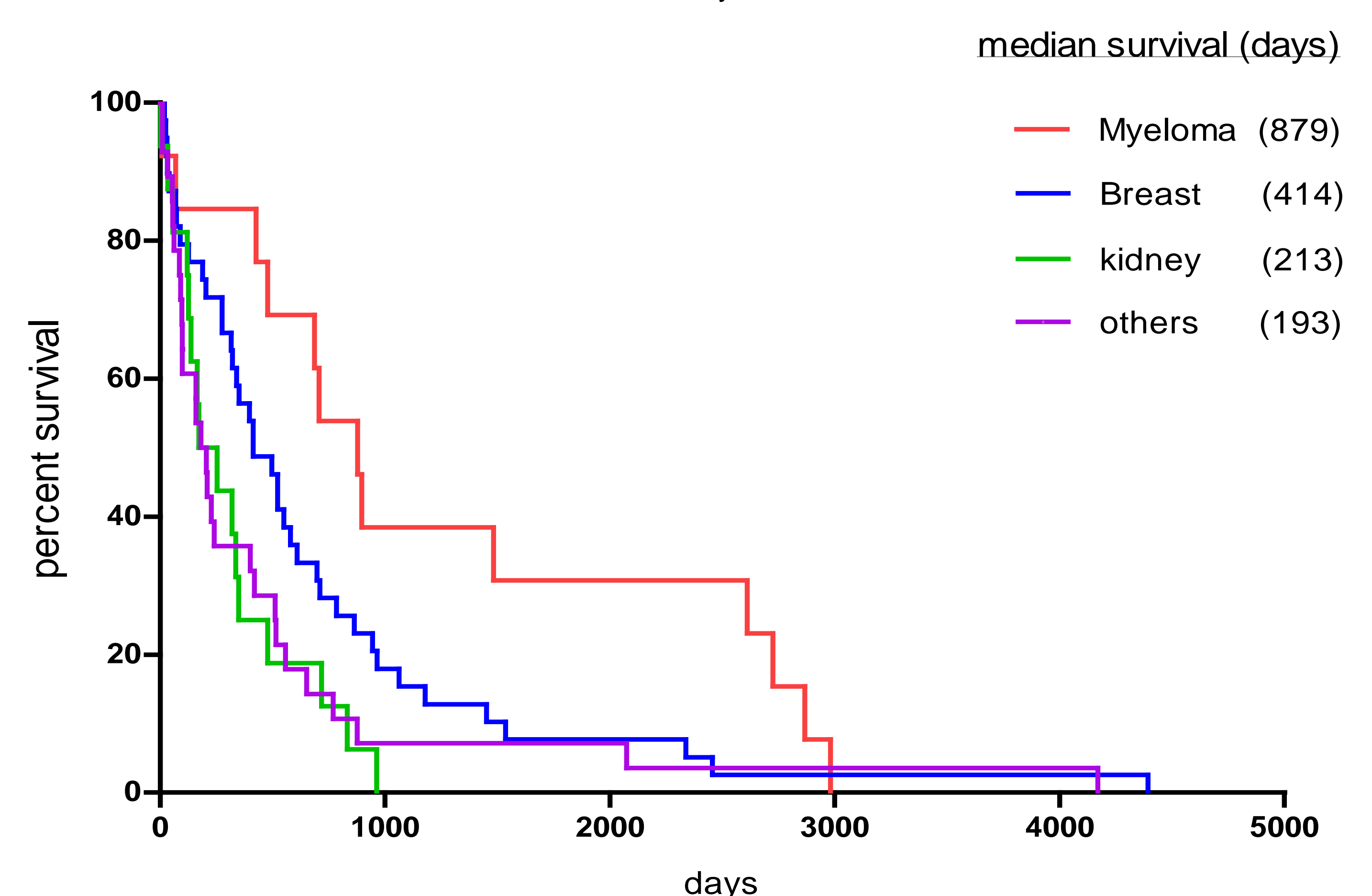
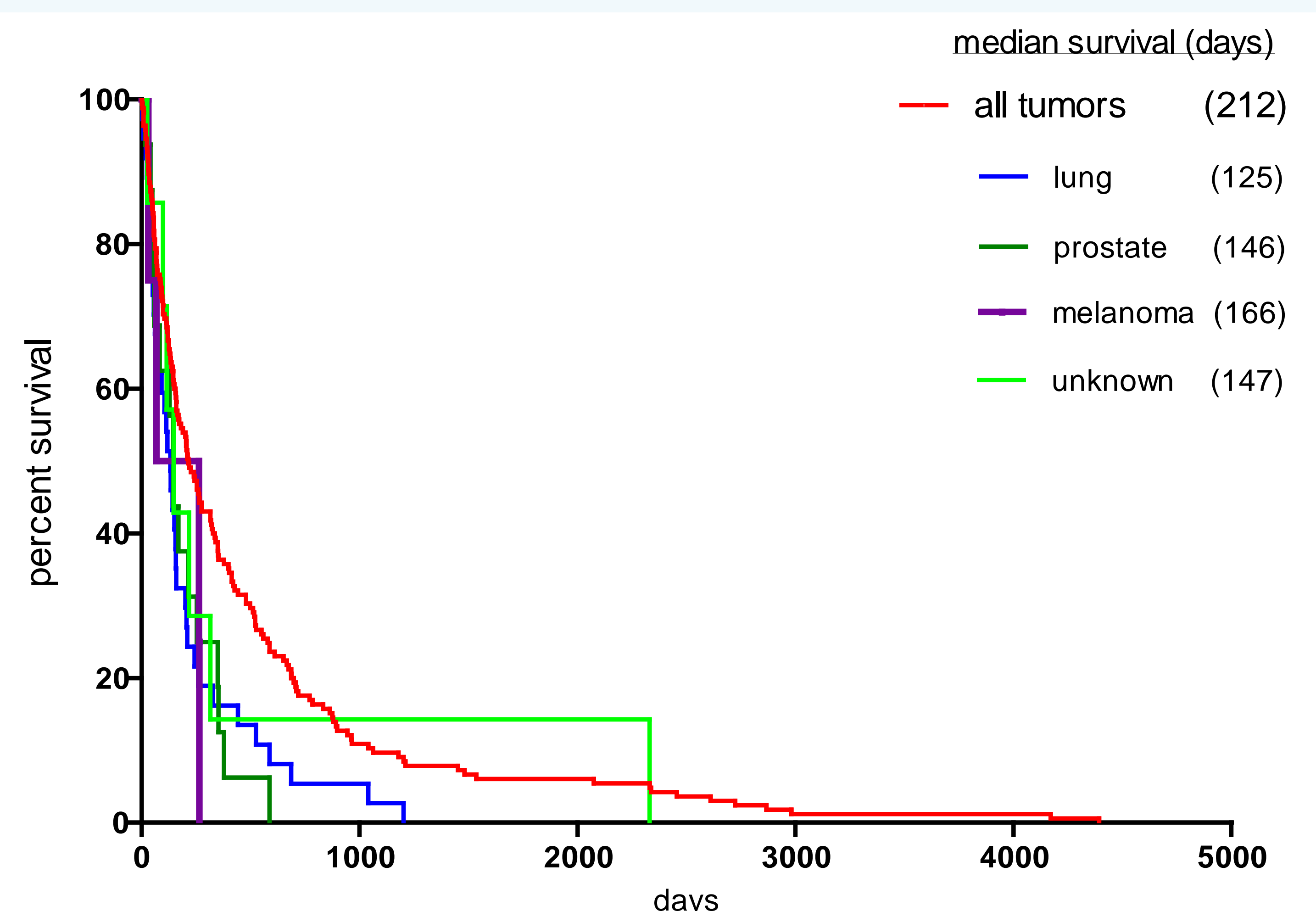


Abb. 3 Kaplan-Meyer plots of postoperative survival

Conclusions: The epidemiologic data demonstrate a constant and typical distribution of spinal metastases in terms of tumor type, localisation and survival time^{1,2}. Further studies will help to determine which factors prognosticate surgery-related outcome and survival in order to refine surgery indications and treatment strategies. However, the decision for surgical treatment and the respective technique is individual and must be embedded in an interdisciplinary and multimodal treatment concept.

References:

1. North RB, Larocca VR, Schwartz J, North CA, Davis RF & McAfee PC: **Surgical management of spinal metastases: analysis of prognostic factors during a 10-year experience.** J Neurosurg: Spine 2:564-573, 2005
2. Klimo P, Schmidt MH: **Surgical Management of Spinal Metastasis.** The Oncologist, 9:188-196, 2004
3. Aepli M: **Spinal metastasis in the elderly.** Eur Spine J (2003) 12 (Suppl.2); S.202-213