Abstract: In multimodal therapy concepts for bone sarcomas, tumor resection is a deciding factor. Modern imaging techniques have made preoperative resection planning much easier and precisely allow tumor boundaries to be defined. There is recent data clearly showing that compartmental resections have no significant advantages compared to wide resections in terms of local recurrence or overall survival. But it remains unclear, how "wide" a "wide resection" should be done. A literature review of the last 15 years, discussion of review articles and multidisciplinary expert opinions as published in major multinational studies. Intralocal resection (R1) is feasible in highly differentiated (G1) chondrosarcoma (atypical cartilaginous tumor) of the extremity. In both osteosarcoma and Ewing’s sarcoma, R0 resection is mandatory. If these fails, there is evidence that in selected cases of osteosarcoma, adjuvant radiotherapy is justified if a second resection is not possible. Expecting contaminated (R1) margins in patients with Ewing’s sarcoma (e.g., in critical locations such as the pelvis), radiotherapy only is better than hoping for the "cure" of insufficient resections margins with a combination of both methods. With regard to the necessary safety distances for a R0 resection, recommendations from the literature are heterogeneous. In addition to the distance measurement, the quality of the anatomic resection margins (e.g., fascia) is of great importance. A distinct recommendation of at least x
millimeters or centimeters cannot be given based on the currently available data. The aim of the resection of a bone sarcoma should be a wide margin with the exception of chondrosarcoma (G1). Ultraradical resections which sacrifice vital structures in order to extend an already wide (R0) resection margin showed no significant benefits. In patients with osteosarcoma, adjuvant radiotherapy should be considered if resection or re-resection is not in sound tissue (R1). Patients with Ewing’s sarcoma should not undergo resection if a contaminated margin is expected. In patients with chondrosarcoma, the available data as for example from pelvic tumors are contradictory and do not allow a clear recommendation.