

Reconstruction in orthopaedic oncology—frontier and future trends

Orthopaedic oncology is a challenging surgical discipline requiring precision and accuracy to accomplish the competing goals of tumor removal and tissue preservation for maximum function. The rationale for this special issue of *Annals of Joint* was to present in-depth approaches to specific surgical problems in bone tumor surgery from our field's international leaders in order to disseminate their expertise and latest insights.

After obtaining the correct diagnosis a treatment plan is made. In most bone tumors this consists of chemotherapy, radiotherapy, and surgery. In case of surgery, an exact plan is required. This planning is key in the success of treatment and must be given the most consideration. To be able to execute the exact plan the development of computer assisted surgery has been proven a most reliable tool as is written by Dr. Kwok-Chuen Wong from Hong Kong in his chapter “Pelvic reconstruction after partial acetabular resection of bone sarcoma”. He explains the work flow and the possibilities and limitations of this image guided surgery concept. He is one of the pioneers and most experienced colleagues in this field and has used navigation since 2006.

Prof. Wei Guo summarized the key element for a prosthesis design and the potential advancement by new technologies, also novel concepts formed from extensive practice. The placement of the stemmed cup can be done navigated as well and Prof. Robert Grimer from Birmingham has done a lot of research into the use of this particular type of implant used to augment acetabular component stability in case of periacetabular resections. His vast experience is well explained in chapter “Pelvic reconstruction using pedestal endoprosthesis—experience from Europe”. In early days, pelvic prosthetic reconstruction was disappointing. Progressively, improvements in clinical outcomes were gradually attained with evolution of implant design. Dr. Tao Ji gave a global view on evolution of pelvic endoprosthetic reconstruction with emphasis on fixation principals and biomechanical structures.

After resection we need to reconstruct and there are various options in reconstruction.

One may choose an uncemented implant or a cemented reconstruction. The tricks and pitfalls of uncemented implants are discussed in chapter “Uncemented megaprosthesis stem fixation using “Scratch Fit” to achieve improved implant fixation” by Dr. Ernest Conrad. If a biological reconstruction method is chosen there are many issues to take into consideration. In the article written by Kelly, from the group of Schwab in Boston, the surgical technique to reconstruct the spine after total *en bloc* spondylectomy using a free vascularized fibula is explained in detail.

Once the correct resection is made and the components are placed in the exact right position, infection is the biggest problem we are facing in tumor surgery. Implants are susceptible to infection due to large surgical areas, extended surgical time and blood loss. Chemotherapy and radiation worsen the local and systemic host defense even further. Evidence concerning the best way to protect our vulnerable patients from implant infections is discussed in the chapter by Drs. Zuidhof and Jutte from Groningen.

Dr. Eric Henderson who is well known to us for the famous failure classification system in our community. He gave us an insight on the objective view of failures that we physicians seldom face squarely. Finally, we hope that this special issue can stimulate discussion and curiosity among the readers, to improve our current surgical practice.

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