Advances in limb-sparing surgery.

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Introduction

A notable development in orthopaedic oncology is limb-sparing surgery, commonly referred to as limb-salvage or limb-preserving surgery. It entails surgically removing a bone or soft tissue tumour while leaving the affected limb intact, giving patients functional mobility and a high quality of life. The development of surgical methods and technologies to enhance the results of limb-sparing surgery has advanced significantly over time. The important advancements and their effects on patient care will be highlighted in this introduction, which will give a general overview of the developments in limb-sparing surgery [1].

Amputation used to be the standard therapy for bone and soft tissue tumours, which frequently caused patients to have serious physical and psychological difficulties. However, thanks to improvements in surgical methods, limb-sparing surgery is now the recommended course of action wherever possible. The main objective of limb-sparing surgery is to completely remove the tumour while keeping the affected limb's function and look. The use of cutting-edge imaging modalities, like Magnetic Resonance Imaging (MRI), Computed Tomography (CT), and Positron Emission Tomography (PET), which enable precise preoperative planning, is one of the significant developments in limb-sparing surgery [2].

These imaging methods give surgeons precise information about the size, location, and proximity of the tumour to important tissues, enabling them to plan exact surgical procedures. In addition, the development of 3D printing and computer-aided design has completely changed limb-sparing surgery. To help with preoperative planning, surgeons can now make patient-specific, 3D-printed replicas of the injured limb [3].

. These models help surgeons create surgical strategies that maximise tumour resection and functional outcomes by helping them better comprehend the architecture of the tumour. Orthopaedic oncology's comprehensive approach has been crucial in advancing limb-sparing surgery. In order to provide patients with complete care, cooperation between orthopaedic surgeons, medical oncologists, radiation oncologists, pathologists, radiologists, and rehabilitation specialists is crucial. Local control and overall survival rates have increased as a result of the treatment plan's inclusion of chemotherapy and radiation therapy [4].

The precision of preoperative planning has significantly increased with the introduction of cutting-edge imaging modalities like MRI, CT, and PET, allowing surgeons to create exact surgical plans. Surgeons now have patient-specific models thanks to the incorporation of 3D printing technology, which has improved their comprehension of tumour anatomy and facilitated the best surgical methods. The alternatives for limb repair have been broadened, providing stability and functionality. Reconstructive procedures now include vascularized bone grafts, allografts, and endoprosthetic reconstruction. The improvements in these methods have resulted in better results and fewer issues [5].

Conclusion

As a result of recent developments in the realm of limb-sparing surgery, orthopaedic oncologists can now obtain superior results while still saving the damaged limb. The field of orthopaedic oncology has undergone radical change as a result of these advancements, which range from customised implants and 3D printing to enhanced imaging and imaging technology. Future advancements in limb-sparing surgery have the potential to significantly improve the quality of life for patients with bone and soft tissue tumours through continued study and collaboration. With limb-sparing surgery, patients can keep their damaged limbs and retain functional mobility while receiving therapy for bone and soft tissue tumours. Innovations in imaging technologies, 3D printing, personalised implants, reconstructive procedures, and interdisciplinary cooperation have pushed the advancements in limb-sparing surgery.

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