

SPECIAL SEMINAR

Presented by the Virginia Tech Department of Biomedical Engineering and Mechanics
and the Fralin Biomedical Research Institute at VTC



COLLEGE OF ENGINEERING
BIOMEDICAL ENGINEERING
AND MECHANICS
VIRGINIA TECH.



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Virtual Seminar: Limb Salvage: An Ideal Role of a Bioengineer in Medicine and Surgery

Bone tumors are a heterogeneous group of benign and high-grade malignant lesions with metastatic potential. Improved imaging technique and adjuvant therapy increased the chance of cure without limb amputation. The advances in implant design and application made bone and joint replacement the standard method of reconstruction in limb salvage. Late loosening problems were solved by the “Hybrid Fixation” concept via extra-cortical bone bridging and ingrowth (EBBI) using bone cement for initial implant stability. Poor joint function resulting from radical resection of soft tissue was attempted by using an enhanced tendon anchor (ETA) device. However, late complications, implant and reconstruction durability, long-term wear particle induced side effects, residual functional deficits, high cost, difficulties in spine and pelvis, and young patients are still problems. Better methods of tumor eradication, skeletal defect reconstruction and joint preservation potential are urgently needed. Prof. Fan of Xi’an, China, pioneered use of microwave (MW) hyperthermia for local bone tumor eradication in the 1980s and subsequently improved instruments and technique and established its efficacy. However, complete eradication of tumor cell inflicted bone and soft tissues could not be assured, thus, it is still considered risky. Bioengineers with electrical and mechanical expertise can play crucial roles with orthopedic oncologists to make it a “low risk and high return” surgery through image-guided pre-operative planning and treatment navigation. Although bone tumors are relatively rare, they provide an example of how bioengineers can impact patient care directly. Finally, a strategic research and development program will be outlined to assure our ultimate goal becomes a reality.

FRIDAY, SEPT. 17 at 3 p.m.

Attend this seminar via Zoom: <https://virginiatech.zoom.us/j/88619513481>



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