

Place of bank allograft with patellar tendon in prosthetic reconstructions of the upper tibia after en bloc resection and gastrocnemius flap

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Introduction: After en bloc resection of the upper tibia for bone sarcomas, the functional results depend mostly on the strength of patellar tendon reattachment and the quality of skin healing.

Patients and methods: From years 1982 to 1995, 50 upper tibial reconstructions were made by authors after en bloc resection for primary bone tumors (osteosarcoma 35, Ewing 5, chondrosarcoma 3, fibrosarcoma 2, MFH 2, osteoclastoma 2, chondroblastoma 1). 13 patients had a direct skin closure, while 37 others benefited from gastrocnemius flap. In 5 cases, reconstruction procedures used long, stainless steel prostheses coated with stem polyethylene. In others, we used a long stem custom made titanium prosthesis coated with massive bank allograft. In 8 cases, we used only bone graft ; the patellar tendon was reinserted either directly through bone or with patient tibial tuberosity. In other cases, bank allograft was harvested with the patellar tendon and patella, and patient's patellar tendon was reattached to the patella and the graft. Weight bearing was immediate in all cases but active motion was restricted during 45 days to help muscle's reattachment. All patients have been followed by authors. Median follow up is 72 months (min 18 - max 144).

Results: Complications are frequent: 10 cases of loosening and 12 infections required reoperation in 18 patients, leading to 8 secondary amputations. The gastrocnemius flap is the best prevention of infection: we had 9/13 infections without flap, versus 3/37 with flap. A massive stainless steel prosthesis coated with polyethylene does not provide a reliable reattachment of the patellar tendon: extension lag appears in all 5 cases after 6 to 10 months. Bone allograft permits a real reinsertion of the patellar tendon, but is exposed to shortening of the tendon (which limits flexion) and is at risk of a secondary fracture. Best results were obtained with grafts of the tibia, tendon and patella. Such a procedure provides an adequate length of the patellar tendon and permits suture through the patella.

Conclusions: 1) Upper tibia allograft should be harvested with the patella and patellar tendon. Such allograft permits a much more reliable reconstruction of the patellar tendon avoiding extensor lag while allowing acceptable knee flexion. 2) Gastrocnemius flap is the best prevention of deep infection after upper tibial reconstruction using prostheses.

Key words: bone neoplasms-surgery; tibia-surgery; prosthetic reconstruction

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