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PP-021

Extra-articular resection of the knee preserving extensor mechanism: a radiological and cadaver study to predict the remaining patellar bone stock; patellar bone stock in extra-articular knee resection

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Background: Extra-articular knee resection (EKR) is performed in patients with malignant lesions contaminating the knee joint in order to achieve negative margins and preserve the extremity. Surgical removal of the knee with extensor mechanism is a well-known technique but an alternative technique was defined without resecting the complete extensor apparatus in contrast to the traditional technique which includes allograft or artificial ligament reconstruction. Preserving the extensor mechanism has been criticized because of the contamination risk and the fracture risk of the remaining patella. This study investigated the thickness of the remaining patella after a bone cut dorsal to the joint capsule in cadaveric dissection and from MRI measurements to predict the risk of patellar fracture.

Methods: The remaining patellar thickness from the dorsal cortex of the patella to joint capsule insertion, was measured by surgical dissection in 14 cadaveric knees (Fig1), and by magnetic resonance imaging (Fig2) (MRI) in 100 adult knees with a meniscal tear (Group 1) and in 24 pediatric knees who had surgical treatment for periarticular malignant tumors (Group 2).

Results: The average remaining thickness of the patella after EKR preserving extensor apparatus (Fig3) was 9.2 mm in cadaveric knees, 10.0mm in group 1 and 7.9mm in group 2. The rate of < 11 mm remaining patellar bone was 71.4% (10/14) in the cadavers and 79% (79/100) and 95,8%(23/24) in group 1-2 respectively.

Conclusions: This study highlights that preserving extensor apparatus may have a theoretical risk of patellar fracture in a certain group of patients undergoing EKR with a patellar cut. Our results and method may guide the surgeon to choose the method of resection preoperatively or discuss the option of not resurfacing the patella with the patient.

Level of Evidence Level IV



Figure 1.



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Figure 2.



Figure 3.