

## ICL #28: ACL Reconstruction - Keeping it Simple and Safe

### Graft harvesting: Patellar Tendon

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A vertical skin incision starting from the level of the inferior pole of patella extending to 1cm below the tibial tuberosity is done. The incision is not midline, but along the medial border of the patellar tendon (PT). Thus, the resultant scar tissue will not be at the point of highest contact while kneeling. Double-incision (horizontal or vertical), or single-incision mini invasive techniques have also been described. Mini incisions may decrease donor-site problems.

Following subcutaneous dissection, the tendon is exposed.

A small incision is made in the paratenon. A mosquito clamp is introduced to protect the tendon while incising the paratenon vertically; this is done through the medial one third, not midline in order to avoid potential damage to the middle one third graft. In addition, there may be adhesions that may lead to potential damage of the graft portion while dissecting through the paratenon.

After full exposure of the tendon, the middle 10mm is marked with a pen, as well as the inferior pole of the patella and 20 mm of patellar and tibial bone blocks.

A single #10 blade is advanced from proximal to distal uninterruptedly, including 20mm patellar bone block, the tendon and 20mm tubercle bone block. Then, the same cut is repeated with the aim of resulting in a 10mm-wide graft. I would like to warn you that, as this cut approaches the distal insertion, do not advance your blade straight, but maneuver it as if you want this portion of the graft a little wider. Only then you end up with 10mm width. Due to undulant fiber structure of the PT, if you go straight down to the tubercle, you may end up with a 8-9mm width at this level. For this reason I do not recommend double-blade systems specifically designed for BPTB harvest.

The proximal bone block is cut with saw; the saw blade is preferably 10mm wide. A line is drawn 6-7mm from the tip of the saw blade; this marks the depth of bone block so that a potential risk of patellar fracture is minimized. Another precaution for the same purpose is to make the cut with the saw blade 30-35 degrees with vertical; thus a trapezoidal plug is created. Another measure to take for less risk of patellar fracture is avoiding bone cuts beyond the confines of the plug. Then cuts for the tibial bone plug are done. After the saw cuts are thought to be enough, I continue with a small and thin osteotome to free the plugs being careful not to tap it hardly on the patellar side for fear of possible chondral damage. The graft is then freed sharply from its soft tissue attachments and taken to the back table wrapped in a wet sponge for preparation. The graft must be handled in a wet sponge at all times during preparation as a precaution against slippage down to the floor.

Excess bone from the plugs is removed and the plug contoured with a rongeur. This bone is kept in a wet sponge in a container to be used for grafting the patellar defect at the end of the procedure. The plug should fit and move easily through a 10mm sizer.

Due to the angle of insertion of the tendon to the tibial tubercle, the graft will be placed upside down, that is, the tibial plug will be placed in the femoral tunnel, so the femoral interference screw is relatively away from the tendon, and thus risk of damage to the tendon is decreased. Tendon insertion to proximal bone plug is marked with a pen. Two parallel drill holes are placed in the proximal plug and #2 nonabsorbable sutures are passed through. The patellar (distal) bone plug will also have two holes but in 90 degrees to each other, because these sutures are prone to be cut during outside-in interference screwing at the tibial side. If both sutures are cut, then the bone plug migrates proximally leading to possible undesired laxity. #2 nonabsorbable sutures are passed and the graft is kept in a container wrapped with a wet sponge for later use.

At the end of the reconstruction, the paratenon is repaired by #2.0 Vicryl in a special manner so as to approximate the tendon. The skin is closed.