

# Revision Extensor Mechanism Reconstruction using Mesh for Proximal Tibial Bone Deficiency: The Tantalum Clamshell Technique

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**INTRODUCTION:** Extensor mechanism (EM) disruption is a rare but severe complication of total knee arthroplasty (TKA) that significantly impairs function. Treatment options for chronic patella tendon ruptures include primary repair, autograft augmentation, and reconstruction with allograft or synthetic material. Despite the number of treatment options, EM reconstructions and repairs have generally poor outcomes. Furthermore, reconstructive options after a failed allograft or mesh are significantly limited, particularly in the setting of a well-fixed tibial component or proximal tibial deficiency due to previous failed EM allograft.

**METHODS:** This case report presents a novel solution for revision EM reconstruction using a Trabecular Metal Cone-Mesh-Cone (TM CMC) clamshell construct in a 72-year-old female patient with a history of multiple EM failures. The surgical procedure involved the removal of a non-viable allograft from the knee joint and the creation of a custom trabecular metal (TM) clamshell construct with a mesh graft placed between the two TM implants. The customized TM cone was designed to cover the deficient anterior tibia and synchronously wrap around the ingrown TM cone. The mesh was cemented between the existing implant and the customized TM cone, and the construct was secured in place with two cancellous screws. The mesh was tunneled between soft tissue to prevent contact with the implant, whereas rotated scar tissue was interposed to avoid abrasion of the mesh on the implant surfaces.

## RESULTS:

The patient tolerated the procedure well and was in stable condition postoperatively. Follow-up X-rays at six months postoperation showed no signs of complications, with the knee in full extension and 1° of extension lag.

**DISCUSSION AND CONCLUSION:** This proposed salvage technique is a promising alternative option for cases with proximal tibial bone deficiency that have failed multiple previous treatments attempts.



Figure 1: Cutting the TM cone into the appropriate shape.

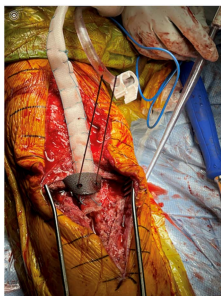


Figure 2: Drilling holes on the outer TM part

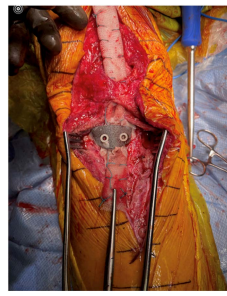


Figure 3: The MESH secured on the TM with screws and through the retinacular sleeve proximally

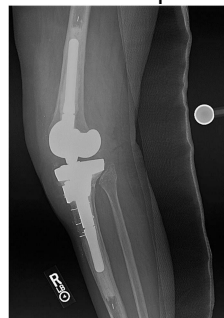


Figure 4: Postoperative lateral X-ray

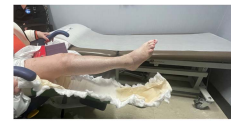


Figure 5: The knee is in full extension 12 weeks postop