



Revision extensor mechanism reconstruction using Marlex Mesh in the setting of 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 can greatly impair function. Treatment options for chronic patella tendon ruptures include primary repair, autograft augmentation, and reconstruction with allograft or synthetic material. Despite various techniques, failures can occur, and options for reconstruction after a failed allograft or mesh are limited, especially if the tibial component is well-fixed and cannot be easily removed, and if there is proximal tibial deficiency from a previous failed EM allograft.



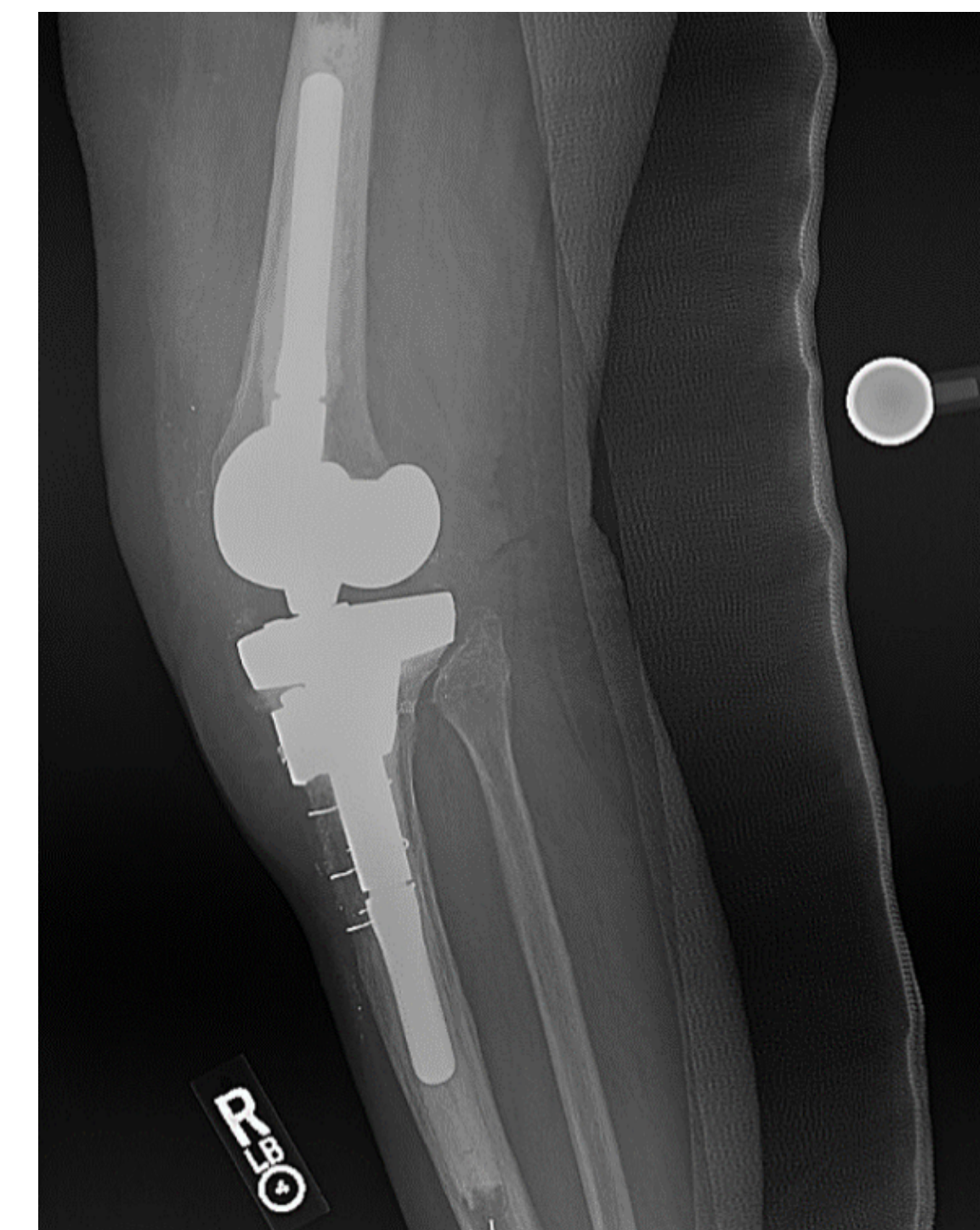
The tibial aspect of the allograft superiorly displaced, 6 months after the procedure

CASE REPORT

This case report presents a novel solution for revision EM reconstruction in a 72 year old female patient with a history of multiple EM failures using a Trabecular Metal Cone-Mesh-Cone (TM CMC) clamshell construct.

SURGICAL TECHNIQUE

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 Marlex mesh graft in between the two TM implants. A TM tibial cone was selected that would provide good anterior coverage of the deficient proximal tibia and wrap around the ingrown TM cone. The borders of the TM cone that needed to contact the peripheral host tibial cone were marked. Then, the TM cone was customized using a metal cutting diamond wheel until its outer shape closely replicated the convex anterior surface of the deficient tibia. The Marlex 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 and rotated scar tissue was interposed to prevent abrasion of the mesh on the implant surfaces.



FOLLOW UP

- In a follow-up 12 weeks after the operation, the patient reported an overall feeling of wellness and denied any pain or swelling in the knee. Her incision had healed well, and there were no signs of wound complications. The knee was in full extension with a 1° extension lag.



- In a follow-up 12 months after the operation, following a reported traumatic fall, the patient exhibited an extension lag of 15°. The patient had a range of motion (ROM) of 45°, with 15° of extension and 60° of flexion. The patient remained satisfied with the result.

CONCLUSION

In conclusion, using a TM CMC construct offers an effective solution for salvaging Marlex mesh reconstructions in cases of severe anterior tibial bone loss following failed EM reconstruction attempts. This innovative approach provides a unique and unconventional technique as a viable alternative to traditional amputation methods, but definitely there is room for improvement.