

Primary Synthetic Ligament Reconstruction for Posterior Cruciate Ligament Tibial Avulsion Fractures: A Viable Alternative

Sir,

Posterior cruciate ligament (PCL) tibial avulsion fractures are typically managed with open reduction and internal fixation (ORIF); however, small comminuted fragments in osteoporotic bone often preclude stable fixation. While synthetic ligaments are well-established for multi-ligament reconstructions, their application in isolated PCL avulsions, particularly for fractures unsuitable for suture or screw fixation, represents an underutilised solution.¹ Synthetic ligaments, established for the treatment of chronic PCL insufficiency, offer an innovative solution for challenging acute avulsion fractures by bypassing fragment fixation needs while restoring knee kinetics. Emerging evidence supports their efficacy in cases where screw or suture fixation is not feasible.²

We treated a 63-year female with a left knee injury from a ground-level fall. Preoperative imaging confirmed a comminuted PCL tibial avulsion (Figure 1A, B). MRI showed complete PCL detachment from the tibia (Figure 2).

Due to inadequate fragment fixation potential, arthroscopic LIGATECH™ ligament reconstruction was performed. Post-operative radiographs confirmed anatomic reduction and graft position (Figure 3).

This technique offers distinct advantages, including immediate stability that enables partial weight-bearing at one week (compared with 6-8 weeks in ORIF), prevention of hardware-related complications in osteoporosis, and a reduced risk of arthrofibrosis (ROM >120° achieved in 90% by week 8).³

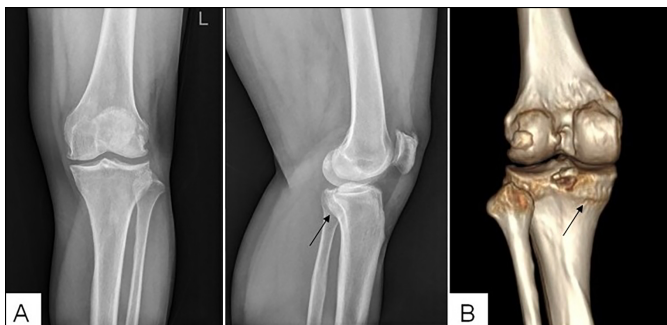


Figure 1: Preoperative imaging. (A) Preoperative anteroposterior and lateral knee radiographs demonstrating an avulsion fracture at the tibial insertion of the posterior cruciate ligament. **(B)** Preoperative 3-dimensional CT reconstruction reveals comminution of the fracture fragment.

This technology also has critical limitations, including a risk of synovitis (3-8%) requiring prophylactic nonsteroidal anti-inflammatory drugs, tibial tunnel positioning that must avoid graft impingement, and the use of 110° knee flexion during fixation.⁴

Absolute contraindication is the active knee infection.⁵ This approach addresses ORIF limitations in the selected complex cases while necessitating stringent technical execution.

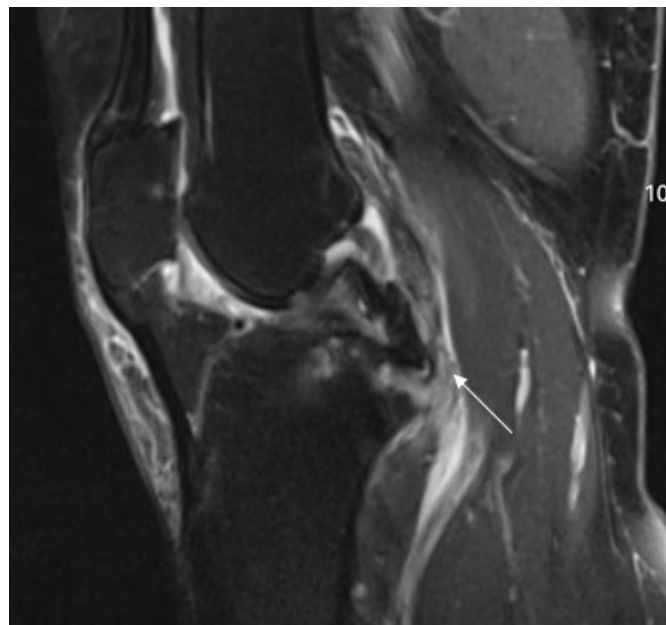


Figure 2: Preoperative knee MRI demonstrating an avulsion fracture at the tibial insertion of the posterior cruciate ligament (PCL), with associated intrinsic ligament injury.



Figure 3: Postoperative anteroposterior and lateral radiographs of the knee demonstrating the fixation of the LIGATECH™ artificial ligament system, with interference screws positioned in the femoral and tibial tunnels.

COMPETING INTEREST:

The authors declared no conflict of interest.

AUTHORS' CONTRIBUTION:

GHS, WHG, XYP: Conceptualisation, data curation, funding acquisition, investigation, methodology and resources, supervision, writing, review, and editing.

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Guang Hong Shao¹, Wen Hu Gao¹ and Xing Yu Pu²

¹Department of Orthopaedic Surgery, Shandan County People's Hospital, Zhangye, China

²Department of Orthopaedic Surgery, Gansu Provincial Hospital, Lanzhou, China

Correspondence to: Dr. Xing Yu Pu, Department of Orthopaedic Surgery of Gansu Provincial Hospital, Lanzhou, China

E-mail: xyputj@163.com

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