

Case Report

Pretibial Cyst after Anterior Cruciate Ligament Reconstruction with Non-bioabsorbable Interference Screw

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Abstract

Pretibial cyst formation after anterior cruciate ligament reconstruction is a rare late complication. Exact etiology is not known, but it is commonly reported with use of bioabsorbable screw for fixation. Here we report a very rare case of pretibial cyst after anterior cruciate ligament reconstruction even with use of non-bioabsorbable screw for fixation.

Keywords: Anterior cruciate ligament (ACL), Pretibial cyst, Titanium screw

Introduction

Pretibial cyst formation after anterior cruciate ligament (ACL) reconstruction is a rare complication, usually occurring 1-5 years post-operatively.¹ Various etiological explanations have been proposed like synovial fluid leakage, intraosseous tendon necrosis, inflammatory reaction to a bioabsorbable screw.^{2,3} It is reported commonly after ACL reconstruction with bioabsorbable screw and hamstring graft.⁴ Our case is very rare as such cyst developed even with use of titanium interference screw fixation.

Case report

We report a case of 35 year old man, with enlarging lump over the right proximal leg after two and half year of ACL reconstruction. He had history of road traffic accident 5 years back with right tibial plateau fracture managed by open reduction and internal fixation with plate and screws and 2 years later implant removal and ACL reconstruction (for ACL tear sustained during primary trauma) with hamstring graft and titanium interference screw fixation was done at other center. On examination there was oval shaped lump in proximal anteromedial right leg, with ill-defined margins. The lump was tender, fluctuant, mobile and measures 8*9 centimeters (Fig.1). Range of movement of knee was normal; stability test showed lax anterior cruciate ligament. X-ray knee shows grade II osteoarthritis, widened tibial tunnel and metallic interference screws (Fig.2). MRI finding was suggestive of pretibial cyst without joint continuity and lax thickened ACL (Fig.3).

Case was thus diagnosed as pretibial synovial cyst, as a late complication of ACL reconstruction and planned for arthroscopic knee evaluation and excision of cyst. Arthroscopy findings were lax anterior cruciate ligament, synovitis and grade III chondral lesion in medial femoral .Cyst was tense, got ruptured while excising with gush of gelatinous material suggestive of ganglion(Fig.4). Interference screw was loose hence removed. There was no extravasation of fluid through tibial tunnel suggesting healed tunnel on articular side; thus we did not need bone plug to occlude the tibial tunnel. Coagulase negative staphylococcus was grown in tissue culture; sensitive to ofloxacin. Marginal wound necrosis occurred postoperatively, suture was removed after 2 weeks. Histopathological examination of specimen was consistent with ganglion cyst. There is no recurrence of cyst on 18 month postop followup.

Discussion

Pretibial cyst formation is a rare late complication of ACL reconstruction.¹ Exact cause of it isn't known but various etiological theory have been proposed like synovial fluid through tunnel due to graft tunnel mismatch, eccentric tendon position in the bone tunnel, intraosseous necrosis of the tendon, bioabsorbable screw breakage and micromotion of the tendon in tunnel.^{1,2} Incomplete incorporation of the soft tissue graft inside the bone tunnel as they don't have a bone block that consolidates and occludes the tunnel ,may cause cyst formation.³ Many screws are cannulated and therefore communication between the joint and the pretibial

area probably exists for some months to years after the operation, but in most cases no cyst develops.⁴

Excision of cyst and curettage of tunnel has good success rate of healing. In cases where there is communication of cyst with joint, bone plug should be used to occlude tunnel.³

Inflammatory reaction to a foreign body i.e. bioabsorbable screw leading to such cyst formation are reported.⁴ As titanium is inert, unlike other metals it integrate directly to bone by forming an oxide layer over which calcium and phosphate precipitate and osteoblast can bind, with minimal inflammatory response.⁵ Thus inflammatory origin of cyst in our case is unlikely. Victoroff BN et al.⁶ hypothesized incomplete allograft integration in bone tunnels or pressure necrosis was cause of cyst formation in their case where titanium screw was used but in our case hamstring autograft was used. Simonian PT et al.³ gave plausible theory as graft micro-motion in bone tunnel causes cyst formation in cases where an inert metal and autograft are used for fixation.

Conclusion

Our case is very rare as pretibial ganglion cyst developed even with use of autograft and titanium screw fixation.



Fig 1. Pretibial lump with healed surgical scar

References

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Fig.2. X-ray of Knee-osteoarthritic changes with metallic interference screws

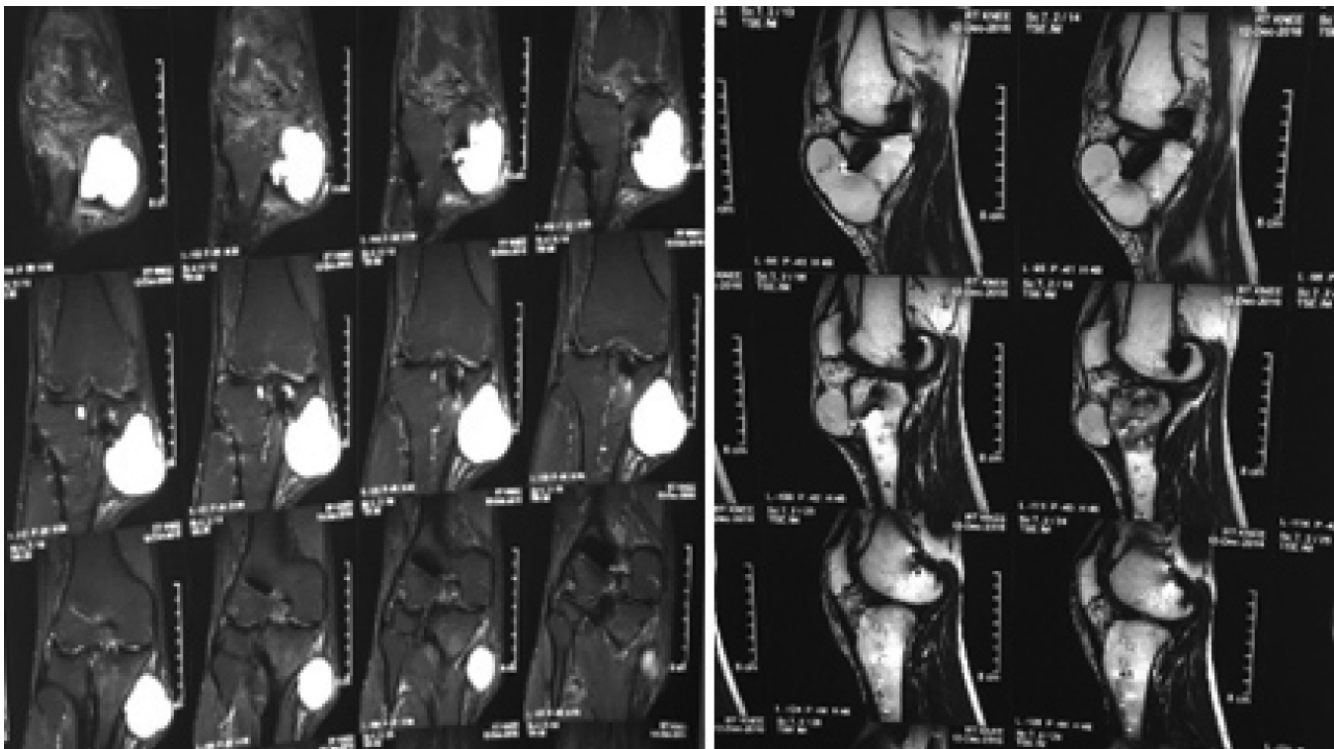


Fig 3.MRI findings: Pretibial cystic mass with high signal intensity in T2W and low signal intensity inT1W image.

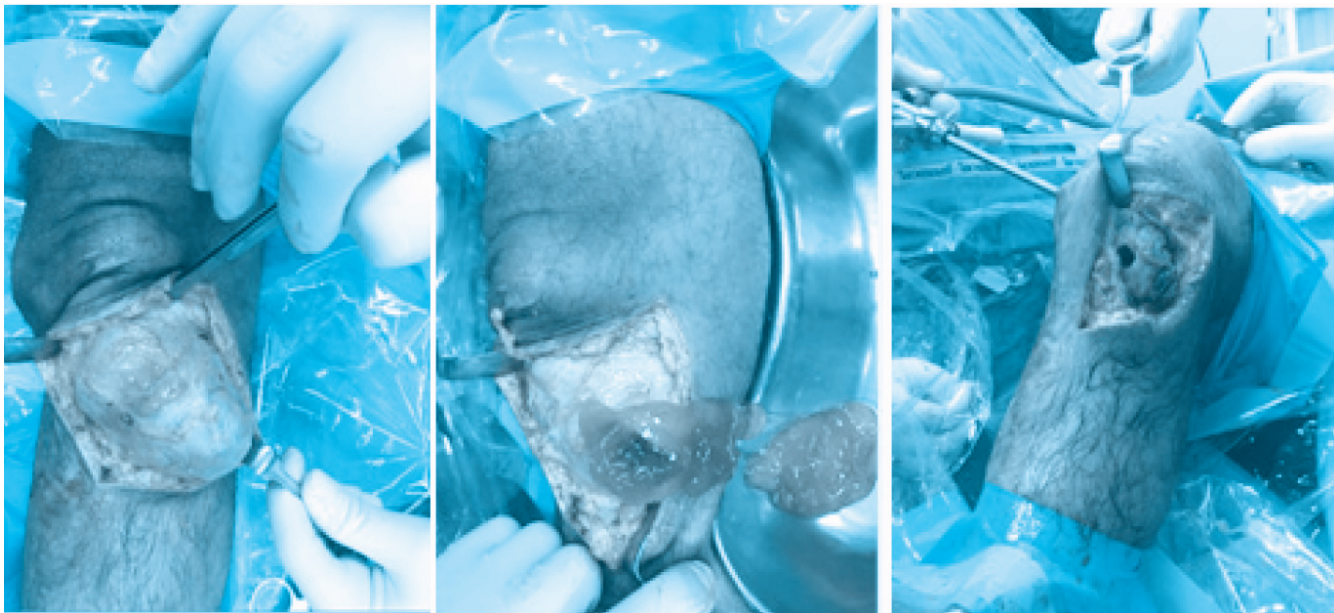


Fig 4.Intraoperative Findings