RESEARCH ARTICLE

MEDIAL PATELLOFEMORAL LIGAMENT RECONSTRUCTION FOR NEGLECTED PATELLAR DISLOCATION POST TOTAL KNEE ARTHROPLASTY

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Abstract

Patellar dislocation is considered to be an infrequent complication post total knee arthroplasty, however identifying the exact underlying pathology that led to this condition is critical, rupture medial structure could result in patellar subluxation or permanent dislocation. We present this case report of medial patellofemoral ligament rapture reconstruction that was done to treat this unfortunate event of chronic patellar permanent dislocation following total knee arthroplasty that was neglected for four months after sustaining a twisting injury.

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Introduction:

Medial patellofemoral ligament reconstruction considered to be commonly performed procedure however it is not commonly used to treat patellar dislocation following total knee arthroplasty, as the reasons for this complication usually related to the implant position, design, and rotation, rather than a traumatic incidence or rapture of the MPFL. in this case report we presented a complex MPFL reconstruction for permanent dislocated patella that was neglected for a long period of time post TKA.

Case presentation

This is a 64-year-old lady, presented to our clinic post left total knee arthroplasty done 4 months back and she is complaining of knee pain following a twisting injury three weeks post her TKAsurgery, since then she had difficulties following up with her physiotherapy sessions. In her clinical examination she had a significant effusion with diffuse tenderness, her range of motion was severely limited 15-85 degrees arc. Knee x-rays revealed left patellar dislocation located at the lateral gutter (fig.1).

She had long stem non hinged TKA with resurfaced patella done by another surgeon due to her high BMI which was 43, during her post-operative period, she only visits her arthroplasty surgeon twice, 1st time two weeks post-operative when her stitches were removed, and the 2nd follow up 10 weeks when her clinical examining revealed a quadriceps weakness and her radiographic images revealed slightly displaced patella, she advised to continue her strengthening physiotherapy exercise and to be reevaluated. An assessment of the reason of her patellar dislocation resulted in her non-contact twisting injury and this conclusion was made after investigating for any component malposition or malrotation utilizing the computed tomography scan.

We took the patient to the operation room for patellar reduction, lateral release and medial patellofemoral ligament reconstruction utilizing posterior tibialis allograft. Under general anesthesia, we examine the patient to assess for collateral stability, patella was dislocated in the lateral gutter and flexing the knee made it worse, we were able to...
reduce the patella to the normal position but was not stable, range of motion was full extension to 100 degrees of flexion.

![Image of knee anatomy](image)

Fig. 1: Preoperative sunrise view in A, dislocation of the patella into lateral gutter in the AP view in B.

We exposed the knee utilizing the same previous incision for the TKA and inspection of the full patellar and quadriceps tendon and no abnormalities detected, we then release the contracted lateral soft tissue and retinaculum, the patella mobilized to the central normal position.

As the patient patellar and quadriceps tendon were extremely poor in quality decision was made to proceed with allograft posterior tibialis and due to her long stem TKA we face some difficulties obtaining the accurate position of 30 degrees femoral tunnel that we eventually achieved adequately under the C-arm x-ray guidance utilizing a 9 size drill, we followed this with patella preparation inserting two sutures anchors of smith and nephew, one at the superior medial border of the patella and the 2nd few centimeters below and we create a groove in between those anchors for the graft to stay in secured by stitches in the groove then the two limps pulled and tighten with fingers tension then secured in the femoral tunnel with size 9x30 mm Bio-Tenodesis Screw (fig 2-4), ending our operation by in situ drain and reexamination of the patella in full range of motion with normal tracking, wound closed in routine fashion and discharge after receiving 48hrs of intravenously administered antibiotic with home oral medications of antibiotic, analgesics and prophylactic anticoagulation.

The patient had routine post-operative follow up for 3 weeks at which her recovery complicated by deep venous thrombosis that required hospitalization for three days under care of the medical team, treated with anticoagulant and continued her follow up with us with unremarkable complication her wound healed and she start to regain her ability to walk with gradual weaning of aids or any assistance, she reached 0-70 range of motion at 5 weeks post-operative visit, at her 8 weeks follow up patient was mobilizing free with full weight bearing and gain 0-90 range of motion pain free.
Discussion:
Patellar dislocation following total knee arthroplasty is an uncommon complication, but it’s leads to significant disability when it occurs and failure of the arthroplasty\cite{1,2}. Proper approach and accurate identification of the underlying causes is extremely important for treating this condition successfully. Detailed history and physical examination with proper views of x-ray will offer good amount of information to facilitate uncovering to some extent the leading etiology of this infrequent incident, assessing the femoral, tibial and patellar component position and rotation utilizing CT scan, this will help avoiding unnecessary operations as revision arthroplasty or corrective realignment procedures proximally or distally that’s alone it might not be sufficient\cite{3}. Other factors that should be considered during assessment of patellofemoral instability are limb alignment component design, patellar preparation, and soft-tissue balancing\cite{4,5}.

Nonoperative treatment of the acute patellar dislocation usually result in radiolocacion in approximately 15\%–44\%\cite{6}. MPFL insufficiency play a role in all the recurrent patellar dislocation\cite{7}, therefore it can be successfully treated by lateral release and MPFL reconstruction in this particular case of patellar dislocation after TKA with no component malrotation\cite{8}.
Furthermore as reported by Goto et al [9] they accomplished excellent result utilizing the MPFL reconstruction for rupture medial structure post TKA, as well as Asada et al [10] first preformed this procedure for the same condition with lower risk for postoperative complication.

In our case, MPFL reconstruction and lateral release was the optimal solution for the permanent patellar dislocation with no need for revision procedures due to lack of any component malrotation, her patellar tracking postoperatively was monitored for a period to reveal good outcome.

As our patient had her patellar resurfaced during her first surgery of the TKA, there was no evidence in the literature pointing toward any association between patellar instability following TKA and wither the surfacing of the patella or not will be a factor. As per Seo et al [11] there is no significant clinical and radiological differences in patients with resurfaced vs nonresurfaced patellae; however, several meta-analyses have revealed a higher risk for reoperation in patients with nonresurfaced patellae.

Conclusion:-
The there is no specific procedure recommended to manage patellar dislocation post total knee arthroplasty therefore identifying the underlying pathology that led to this uncommon condition, we emphasized the importance to proceed with accurate approach to reach successful treatment, as for MPFL reconstruction for chronic patellar dislocation post TKA due to an injured medial structure, we achieved successful good outcome in regards to pain and function.

References:-
1. Merkow RL, Soudry M, Insall JN: Patellar dislocation following total knee replacement. J Bone Joint Surg Am. 1985, 67:1321-27.
2. A. Lamotte, T. Neri, A. Kawayec, B. Boyer, F. Farizona, R. Philippot: Medial patellofemoral ligament reconstruction for patellar instability following total knee arthroplasty: A review of 6 cases. A. Orthopaedics & Traumatology: Surgery & Research 102 (2016) 607–610.
3. Vishal Mehta, MD1 David Morawski, MD: Medial Patellofemoral Ligament Reconstruction Following Total Knee Arthroplasty: A Case Report. J Knee Surg Rep 2016;2:e1–e3.
4. Song SJ, Detch RC, Maloney WI, Goodman SB, Huddleston JJ 3rd. Causes of instability after total knee arthroplasty. J Arthroplasty 2014; 29: 360-364.
5. Shen XY, Zuo JL, Gao JP, Liu T, Xiao JL, Qin YG. New treatment of patellar instability after total knee arthroplasty: A case report and review of literature. World J Clin Cases 2020; 8(21): 5487-5493.
6. Cash JD, Hughston JC. Treatment of acute patellar dislocation. Am J Sports Med 1988;16:244–9.
7. Mäenpää H, Lehto MU. Patellar dislocation: the long-term results of nonoperative management in 100 patients. Am J Sports Med 1997;25:213–7.
8. Goto T, Hamada D, Iwame T, Suzue N, Takeuchi M, Egawa H, Sairyo K. Medial patellofemoral ligament reconstruction for patellar dislocation due to rupture of the medial structures after total knee arthroplasty: a case report and review of the literature. J Med Invest 2014; 61: 409-412.
9. Van Gennip S, Schimmel JJ, van Hellemontd GG, Defoort KC, Wymenga AB. Medial patellofemoral ligament reconstruction for patellar maltracking following total knee arthroplasty is effective. Knee Surg Sports Traumatol Arthrosc 2014; 22: 2569-2573.
10. Asada SH, Akagi MA, Mori SH, Hamanishi CH. Medial patellofemoral ligament reconstruction for recurrent patellar dislocation after total knee arthroplasty. J Orthop Sci (2008) 13:255–258.
11. Seo SS, Kim CW, Moon SW. A Comparison of Patella Retention vs Resurfacing for Moderate or Severe Patellar Articular Defects in Total Knee Arthroplasty: Minimum 5-year Follow-up Results. Knee Surg Relat Res 2011; 23: 142-148.