



Research Article

ARTHROSCOPIC MANAGEMENT OF ISOLATED PCL INJURIES- CLINICAL OUTCOME AT TWO YEARS

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ARTICLE INFO

Article History:

Received 12th November, 2019

Received in revised form 23rd

December, 2019

Accepted 7th January, 2020

Published online 28th February, 2020

Key words:

PCL, avulsion fractures

ABSTRACT

Aim: Isolated PCL injuries are often considered as benign and treated conservatively. Aim our study is to determine the functional outcomes, efficacy of arthroscopic ally treated isolated PCL injuries treated by PCL reconstruction or fixation.

METHODS: 48 patients, each with an isolated PCL injury were taken in this prospective study of which 34 had complete PCL tear and 14 with PCL avulsion fracture. Patients with complete tear underwent single bundle PCL reconstruction with semitendinosis and gracilis tendon autograft and patients with displaced PCL avulsion fractures managed by arthroscopic fixation with suture bridge technique. Patients underwent regular follow-up postoperatively with clinical and radiographic evaluation. Clinical follow-up was done by Lysholm Knee Score, IKDC score. Patients had a minimum follow up of two years.

RESULTS: Mean preoperative Lysholm score for 48 knees was 41; mean postoperative Lysholm score was 90. had excellent results were achieved in 36 of 48 patients and 8 patients had good results and 4 patients had fair result at final assessment. In IKDC grading, 42 patients were assessed as normal or near normal (grade A or B).

CONCLUSIONS: Arthroscopic management of isolated PCL injuries showed a good function outcome. Hence PCL injuries should not be considered as benign, High grade PCL injuries should be treated surgically to restore normal biomechanics of knee joint.

Aim: Aim our study is to determine the functional outcomes, efficacy of arthroscopic ally treated isolated PCL injuries treated by PCL reconstruction or fixation.

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INTRODUCTION

The posterior cruciate ligament is the strongest of all the ligament in the knee. PCL injuries account for more than 20% of reported knee injuries [1], but injuries to the PCL are commonly missed or treated as benign.

The primary function of posterior cruciate ligament is to prevent posterior translation of the knee at higher knee flexion angles [2], thus patients commonly complaints of problems while deceleration.

Studies have shown that the PCL has intrinsic capacity to heal following injury unlike ACL [3], [4]. The treatment of isolated PCL injuries is often controversial [5]. Various studies have proved that neglected grade III PCL injuries may lead to early patellofemoral and medial compartmental osteoarthritis.

MATERIALS AND METHODS

48 patients were enrolled in this prospective study. All surgeries were performed between September 2015 and October 2017 at Sri Ramachandra Medical Center.

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All the patients had an traumatic etiology. Inclusion criteria of the study were isolated PCL injury either complete tear or PCL avulsion fracture. Patients with associated ACL injury or PLC injury excluded from the study. All patients on clinical evaluation had a definite posterior sag and a positive posterior drawer. Preoperatively, all patients had a magnetic resonance imaging (MRI) to confirm the diagnosis. 34 patients had a complete PCL tear, who underwent single bundle PCL reconstruction with semitendinosis and gracilis tendon autograft and 14 patients with avulsion fractures underwent arthroscopic PCL avulsion fracture fixation by suture bridge technique. Average age at time of surgery was 32 years. All patients were followed up at regular intervals for a minimum period of 2 year. Average follow-up period was 28 months. Post operatively, patients were evaluated by Lysholm Knee Score and the International Knee Documentation Committee (IKDC) Objective score. Quantitative assessment of translation was documented by KT-2000.

Surgical procedure

Patients managed either by arthroscopic PCL reconstruction or fixation of the avulsion fracture depending on the pathology. Single Bundle Arthroscopic PCL Reconstruction was done with semi tendonus and gracilis autograft. Surgery was

performed under general anesthesia with patient in supine position with involved knee in hanging position stabilized by a thigh holder. Under tourniquet control, diagnostic arthroscopy was done using standard anterolateral and anteromedial portals. Under arthroscopic guidance postero medial portals were established. PCL tear was confirmed arthroscopically. Auto grafts were obtained from ipsilateral leg. The graft was prepared and doubled. Tibial and femoral tunnels were reamed at anatomical footprints of PCL. Tibial tunnel is reamed at a PCL jig angle of 60° and wire catcher is used to protect popliteal vessels. Femoral tunnel reamed using a outside in jig. Graft was passed through the femoral and tibial tunnels and fixed with biodegradable interference screw. While doing Tibial fixation the knee is kept at 70° flexion and anterior drawer thrust was given.

Postoperative Rehabilitation

Patients was immobilized in long knee brace with posterior support for tibia. Patients were mobilized full weight bearing from the first post operative day. Knee bending started from the 10th post operative day onwards. Knee brace was weaned off after 4 weeks and put on knee strengthening rehabilitation protocol.

Arthroscopic PCL Avulsion Fracture Fixation

Arthroscopic PCL Avulsion Fracture Fixation was done using suture bridge technique. Surgery was performed under general anesthesia with similar set up. Diagnostic arthroscopy was done using standard anterolateral and anteromedial portals. Under arthroscopic guidance high postero medial and low postero medial portals were established. PCL avulsion fracture was confirmed arthroscopically. Fracture bed was freshened. Fracture fragment is fixed by suture bridge technique and secured by the tying knots anteriorly over the tibial bone bridge.

Postoperative Rehabilitation

Patients was immobilized in long knee brace. Patients mobilized from first post op day with partial weight bearing with walker. Knee bending started from the 10th post operative day. Knee brace was weaned off after 4 weeks. Quadriceps and hamstring strengthening exercise were encouraged and put on knee strengthening rehabilitation protocol.

RESULTS

Average age at time of surgery was 32 years. male: female ratio was 4:1. Average time from injury to surgery was 1 month in case of PCL rupture and 2nd week in case of avulsion fractures. Mean preoperative Lysholm score for 48 knees was 41; mean postoperative Lysholm score was 90. Patients had a significant improvement in Lysholm score since 3rd month followup. 36 of 48 patients had excellent results and 8 patients had good results and 4 patients have fair result at final assessment.

Objective IKDC grading showed significant improvements on subsequent follow-ups. In final IKDC ratings, 42 patients were assessed as normal or near normal (grade A or B) at 2 years follow up. Six patients had grade C on final assessment.

DISCUSSION

Isolated PCL injuries treated conservatively had incidence of residual instability and early patella femoral arthritis[5]. In our

study we have evaluated the outcome of both arthroscopic PCL reconstructions and arthroscopic PCL avulsion fracture fixation both had similar biomechanical effects.

All arthroscopic PCL avulsion fracture fixations were done on the second or third week after the injury. Since the incidence of compartment syndrome is higher if higher arthroscopy is performed in the acute stage, the surgery was avoided during the first week after injury. Surgeries were not delayed after 4th week after the injury due to probable difficulty in reduction of the fracture fragment. All arthroscopic PCL reconstructions was performed with semi tendonus and gracilis autograft within 2 years from the time of injury.

Arthroscopic management of PCL injuries have lower morbidity than open techniques. Moreover arthroscopy also allows the assessment and management of associated meniscal and chondral injuries. Posterolateral and posteromedial injuries can also be identified during arthroscopy. Other advantages include less hospital stay and less incidence of postoperative knee stiffness due to early mobilization.

The functional outcomes of our study is comparable with study by Chang *et al* [6] which showed 90% good or excellent results in Lysholm score after arthroscopic PCL reconstruction. In our study 91.67% good or excellent results in Lysholm score. In the same study 85% of patients had normal or near normal IKDC scoring whereas in our study showed 87.5% normal or near normal IKDC score. Sekiya JK *et al* [7] evaluated functional outcome of single bundle arthroscopic PCL reconstruction and had 62% normal to near normal IKDC scores in their study.

Arthroscopic PCL reconstruction or avulsion fixation is a challenging procedure with steep learning curve. By understanding surgical principles and techniques, patients with posterior knee instability undergoing PCL reconstruction or fixation can achieve satisfactory results. Recently progress has been made in basic knowledge and surgical techniques in PCL injuries.

CONCLUSION

Arthroscopic management of isolated PCL injuries showed a good function outcome. Hence PCL injuries should not be considered as benign, High grade PCL injuries should be treated surgically to restore normal biomechanics of knee joint. Arthroscopic PCL avulsion fracture fixation safely done on the second week after the injury gives excellent clinical outcomes and achieves good bony union.

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How to cite this article:

Dr.Suresh Perumal, Dr.Prakash. A and Arumugam.S (2020) 'Arthroscopic Management of Isolated Pcl Injuries- Clinical Outcome at Two Years', *International Journal of Current Advanced Research*, 09(02), pp. 21273-21275. DOI: <http://dx.doi.org/10.24327/ijcar.2020.21275.4176>
