International Journal Dental and Medical Sciences Research
Volume 6, Issue 5, Sep - Oct 2024 pp 493-503 www.ijdmsrjournal.com ISSN: 2582-6018

Study on Gracilis Auto graft Transosseous Suture Technique for Medial Patellofemoral Ligament Reconstruction

Dr. Hoysal Gowda, Dr.H M Manjunath Swamy, Dr.Vishan Shetty
Post graduate (Departmant of Orthopaedics)
Post graduate (Departmant of Orthopaedics)
, Post graduate (Departmant of Orthopaedics)
Departmant of Orthopaedics, AJIMS, Mangalore, Karnataka.

Submitted: 20-10-2024 Accepted: 30-10-2024

I. INTRODUCTION

- Recurrent patellofemoral instability is a disabling condition, commonly seen in young athletic population.
- The MPFL being the primary medial stabilizer of the patella, is injured in almost all patients following an acute patellar dislocation.
- The optimal surgical treatment for chronic patellar instability remains controversial but reconstruction of the MPFL has shown good results in restoring normal patellar tracking.

Aims And Objectives

- To evaluate the functional Outcome of an isolated medial patellofemoral ligament reconstruction in patients with recurrent patellar dislocations and to assess the complications and re-dislocation rates following surgery.

Materials and Methods

- This was a hospital-based observational study conducted in A. J. Institute of Medical Sciences and Research Centre, Mangalore from March 2021 to December 2023.
- During this period 26 patients with chronic patellar instability were selected based on the inclusion criteria and were treated by an isolated MPFL reconstruction.
- The functional assessment was done using the Kujala patellofemoral scoring system pre and post-operatively.

INCLUSION CRITERIA:

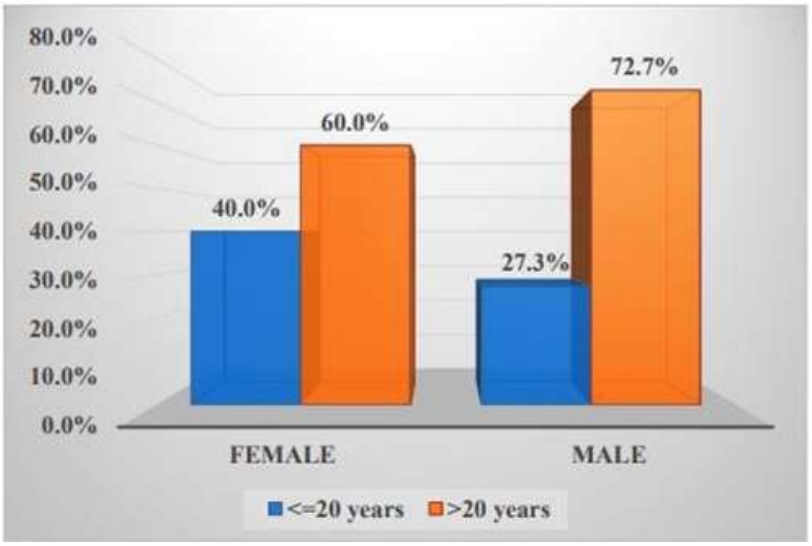
1. Patients with at least 2 episodes of patellar dislocation
2. Patients who experienced episodes of recurrent patellar subluxation or apprehension
3. Normal limb alignment (no valgus / varus deformity)
4. TT-TG (tibial tuberosity trochlear groove) distance lesser than 20mm

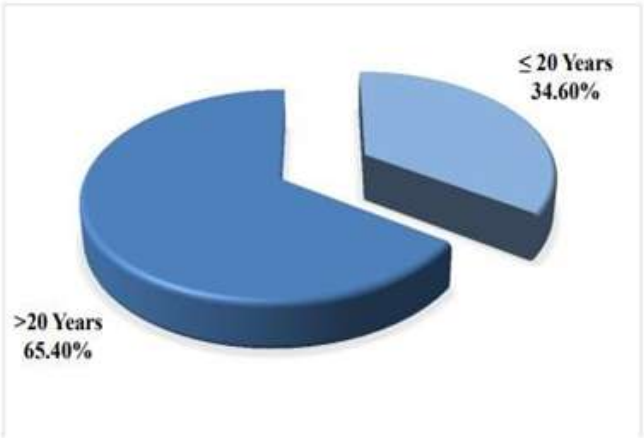
EXCLUSION CRITERIA:

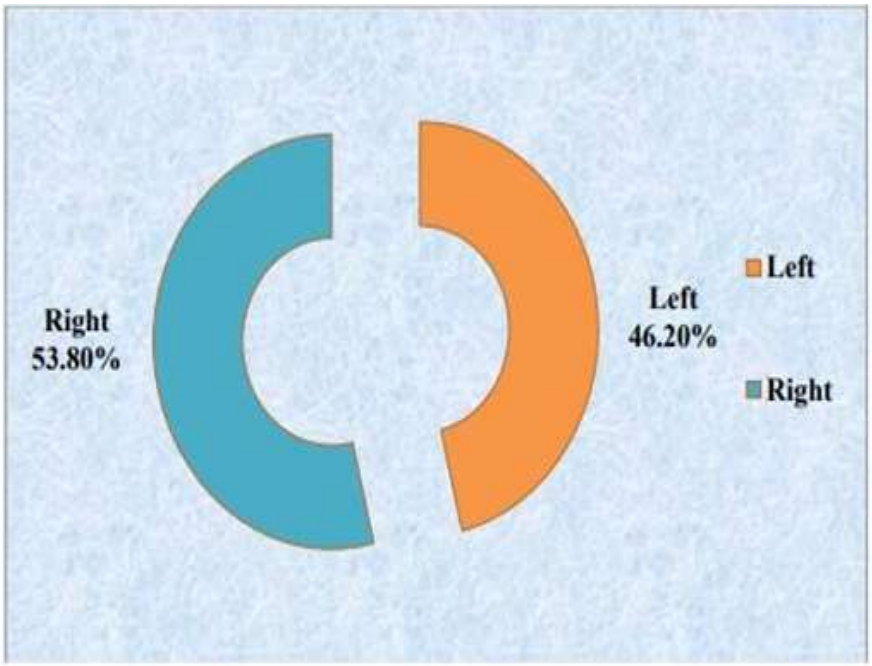
1. Skeletal immaturity
2. Patella alta (Insall-Salvati ratio >1.2)
3. Severe trochlear dysplasia (Dejour type B to D)
4. TT-TG (tibial tuberosity trochlear groove) distance greater than 20 mm
5. Q angle greater than 20°

AGE	FREQUENCY	PERCENTAGE
≤ 20 years	9	34.6 %
>20 years	17	65.4 %
Total	26	100 %

International Journal Dental and Medical Sciences Research
Volume 6, Issue 5, Sep - Oct 2024 pp 493-503 www.ijdmsrjournal.com ISSN: 2582-6018



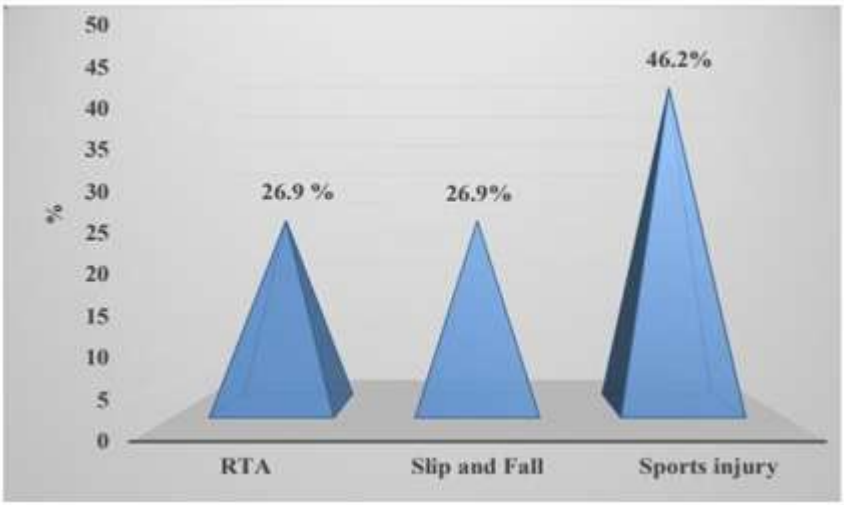




International Journal Dental and Medical Sciences Research
Volume 6, Issue 5, Sep - Oct 2024 pp 493-503 www.ijdmsrjournal.com ISSN: 2582-6018

MODE OF INJURY	FREQUENCY	PERCENTAGE
RTA	7	26.9 %
Slip and Fall	7	26.9 %
Sports injury	12	46.2 %
Total	26	100 %

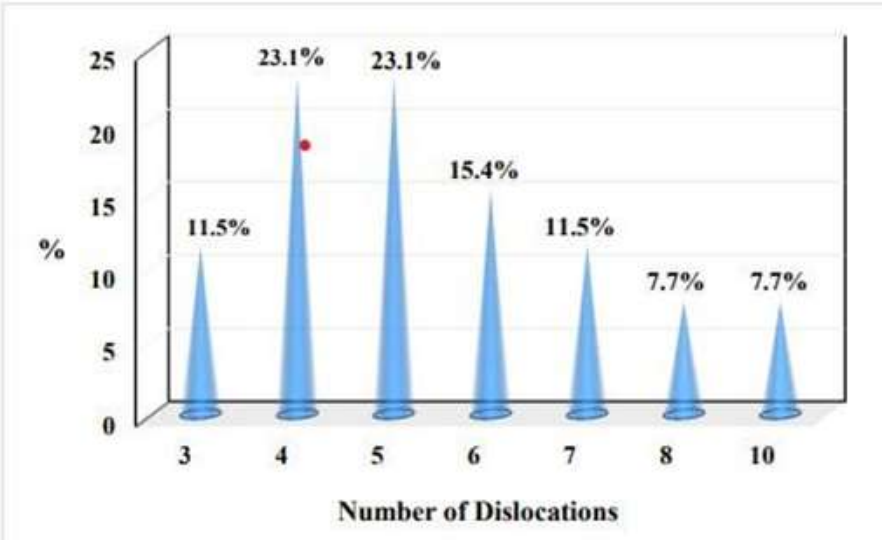
Table showing Frequency Distribution of Mode of Injury



NUMBER OF DISLOCATIONS	FREQUENCY	PERCENTAGE
3.00	3	11.5 %
4.00	6	23.1 %
5.00	6	23.1 %
6.00	4	15.4 %
7.00	3	11.5 %
8.00	2	7.7 %
10.00	2	7.7 %
Total	26	100 %

Table showing frequency distribution on Number of Dislocations at presentation

International Journal Dental and Medical Sciences Research
Volume 6, Issue 5, Sep - Oct 2024 pp 493-503 www.ijdmsrjournal.com ISSN: 2582-6018



SURGICAL TECHNIQUE:

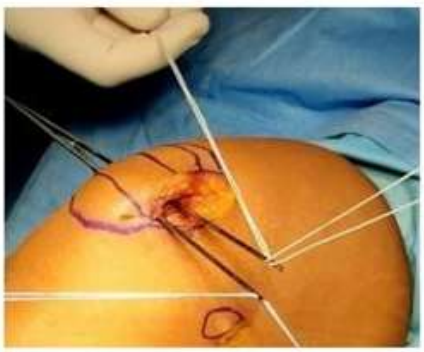
Following the administration of anaesthesia and prophylactic antibiotics, the patient is positioned supine with an above knee tourniquet.

Skin preparation and sterile draping are carried out in a standard manner.

A diagnostic knee arthroscopy is performed to evaluate the patellar and trochlear chondral surfaces and to look for any intra-articular lesions in the knee

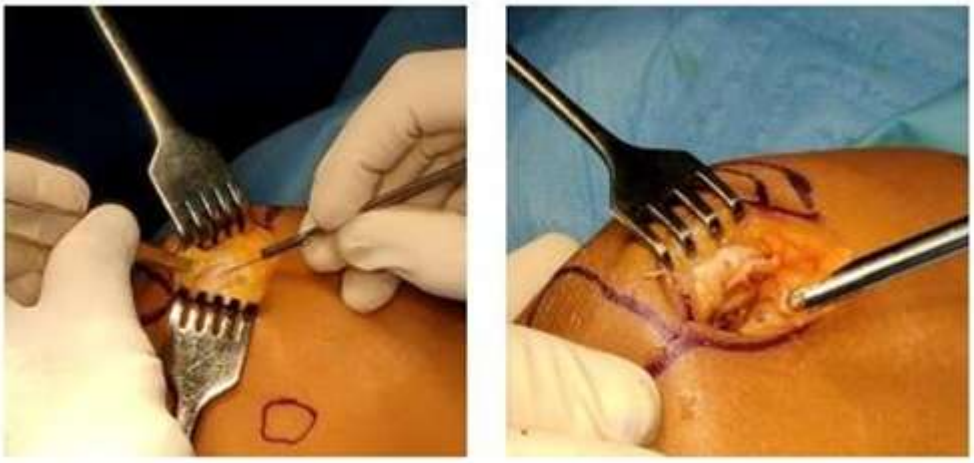
Graft slection - The gracilis autograft is preferred by most surgeons because it has appropriate tensile strength, easily harvested, and is small enough to fit through the small bone tunnels

Harvesting the Gracilis Autograft.



Drilling Trans-Patellar Tunnels to pass the Sutures.

International Journal Dental and Medical Sciences Research
Volume 6, Issue 5, Sep - Oct 2024 pp 493-503 www.ijdmsrjournal.com ISSN: 2582-6018



Preparation of the Medial Patellar Surface.

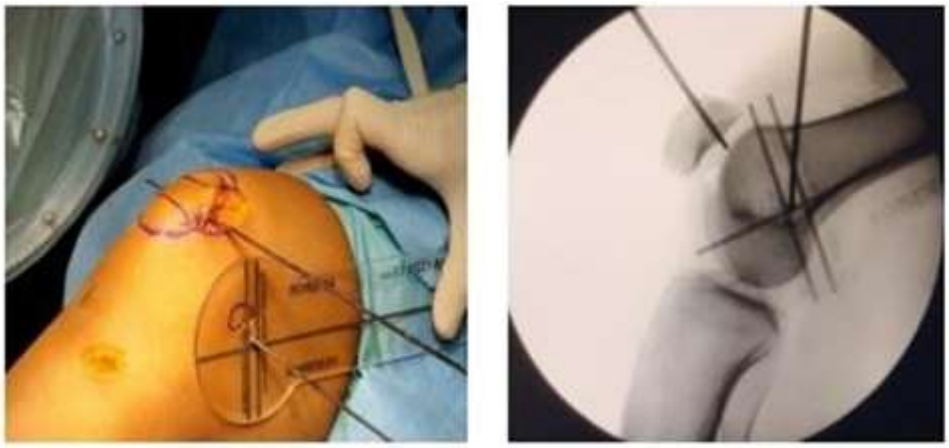
Figure 55: Looping the Sutures across the Tunnels.

Passing the Fibre-wire Loops through the Patellar Tunnels.

International Journal Dental and Medical Sciences Research
Volume 6, Issue 5, Sep - Oct 2024 pp 493-503 www.ijdmsrjournal.com ISSN: 2582-6018

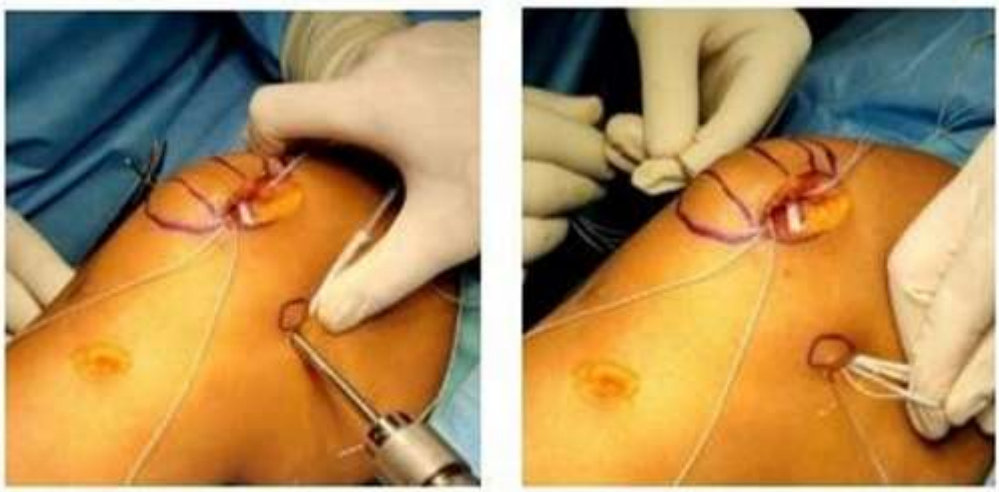
Passing the graft between layer 2 and layer 3 of the retinaculum.

Graft Fixation on the Patella.



Intra-Operative Localization of Schöttle's point.

International Journal Dental and Medical Sciences Research
Volume 6, Issue 5, Sep - Oct 2024 pp 493-503 www.ijdmsrjournal.com ISSN: 2582-6018



Passing the graft through the Femoral Tunnel.

Graft Fixation using a Bio-absorbable Interference Screw.

POST-OPERATIVE REHABILITATION

- Post-operatively, the knee was immobilized in a hinged knee brace which was locked in full extension for the first few days.
- Along with Pain and swelling control, ankle pumps, leg-raising exercises, as well as static quadriceps muscle strengthening exercises were initiated immediately postoperatively.
- Weight bearing is allowed as tolerated, immediately after the surgery with knee brace and crutch support.
- For the first two post-operative weeks, knee flexion is restricted to 60° after which the use of knee brace is discouraged and knee flexion is increased to 90° over the third postoperative week.
- Walking with full weight bearing is usually possible 3 weeks after surgery.
- From 3 weeks to 6 weeks post-operatively, knee flexion is gradually increased to reach its full ROM and the crutches are discontinued.
- Controlled sports activities like jogging, cycling etc are allowed from 3 months post-operatively.

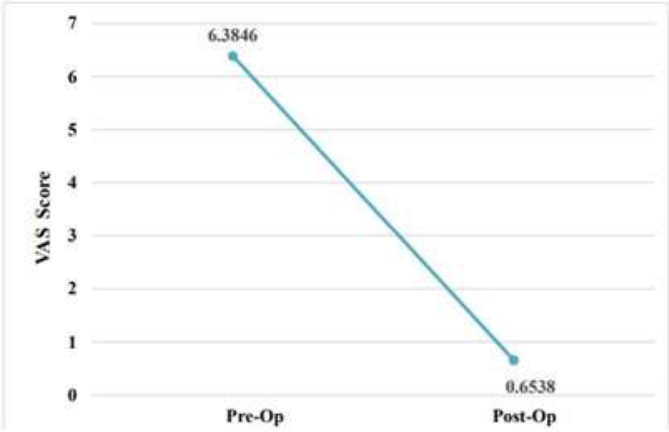
COMPLICATIONS:

The common complications following an MPFL reconstruction included

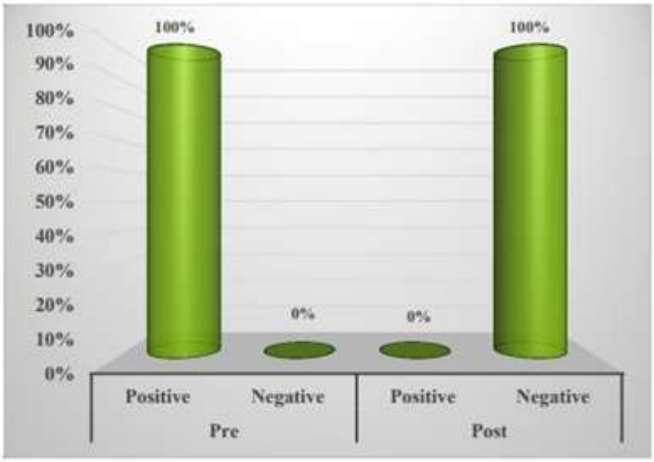
- recurrent instability
- patellar fractures
- patello-femoral arthrosis
- residual pain
- loss of knee flexion and wound complications.

International Journal Dental and Medical Sciences Research
Volume 6, Issue 5, Sep - Oct 2024 pp 493-503 www.ijdmsrjournal.com ISSN: 2582-6018

II. RESULTS



Representation of Pre and Post-operative VAS score.



Representation of Pre and Post-operative Apprehension test

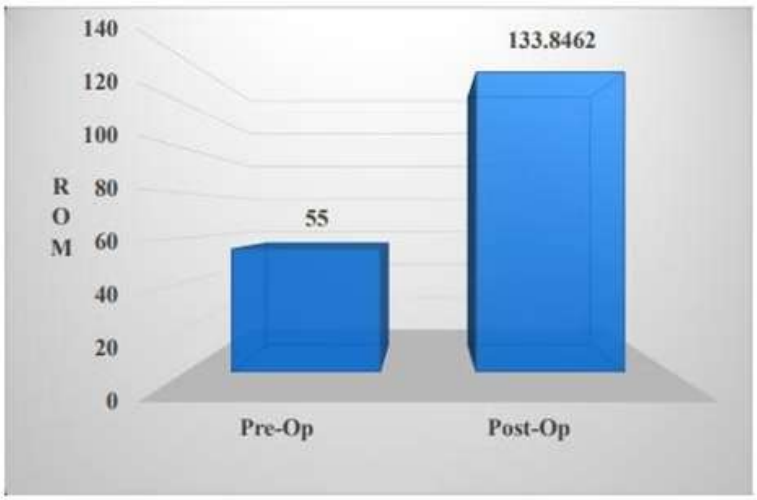


Figure 73: Showing mean Pre and Post-operative Knee flexion ROM

International Journal Dental and Medical Sciences Research
Volume 6, Issue 5, Sep - Oct 2024 pp 493-503 www.ijdmsrjournal.com ISSN: 2582-6018

	Mean	Std. Deviation	N	F value	P value
Pre-Op	45.384	3.69948	26	2818.0	P<0.001
Post-Op 2 Months	69.038	3.75745	26		
Post-Op 6 Months	79.961	4.34954	26		
Post-Op 1 Year	90.500	4.24500	26		

Table showing mean and standard deviation of Kujala scores

Figure 74: Showing Changes in Pre and Post-operative Kujala scores

Figure 77: Representation of final outcome based on age

International Journal Dental and Medical Sciences Research
Volume 6, Issue 5, Sep - Oct 2024 pp 493-503 www.ijdmsrjournal.com ISSN: 2582-6018

OUTCOME	FREQUENCY	PERCENTAGE
Excellent	3	11.5 %
Fair	2	7.7 %
Good	21	80.8 %
Total	26	100 %

Table showing frequency distribution of Outcomes

Figure 78: Representation of final outcome based on gender

III. DISSCUSSION

- The mean age of patients in our study was 24.19 years with the youngest patient being 18 years and the oldest being 40 years. Majority of the patients in our study [n=14 (53.84%)] belonged to the age group of 21-30 years which is in concordance with other studies conducted on functional outcome of MPFL reconstruction in recurrent patellar dislocations
- In our study, 92.31% of the patients (n=24) achieved a full range of motion of the affected knee by the 6 months follow-up after surgery whereas 2 patients (7.69%) had a lack of flexion of 10° to 20° compared with the contralateral normal knee, even at the final follow-up
- Our study had certain strengths and limitations. The first benefit is that the transosseous suture technique allows placement of tunnels with smaller diameters than traditional patellar tunnel techniques, which preserves more bone and technically reduces the risk of patellar fracture.
- The other advantage is that it has a significant cost advantage over suture anchors or other devices such as suspension buttons, biodegradable screws, and metallic anchors

IV. CONCLUSION

- In our study, we concluded that, an isolated Medial Patello-femoral ligament reconstruction with a gracilis auto-graft, using the transosseous suture technique for graft fixation is a safe and efficient method of treating patients with recurrent patellar dislocations.

- This procedure has shown excellent short-term results, when evaluated by clinical protocols and seems to be a reliable method of restoring patellar stability and achieving a pain-free patello-femoral joint.

REFERENCES

[1]. Stefancin JJ, Parker RD. First-time traumatic patellar dislocation: a systematic review. Clinical Orthopaedics and Related Research®. 2007 Feb 1; 455:93-101.

[2]. Mackay ND, Smith NA, Parsons N, Spalding T, Thompson P, Sprowson AP. Medial patellofemoral ligament reconstruction for patellar dislocation: a systematic review. Orthopaedic Journal of Sports Medicine. 2014 Aug 6;2(8):2325967114544021.

[3]. Verghese SC, Sahanand SK, Martin NJ, Kerketta AH, Chalasani P, Rajan DV. Isolated MPFL reconstruction for recurrent lateral patellar instability in patients with TT-TG distance< 25 mm: A calculated safe risk. Journal of Arthroscopic Surgery and Sports Medicine. 2022 Sep 21;3(2):94-100.

[4]. Ballal M, Vamsinath P, Basha N. Functional outcome of medial patellofemoral ligament injury (MPFL) reconstruction in recurrent patellar dislocation. Int J Orthop Sci. 2018;4(4):204-7.

[5]. Torkaman A, Monshizadeh S, Shabanpour M. Medial patellofemoral ligament (MPFL) reconstruction surgery in Iranian patients with recurrent patellar dislocation: Report of three years experiences. Biomedical and Pharmacology Journal. 2015 Jun 18;8(1):165-70.

[6]. Baer MR, Macalena JA. Medial patellofemoral ligament reconstruction: patient selection and perspectives. Orthopedic Research and Reviews. 2017; 9:83.

[7]. Enderlein D, Nielsen T, Christiansen SE, Faunø P, Lind M. Clinical outcome after reconstruction of the medial patellofemoral ligament in patients with recurrent patella instability. Knee Surgery, Sports Traumatology, Arthroscopy. 2014 Oct;22(10):2458-64.