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# Double-bundle medial patellofemoral ligament reconstruction using patellar suture anchor fixation for patellar instability: A prospective study with 5-year follow-up

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**We have no financial conflicts to disclose**



# Introduction

- The treatment of patellar instability ;  
Currently, the first choice procedure - **MPFL reconstruction**
- Isolated MPFL reconstruction  
for patients with normal or mild anatomical factor;  
good short-term results, low recurrent dislocation
- To date,  
**Insufficient midterm** clinical reports on isolated MPFL reconstruction  
Especially, no prospective midterm clinical study





# Purpose

Isolated double-bundle MPFL reconstruction using patella suture anchor technique with hamstring autograft.

- To evaluate **prospectively mid-term (5 years follow-up)** clinical and radiologic results





# Materials and Methods

- **Prospective Design;**  
between March 2013 and February 2017
- **Indication** for isolated MPFL reconstruction  
symptomatic patients with **at least 2 episodes** patellar dislocations
- **Contraindication** for isolated MPFL reconstruction  
high degree of trochlea dysplasia ( **Dejour type D** )  
TT-TG distance  $\geq 20\text{mm}$   
congenital or habitual dislocation

Inclusion	Exclusion
participate <b>until the 5-year follow-up</b>	combined with <b>bony procedure</b> no acquisition of a regular series of radiographs





# Materials and Methods

- Clinical evaluation

preoperatively, at 6, 12, 24, and 60 months after surgery

Functional evaluation	Physical examination
Kujala score Lysholm score Tegner score	apprehension test patellar compression test range of motion (ROM)

- Radiographs

1. AP, lateral, and axial Merchant views : preoperatively, at 24, 60 months postoperatively

2. MRI: preoperatively

Lateral view	patellar height: modified Insall-Salvati (MIS) ratio
Merchant view	congruence angle (CA) lateral patellofemoral angle (LPFA)
MRI (preoperative)	tibial tuberosity-trochlear groove (TT-TG) distance Trochlear dysplasia: defined by Dejour





# Results

## Demographic data

- Total of 27 patients (27 knees)

Patient Characteristic	Data
No. of MPFLRs	27
Female/male	16/11
Age (years)	22± 6.4 (range, 16-28)
Right/ left	12/15
Harvested graft Semitendinosus/gracilis	19/8

- Concomitant procedures  
lateral release in 7 patients  
chondroplasty in 5 patients

## Radiologic Assessments

- The shape of the trochlea; criteria of Dejour.

No dysplasia	5
Dejour A	11
Dejour B	10
Dejour C	1
Dejour D	0

- The mean preoperative TT-TG ;  
15.8 ± 4.4 mm (range, 10.6 - 19.5)

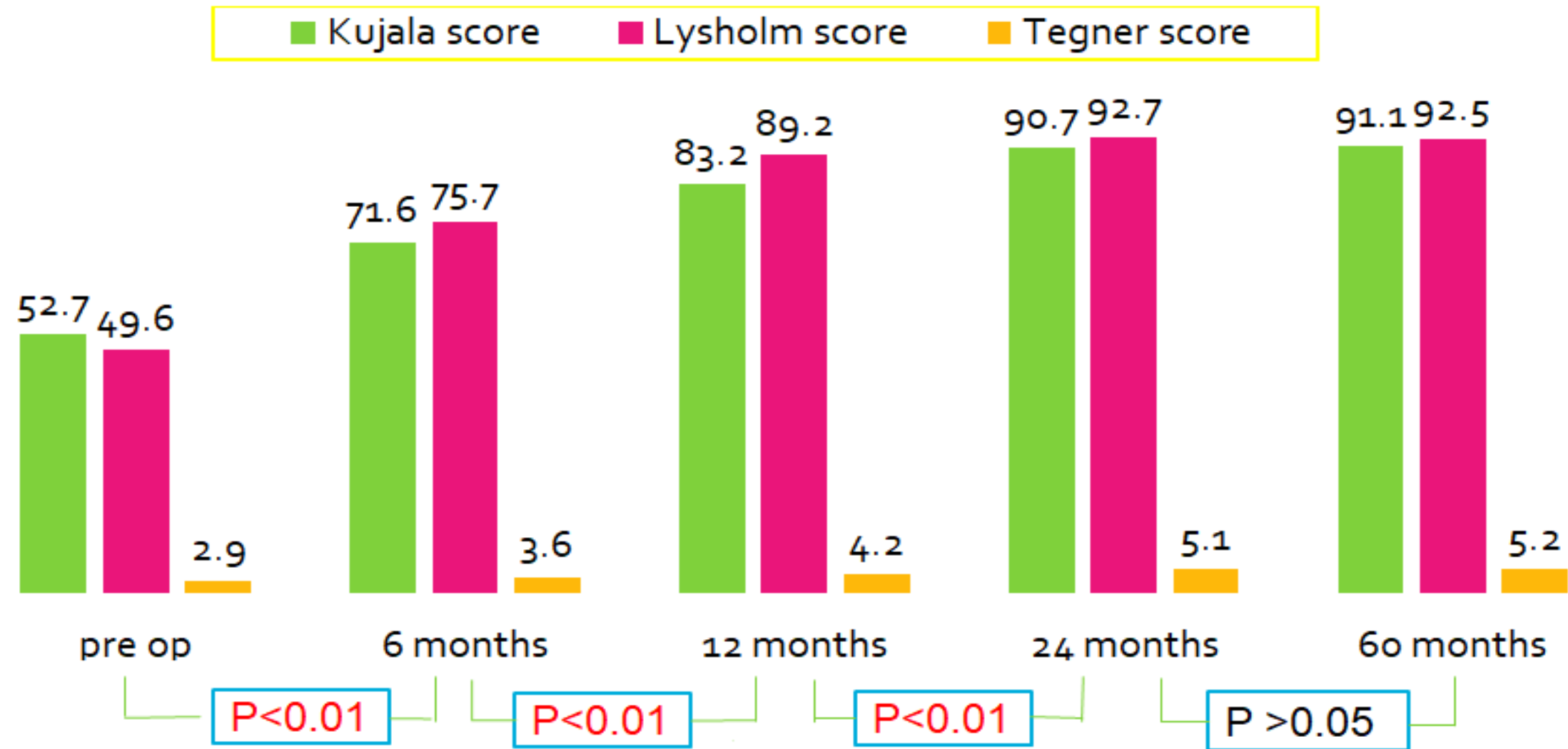
<15mm	11
15 ≤ < 20mm	16
≥ 20mm	0

## Complication

- patellar **redislocation** or subluxation : **none**  
patellar fracture : **none**  
infection : none



# Clinical assessments

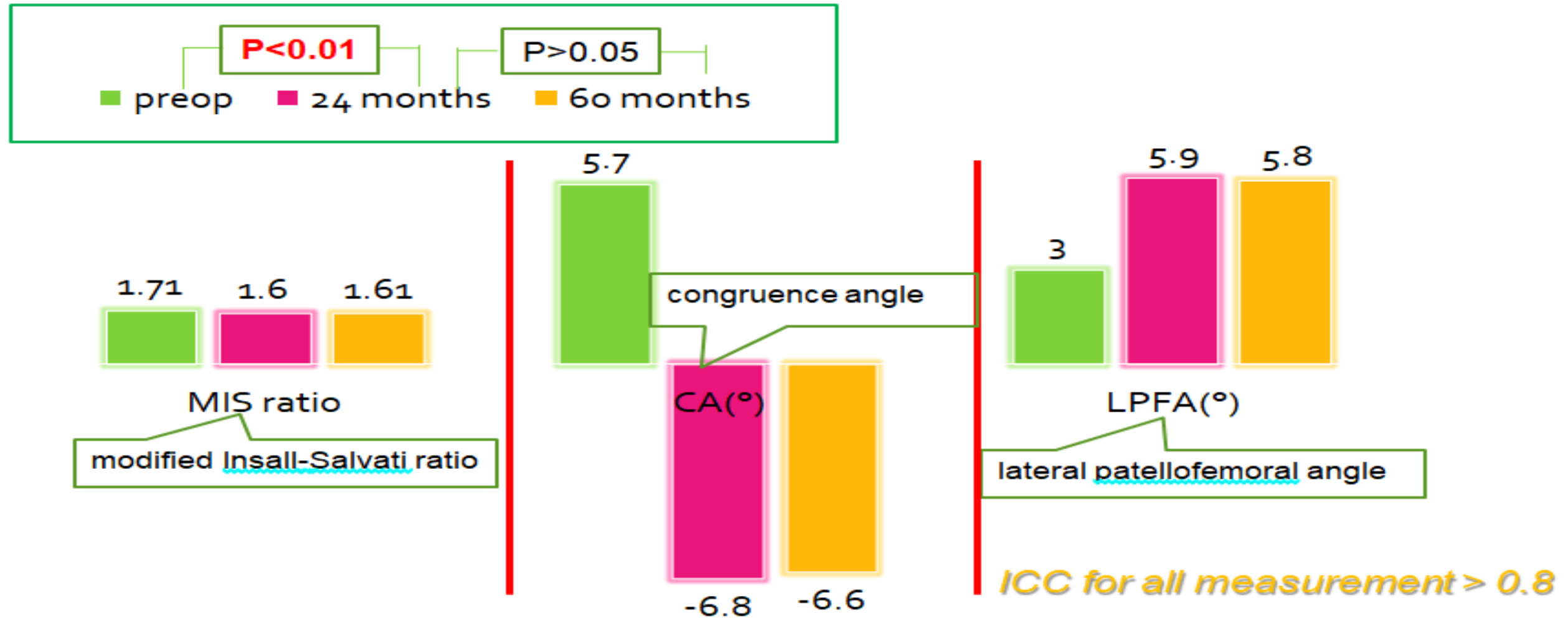


- Serial **significant improved** during 24 months ( $P < 0.001$ )

**No** statistical difference between 24 and 60 months



# Radiologic Assessments



- Statistical differences between preoperatively and 24 months ( $P < 0.001$ )

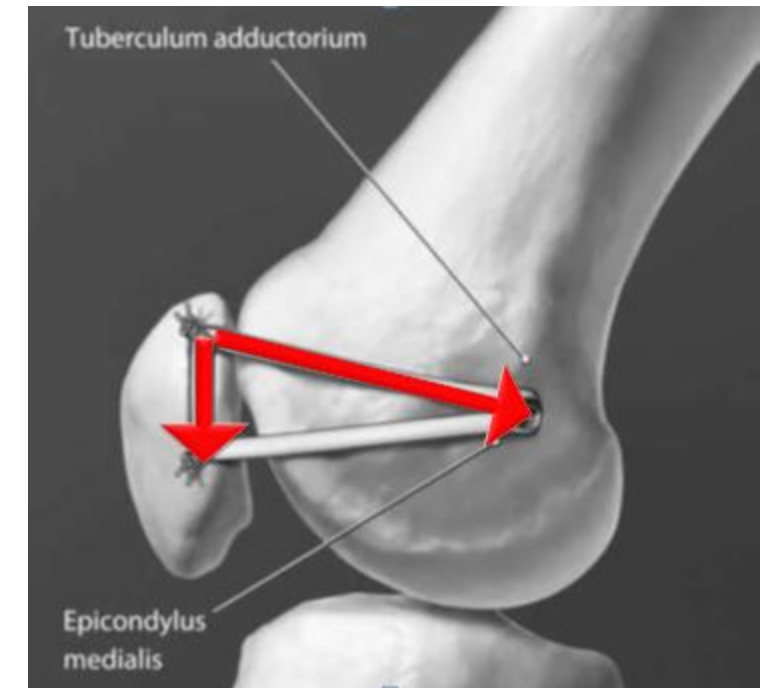
No statistical difference between 24 months and 60 months



# Additional finding (Significant decrease of patella height )

## MIS ratio

	preoperatively	24 Mo	60 Mo
MIS ratio	1.71 ± 0.17	1.6 ± 0.13	1.61 ± 0.14



**\*\* Significant decrease of patella height ( $P < 0.01$ )**  
In our opinion,  
**inferomedial patellar traction** of reconstructed ligament.



# Conclusion

Isolated double-bundle MPFL reconstruction using patella suture anchor technique with hamstring tendon autograft

- The results of 5-year follow up : Prospective trial
  - Clinical outcomes significantly improved for 2 years and maintained to 5years without deterioration
  - All radiologic results improved
  - no re-dislocation or no patellar fracture



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# References

- Song, S.Y., et al., *Anatomic medial patellofemoral ligament reconstruction using patellar suture anchor fixation for recurrent patellar instability.* Knee Surg Sports Traumatol Arthrosc, 2014. **22**(10): p. 2431-7.
- Amis, A.A., et al., *Anatomy and biomechanics of the medial patellofemoral ligament.* The Knee, 2003. **10**(3): p. 215-220.
- Philippot, R., et al., *The role of the medial ligamentous structures on patellar tracking during knee flexion.* Knee Surg Sports Traumatol Arthrosc, 2012. **20**(2): p. 331-6.
- Yoo, Y.S., et al., *Changes in the length of the medial patellofemoral ligament: an in vivo analysis using 3-dimensional computed tomography.* Am J Sports Med, 2012. **40**(9): p. 2142-8.
- Duerr, R.A., et al., *An Algorithm for Diagnosing and Treating Primary and Recurrent Patellar Instability.* JBJS Rev, 2016. **4**(9).
- Zheng, X., et al., *Surgical medial patellofemoral ligament reconstruction versus non-surgical treatment of acute primary patellar dislocation: a prospective controlled trial.* Int Orthop, 2019. **43**(6): p. 1495-1501.
- Schlumberger, M., et al., *Midterm Results After Isolated Medial Patellofemoral Ligament Reconstruction as First-Line Surgical Treatment in Skeletally Immature Patients Irrespective of Patellar Height and Trochlear Dysplasia.* Am J Sports Med, 2021. **49**(14): p. 3859-3866.
- Repo, J.P., et al., *Outcomes following the operative treatment of intra-articular fracture combined with medial patellofemoral ligament reconstruction after patellar dislocation.* Knee Surg Relat Res, 2022. **34**(1): p. 21.
- Nha, K.W., et al., *Medial patellofemoral ligament reconstruction using an autograft or allograft for patellar dislocation: a systematic review.* Knee Surg Relat Res, 2019. **31**(1): p. 8.
- Kang, H.J., et al., *The horizontal Y-shaped graft with respective graft tension angles in anatomical two-bundle medial patellofemoral ligament reconstruction.* Knee Surg Sports Traumatol Arthrosc, 2014. **22**(10): p. 2445-51.
- Allahabadi, S. and N.K. Pandya, *Allograft Medial Patellofemoral Ligament Reconstruction in Adolescent Patients Results in a Low Recurrence Rate of Patellar Dislocation or Subluxation at Midterm Follow-Up.* Arthroscopy, 2022. **38**(1): p. 128-138.

