MPFL RECONSTRUCTION SPECTRUM OF FAILURE

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MPFL failure

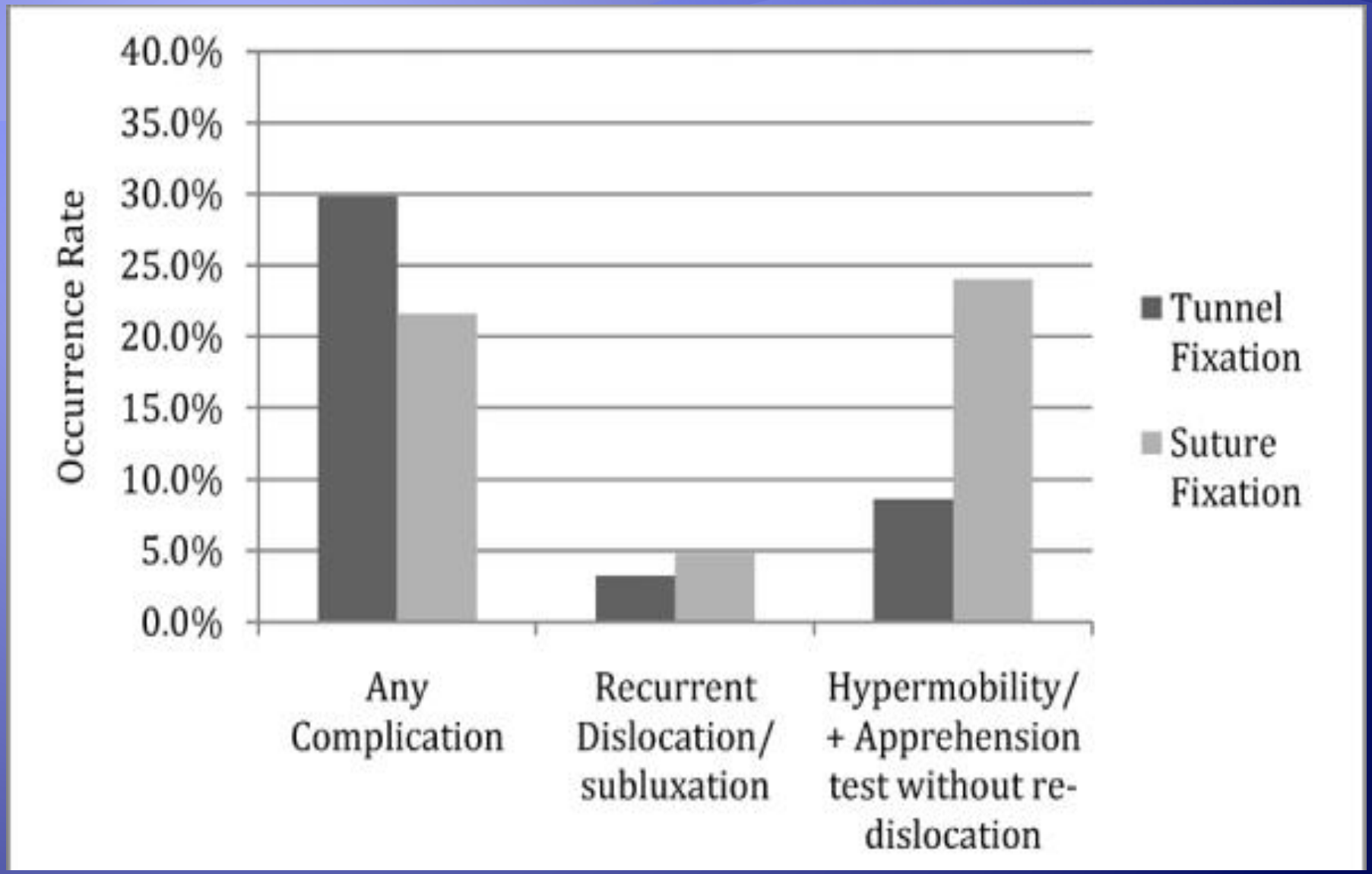
- Failure to stabilize patella
- Over stabilize the patella – increase medial load
- My tips to prevent failure

A Systematic Review of Complications and Failures Associated with Medial Patellofemoral Ligament Reconstruction for Recurrent Patellar Dislocation

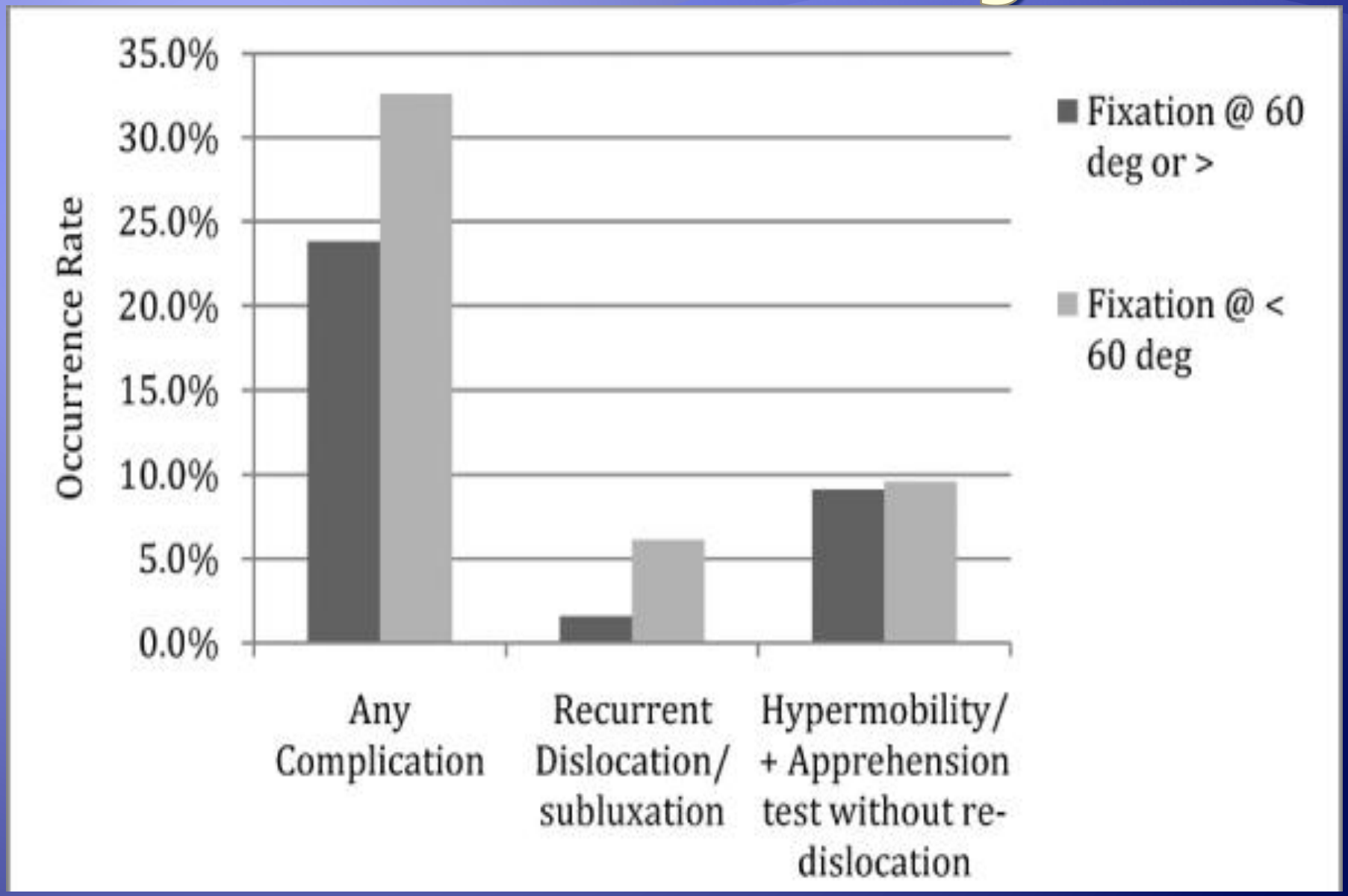
Jay N. Shah, et al Am J Sports Med 2012

- 25 studies 629 MPFL reconstructions
- 230 knees had LRR, 76 knees had TTT, and 67 knees had medial retinacular plication or VMO advancement
- 164 complications – 26.1%
- 12% Instability Issues
- Recurrent subluxation/dislocation 4.3 ± 5.6%
- Continued hypermobility/apprehension without subluxation or dislocation 7.7 ± 12.3%

Patella Graft Fixation



Graft Fixation Angle



ROM & Fracture

- Twenty-two knees had residual flexion loss at final follow-up
  Nine underwent manipulation under anesthesia

- Four patella fractures all had tunnels

Widespread Implementation of Medial Patellofemoral Ligament Reconstruction for Recurrent Patella Instability Maintains Functional Outcomes at Midterm to Long-Term Follow-up While Decreasing Complication Rates: A Systematic Review

Arthroscopy 2015. Stupay, Swart, M.D., and. Shubin Stein,

- 34 studies 1048 patients
- Isolated MPFL reconstructions
- 15 studies old – 398 patients prior to October 2010
- 19 studies new – 650 patients after October 2010

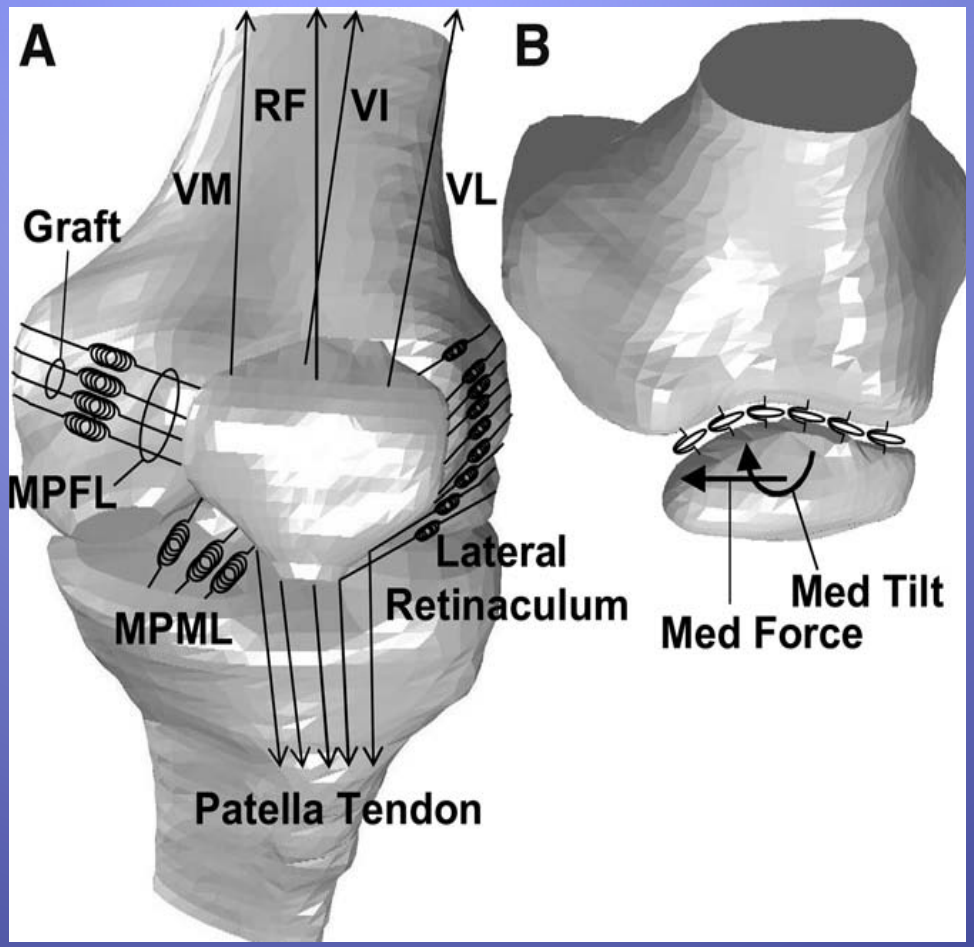
Results

- Functional failure rates decreased from 9.55% in older studies to 4.77% in more recent studies $p < .001$
- The major complication rate dropped from 2.01% to 0.46% in the newer studies $p = 0.005$
- Postoperative Kujala scores did not show a statistically significant change between newer 89 and older publications 89.4
- Bony vs soft tissue fixation and graft choice had no effect on outcome or failure rate

MPFL Isometry

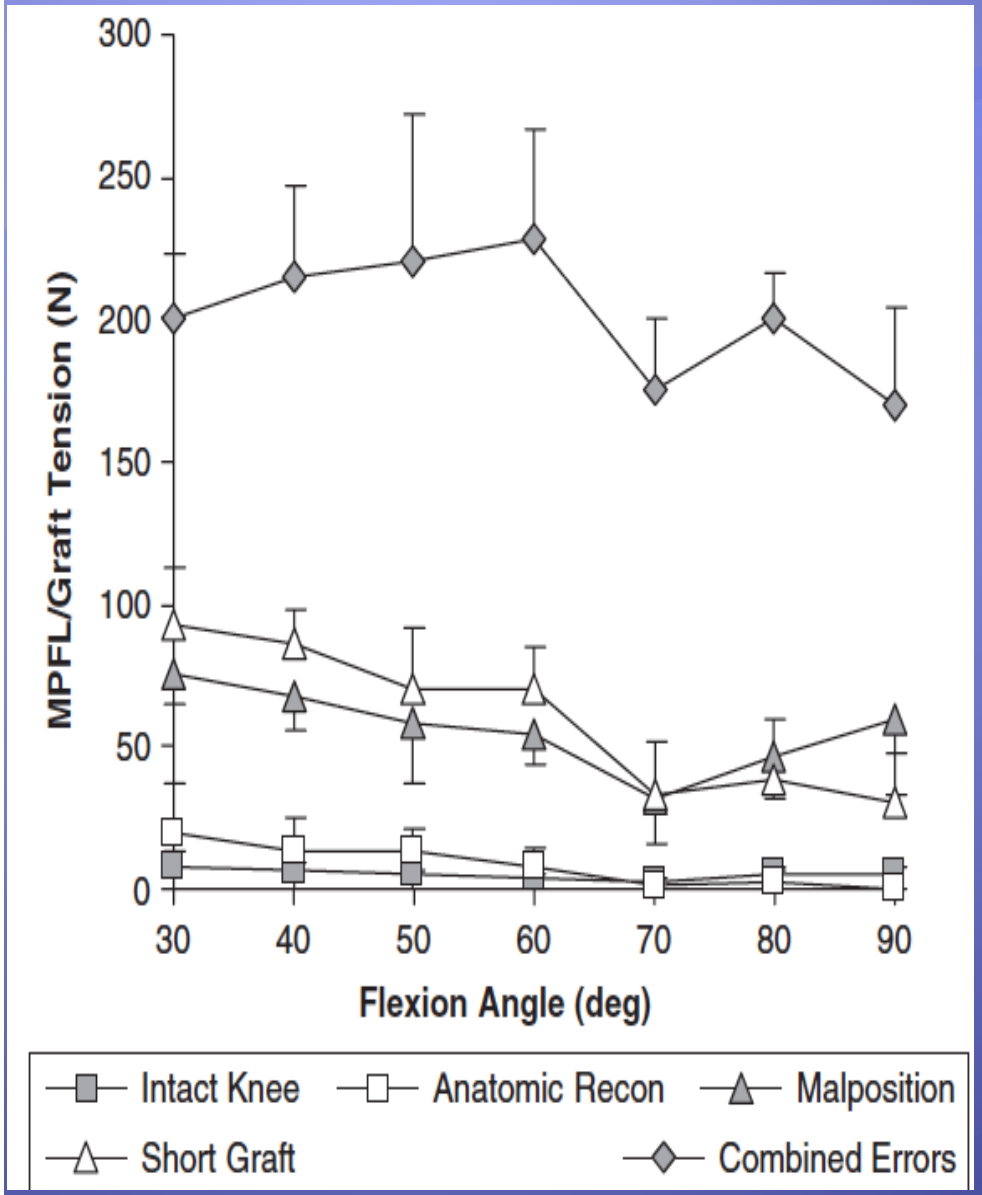
- The native MPFL is tight in extension and lax in flexion – non-isometric
- Proximal femoral tunnel placement will tighten the graft in flexion which may reduce flexion and can theoretically increase patellofemoral joint contact forces which may lead to PFOA
- Distal femoral tunnel placement will tighten the graft in extension which may lead to an extensor lag but will decrease PF forces

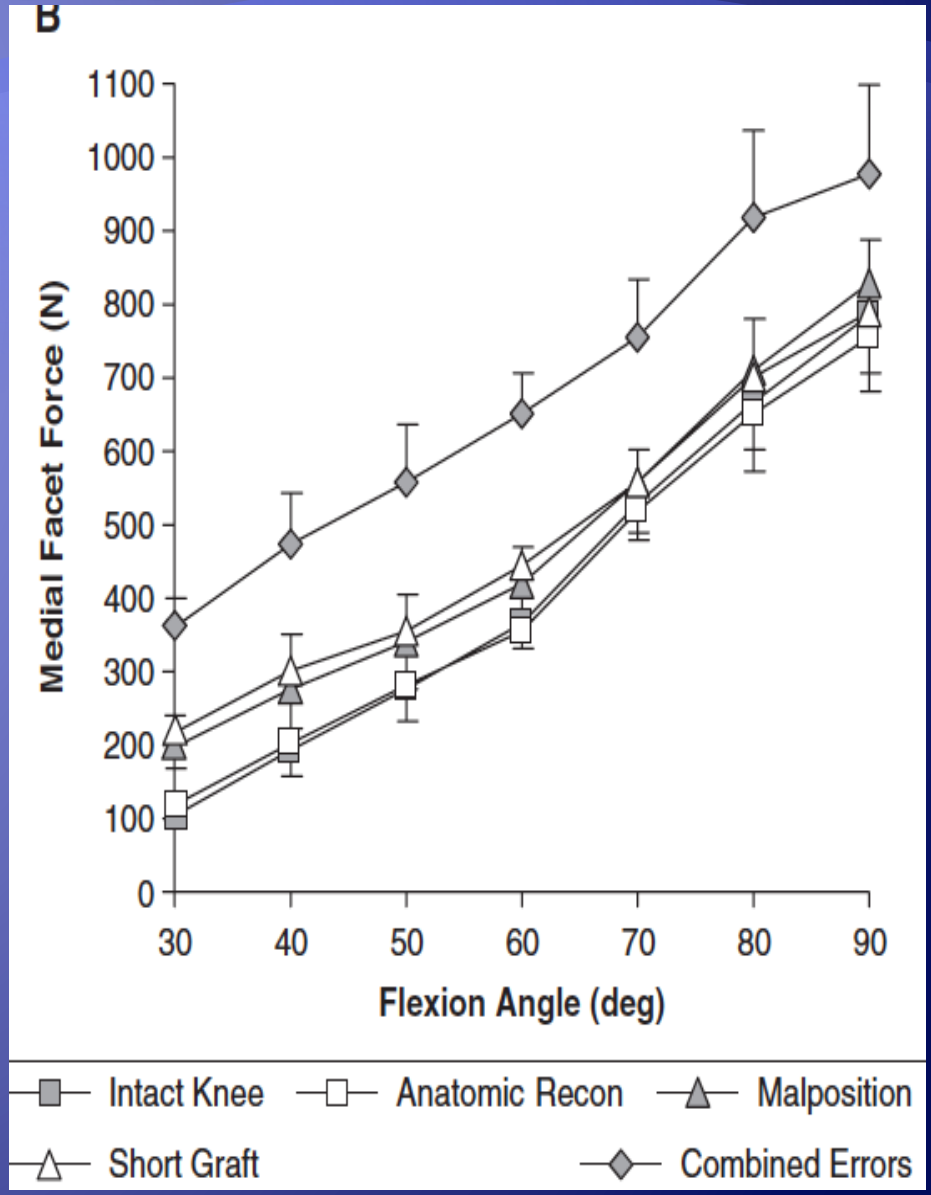
Technical Errors During Medial Patellofemoral Ligament Reconstruction Could Overload Medial Patellofemoral Cartilage A Computational Analysis Elias & Cosgareva AJSM 2006



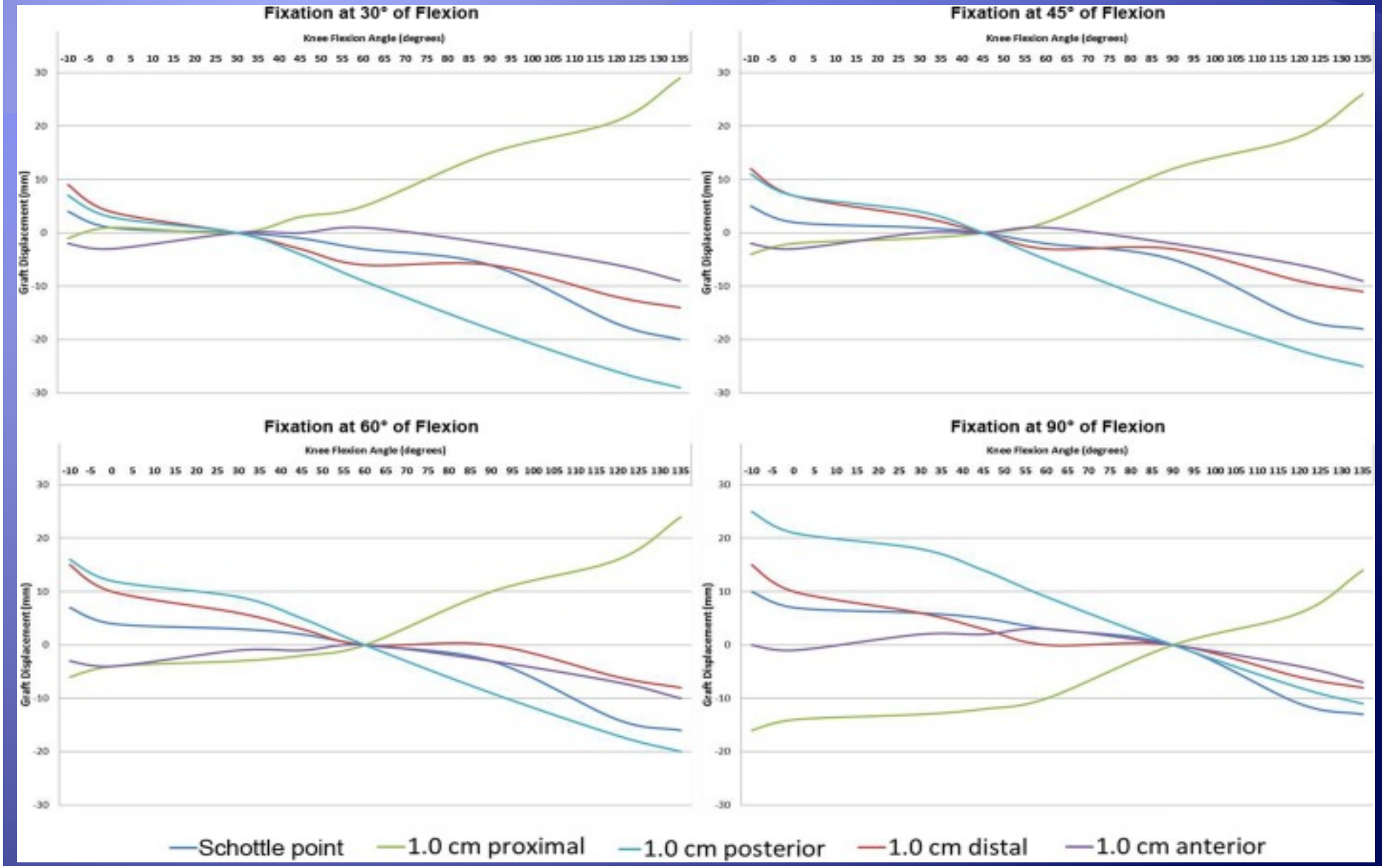
- Intact MPFL
- Center of MPFL
- 5 mm proximal to MPFL
- MPFL 3mm short
- Combined 5mm proximal and 3mm short

Results


300
250
200
150
100
50
0
MPFL/Graft Tension (N)
30
40
50
60
70
80
90
Flexion Angle (deg)
Intact Knee
Anatomic Recon
Malposition
Short Graft
Combined Errors


B
1100
1000
900
800
700
600
500
400
300
200
100
0
Medial Facet Force (N)
30
40
50
60
70
80
90
Flexion Angle (deg)
Intact Knee
Anatomic Recon
Malposition
Short Graft
Combined Errors

Troubleshooting the Femoral Attachment During Medial Patellofemoral Ligament Reconstruction Burrus OJSM 2015



Does poor femoral tunnel position correlate with poor outcome

- Sevrien et al AJSM 2011
- 29 patients - 2 year follow up
- Ideal position - Schottle's point +/- 7mm
- 69% ideal, 17% proximal, 11% anterior, 7% anterior and proximal
- No correlation between IKDC score and poor tunnel position

Does poor femoral tunnel position correlate with poor outcome

- McCarthy et al Iowa 2013
- 50 patients correlated femoral tunnel position with KOOS score
- 64% > 9mm from Schottle's point
- No statistically significant difference in KOOS scores in patients who had a malpositioned tunnel compared to anatomic placement

Clinical studies of medial facet PFOA

- Technical Failure of MPFL Reconstruction Bollier et al Arthroscopy 2011

5 patients with malpositioned grafts
3 medial subluxation, 2 medial facet PF OA
2 graft ruptures - recurrent lateral instability

- Clinical and radiological outcomes after a quasi-anatomical reconstruction of medial patellofemoral ligament with gracilis tendon autograft. Monllau et al KSTTA 2015

36 patients min 27 month follow up – short
No OA

My MPFL Reconstruction

- Philoposphy is the pathology is disrupted and lax medial retinaculum – MPFL acts a check rein to enable the medial retinaculum to heal
- Palpate the medial retinaculum and if thin I imbricate it then do an MPFL reconstruction
- Use II to find Schottle's point
- Place a guidewire and use a suture to check isometricity
- Ideally isometric up to 70° of flexion then slightly loosens as flexion progresses
- If suture tightens in flexion tunnel position to proximal so distalize it

My MPFL reconstruction

- Use II to mark patella position in superior half of the patella
- Drill femoral tunnel, place screw guide wire in tunnel
- Pass graft into femoral tunnel, pass graft anteriorly to patella
- Secure the graft on top of the patella with Mitek anchors. No tunnel – No fracture
  Graft on top of patella rather than the side reduces patella tilt - reduce PF joint contact forces
- Cycle the knee through a ROM to check isometry
- Secure in 60° if isometric
  Have an assistant hold the lateral border of the patella flush with the lateral trochlea while the graft is tensioned. This prevents overtightening the MPFL graft
- If not secure when at maximum length