Is QT a suitable option for MPFL Reconstruction in recurrent patella dislocations? A SR & Meta-analysis on the Functional & Clinical outcomes.

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Faculty Disclosure Information

- **Peter D'Alessandro –**
  - Speaker for Medacta, Smith & Nephew, Arthrex.
  - Paid Consultant for Smith & Nephew;
  - Support received from Smith & Nephew, Arthrex;
  - Board of Directors member for Australian Orthopaedic Association

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Introduction

- The medial patellofemoral ligament (MPFL) has been identified as an important stabilizer of the patella and reconstruction can be done with soft tissue grafts such as hamstring, gracilis and quadricep tendons (QT).

- The aim of this review was to assess the clinical, functional outcomes of MPFL reconstruction using quadricep tendon in recurrent patella dislocation.

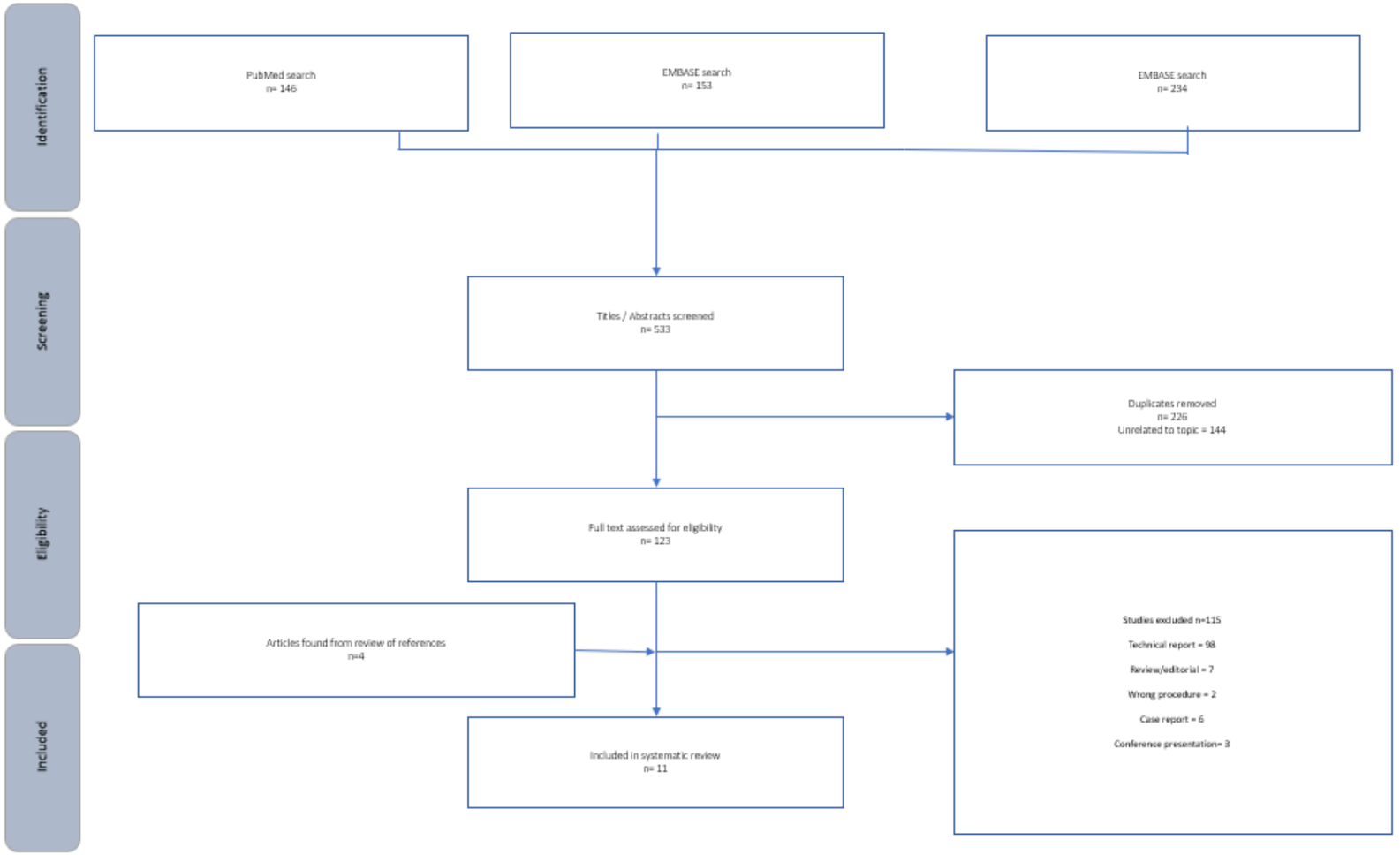
- Our hypothesis was that reconstruction using quadricep tendon would provide good outcomes (functional and clinical) with low complication and revision rates.

Methods

- **Review Design:**
  – Conducted in line with PRISMA guidelines
- **Databases Searched:**
  – MEDLINE
  – Embase
  – PubMed
- **Registration:**
  – Prospectively registered with PROSPERO

- **Inclusion Criteria:**
  – Clinical studies on MPFL reconstruction using quadriceps tendon
  – Focused on recurrent patella dislocation
- **Outcomes Reported:**
  – Functional outcome measures
  – Clinical outcome measures
  – Recurrence rates
  – Complications

Search Strategy



Results: Summary

- **Included Studies:**
  - 14 total studies
    - (12 non-comparative, 2 comparative (non-randomized)
- **Patient Demographics:**
  - 348 patients (350 knees)
    - 296 (84.6%) underwent MPFLR with QT
- **Mean age**: 20.1 years (range: 8–58)
- **Mean FU**: 30.8 months (range: 12–68)

- **Comparative Findings:**
  - 2 studies compared QT vs hamstring tendon
  - QT group showed significantly better:
    - Patient-reported outcome measures
    - Pain scores
    - Post-op range of motion

Results

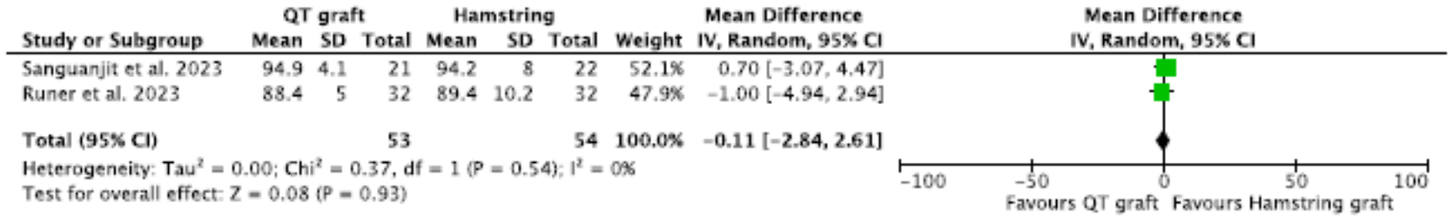
- **Common PROMs Used:**
  – **Lysholm:** 88.7 ± 6.7
  – **Kujala:** 90.0 ± 6.26
  – **Tegner:** 5.3 ± 1.95
  – All showed significant improvement post-op

- **Patient Satisfaction:**
  – Mean satisfaction: **93.2%** (range: 85–100%)
- **Post-Operative Function:**
  – Mean ROM: **0°–150°** (range: 0°–170°)
  – All patients could squat to **at least 90°**

- **Meta-Analysis (QT vs Hamstring):**
  – **Lysholm Score:** No significant difference
  - Mean diff: 1.83 [95% CI: -1.23 to 4.88], p = 0.24

  – **Kujala Score:** No significant difference
    - Mean diff: -0.11 [95% CI: -2.84 to 2.61], p = 0.93

Figure 1 Kujala score pooled analysis



Study or Subgroup	QT graft Mean	SD	Total	Hamstring Mean	SD	Total	Weight	Mean Difference IV, Random, 95% CI
Sanguanjit et al. 2023	94.9	4.1	21	94.2	8	22	52.1%	0.70 [-3.07, 4.47]
Runer et al. 2023	88.4	5	32	89.4	10.2	32	47.9%	-1.00 [-4.94, 2.94]
Total (95% CI)			**53**			**54**	**100.0%**	**-0.11 [-2.84, 2.61]**

Heterogeneity: $Tau^2 = 0.00$; $Chi^2 = 0.37$, df = 1 (P = 0.54); $I^2 = 0\%$

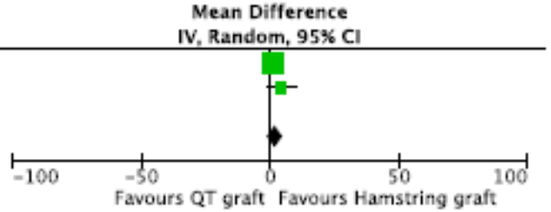
Test for overall effect: Z = 0.08 (P = 0.93)

Figure 2 Lysholm score pooled analysis

Study or Subgroup	QT graft Mean	SD	Total	Hamstring graft Mean	SD	Total	Weight	Mean Difference IV, Random, 95% CI
Sanguanjit et al. 2023	94.1	5	21	93.2	7	22	71.1%	0.90 [-2.72, 4.52]
Runer et al. 2023	88.9	10.1	32	84.8	12.9	32	28.9%	4.10 [-1.58, 9.78]
Total (95% CI)			**53**			**54**	**100.0%**	**1.83 [-1.23, 4.88]**

Heterogeneity: $Tau^2 = 0.00$; $Chi^2 = 0.87$, df = 1 (P = 0.35); $I^2 = 0\%$

Test for overall effect: Z = 1.17 (P = 0.24)



Complications

- **Overall Complication Rate:**
  - **2.8%** (range: 1–3%)
    - Most common: **Hypertrophic scar (0.8%)**
      – Apprehension in **0.6% (2 patients)**
      – **Recurrent instability:** 0.3% (1 patient, required reoperation)

- **Revision Rate:**
  - **2%** (range: 0–3%)
    - Most common cause: **Superficial site infection (0.6%)**

- **Comparative Studies Complications:**
  - No significant difference between QT and hamstring groups
    - One study reported **sensory loss**:
      ▫ Hamstring group: **59.4% (n=19)**
      ▫ QT group: **3.1% (n=1)**

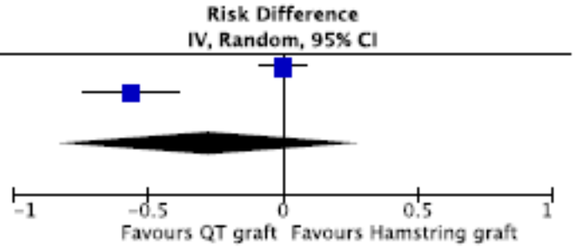
- **Sensory Loss – Meta-Analysis:**
  - Pooled risk difference: **-0.28**
    - 95% CI: **(-0.83 to 0.28)**
      – $p = 0.33$ (not statistically significant)
      – **Trend favoured QT** for lower postoperative sensory loss

Figure 3 Sensory loss pooled analysis

Study or Subgroup	QT graft Events	QT graft Total	Hamstring graft Events	Hamstring graft Total	Weight	Risk Difference IV, Random, 95% CI
Sanguanjit et al. 2023	0	21	0	22	51.0%	0.00 [−0.09, 0.09]
Runer et al. 2023	1	32	19	32	49.0%	−0.56 [−0.74, −0.38]
Total (95% CI)		**53**		**54**	**100.0%**	**−0.28 [−0.83, 0.28]**
Total events	1		19			

Heterogeneity: $Tau^2 = 0.15$; $Chi^2 = 30.37$, df = 1 ($P < 0.00001$); $I^2 = 97\%$

Test for overall effect: $Z = 0.98$ ($P = 0.33$)



Conclusion

- Quadriceps tendon for MPFL reconstruction offers
  - good knee function and patient satisfaction
  - with low rate of complications and recurrence.

References

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