Complete Infrapatellar Fat Pad Resection, Patella Baja, and Persistent Pain

Young B, McGovern AG, Tantikosol P, Sodhi N, Wong HJ, Koltsov JCB, Maloney WJ, Amanatullah DF. A Complete Infrapatellar Fat Pad Resection Is Associated With New Postoperative Patella Baja and Persistent Pain, but a Lower Risk of Manipulation Under Anesthesia After Primary TKA.

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Study type / level of evidence: Therapeutic/harm study — single-institution retrospective cohort (n=592) with risk-adjusted multivariable regression. Level III.

Part 1 — Leopold Five-Minute Critical Appraisal

1. What kind of study and what design?
A retrospective comparative cohort (Level III) of 592 primary TKAs — 351 complete vs 241 partial infrapatellar fat pad (IPFP) resection — using multivariable binomial and linear regression to relate resection extent to new patella baja, pain, KSS, ROM, and manipulation under anesthesia (MUA).

2. Does it study an important question?
Yes. IPFP management is an everyday intraoperative decision with genuinely conflicting evidence, and the outcomes at stake — patella baja, anterior knee pain, and stiffness — are leading drivers of post-TKA dissatisfaction.

3. To whom does it apply, and to whom not?
Primary TKA by two academic surgeons at one institution. Generalizability is constrained because resection technique is perfectly aligned with surgeon (one always complete, one always partial), so the result is not cleanly transferable to mixed-practice settings.

4. Describe the methods — anything to watch for?
The decisive flaw is that surgeon equals technique: any surgeon-level difference (implant, closure, MUA threshold, rehab nuance) loads onto the 'resection' variable. Resection degree was inferred from the surgeon rather than measured intraoperatively (misclassification). Follow-up was shorter in the complete group (1.0 vs 2.0 yr), patella baja was defined by Insall-Salvati <0.8, and MUA is a surgeon-discretion endpoint.

5. Were hypotheses clearly stated?
Yes — three explicit research questions on patella baja, persistent anterior pain, and function/MUA.

6. Key results — any counterintuitive findings?
After risk adjustment, complete resection nearly tripled new patella baja (OR 2.92, CI 1.12–9.15; NNH 26) and more than doubled persistent pain (OR 2.45; NNH 19), with KSS 2.9 points lower (below the MCID, so not clinically meaningful) and no ROM difference. Counterintuitively, complete resection had roughly four-fold lower odds of MUA (OR 0.27). Since adjusted ROM did not differ, the MUA difference most plausibly reflects differing surgeon thresholds rather than true stiffness — a point the authors concede.

7. Strengths?

One of the largest single-institution comparative cohorts on this question, standardized rehabilitation, risk-adjusted multivariable models, the most reliable patellar-height measure (Insall-Salvati), NNH reporting, and candor about the confounding.

8. Weaknesses?

Surgeon–technique confounding undermines any causal claim; retrospective design; resection not quantified; unequal follow-up; the KSS difference is sub-MCID; MUA is preference-driven; and multiple unmeasured confounders (implant, periarticular cocktail, tourniquet, patellar resurfacing) remain. The authors appropriately frame it as an associative pilot.

9. How does it fit with what is known, and what remains?

It aligns with Lemon (patellar tendon shortening), Moverley (worse Oxford scores with resection), and meta-analyses trending toward shortening and pain with resection (Ye 2016, White 2016), while being contradicted by RCTs/series showing no difference (Pinsornsak, Michalak). It is now bracketed by stronger recent evidence — the Han 2026 NEJM Evidence RCT and the Skaik 2025 meta-analysis — both favoring preservation for early outcomes. Open questions: an RCT with quantified resection and the true mechanism (vascular compromise vs fibrosis).

10. Would it change your practice?

It leans toward preserving or limiting IPFP resection when exposure allows — biologically plausible (tendon shortening → baja) and concordant with the new higher-level evidence favoring preservation. But surgeon-confounded Level III data should not drive practice on their own; the concurrent RCT and meta-analytic evidence is the stronger basis, and the MUA finding should not be over-read.

Validity and Bias

Internal validity: Compromised by performance/confounding bias because surgeon is inseparable from technique; detection bias is partly mitigated by using the reliable Insall-Salvati ratio, but exposure misclassification (technique inferred from surgeon) remains.

External validity (generalizability): Two surgeons at a single academic institution with standardized rehab — limited transferability.

Principal biases: Confounding/performance bias (surgeon=technique, unmeasured co-interventions), transfer bias (unequal follow-up), and exposure misclassification.

Part 2 — Comparison to the Existing Literature

Search method: PubMed searched across three windows — the past 20 years (2006–2026), the past 2 years (2024–2026), and the trailing 30 days (29 May–29 June 2026). Citations below include DOIs (source: PubMed).

Foundational / landmark context (20-year window)

Foundational work includes Lemon 2007 (patellar tendon length with vs without IPFP preservation), Pinsornsak 2014 (CORR RCT of fat pad excision in MIS TKA), and the syntheses by Ye 2016 (PLoS One meta-analysis) and White 2016 (Arch Orthop Trauma Surg systematic review) — collectively suggesting a trend toward tendon shortening and increased pain with resection but no consistent ROM effect. Dragoo 2012 (Sports Med) frames IPFP biology and pain.

Past two years (2024–2026)

The literature has moved to higher-level evidence. Han 2026 (NEJM Evidence) reports a randomized comparison of IPFP preservation versus resection in TKA, and Skaik 2025 (J Arthroplasty) meta-analyzed 21 studies (4,107 TKAs), finding preservation reduced early (six-week) complications and 3-month anterior knee pain and produced less patellar tendon shortening (2.68 mm less at 12 months) and better 12-month flexion, without affecting operative time or long-term pain. Both favor preservation, consistent with the present cohort's baja/pain signal.

Trailing 30 days

No additional on-topic comparative study was indexed in the trailing 30 days (to 29 June 2026); the field's most current high-level evidence remains the 2026 Han RCT and the Skaik 2025 meta-analysis, both within the past-two-year window.

Where this paper sits in the literature

This is among the largest single-center comparative cohorts and points in the same direction as the meta-analytic and new randomized evidence favoring preservation for baja and pain. Its distinct contributions — and distinct liabilities — are the perfect surgeon–technique confounding and the novel (but likely preference-driven) MUA observation, which set it apart from but beneath the concurrent RCT-level data.

Key comparator references

1. Han 2026. Infrapatellar Fat Pad Preservation versus Resection in Total Knee Arthroplasty (randomized). NEJM Evidence 2026;5(4):EVIDoa2500135. doi:10.1056/EVIDoa2500135
2. Skaik K, et al. Excision Versus Preservation of the Infrapatellar Fat Pad During TKA: A Systematic Review and Meta-Analysis. J Arthroplasty 2025. doi:10.1016/j.arth.2025.12.015
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4. White L, et al. The effect of infrapatellar fat pad resection on outcomes post-TKA: a systematic review. Arch Orthop Trauma Surg 2016;136:701–708. doi:10.1007/s00402-016-2440-x
5. Dragoo JL, et al. Evaluation and treatment of disorders of the infrapatellar fat pad. Sports Med 2012;42:51–67. doi:10.2165/11595680-000000000-00000