Real-world outcomes of platelet-rich plasma versus corticosteroid injections across common tendinopathies, bursitis, and knee osteoarthritis: A Propensity-Matched TriNetX Study

Aamir Shahzad[3], Syed Faisal Ali[2], Aoun Zaib Khan[3], Ahmed Sajid[4], Pregash Ellapparadja[1], Shaikh Muhammad Daniyal[5]
[1]Tameside and Glossop Integrated Care, United Kingdom [2]Royal Devon and Exeter Hospital, UK [3]MetroHealth Medical Center, Cleveland, Ohio, [4]Pakistan Institute of Medical Sciences, Pakistan, [5]DOW Medical College, Pakistan
amirshehzad4321@gmail.com

Disclosures: Aamir Shehzad (N), Syed Faisal Ali (N), Aoun Zaib Khan (N), Ahmed Sajid (N), Pregash Ellapparadja (N)

INTRODUCTION: Platelet-rich plasma (PRP) are marketed as superior to corticosteroid injections (CSI) for over-use and degenerative musculoskeletal disorders, yet comparative effectiveness remains uncertain. This study assesses 12-month outcomes of PRP versus CSI across common tendinopathies, bursitis, and knee osteoarthritis in a large electronic-health-record network.

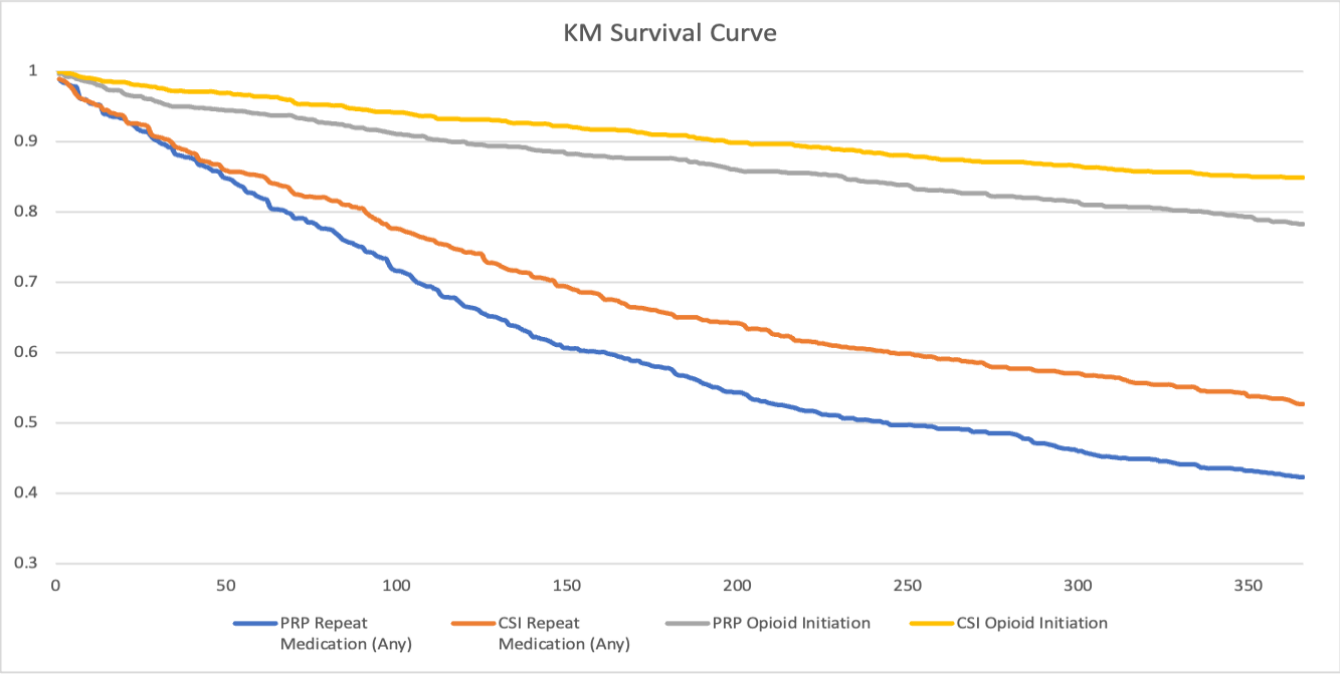
METHODS: Adults ≥18 y with lateral epicondylitis, plantar fasciitis, rotator-cuff/shoulder tendinopathy, knee osteoarthritis, Achilles or patellar tendinopathy, trochanteric bursitis, or de Quervain tenosynovitis (ICD-10-CM M77.1*, M72.2, M75.1-M75.8, M17.*, M76.6, M70.6, M65.4) from 2010-2025 were identified in the TriNetX US Collaborative Network. Index exposure was first PRP (CPT 0232T ± 20550) or CSI (CPT 20550/2060x + same-encounter steroid HCPCS/RxNorm). A 12-month look-back preceded 1- to 365-day follow-up. After 1:1 propensity-score matching (caliper 0.2 SD) on demographics, comorbidities, and prior care, risk difference (RD), risk ratio (RR), and hazard ratio (HR) with 95 % confidence intervals (CI) and log-rank p-values were calculated for eleven prespecified outcomes.

RESULTS SECTION: In the propensity-matched cohort (2128 patients; 1064 PRP, 1064 CSI; mean age 60 ± 14 y, 59 % female, 80 % White), PRP was associated with higher event rates across several endpoints. Surgical escalation occurred more often after PRP/ABI (RD 1.2 %, 95 % CI (0.2–2.3), p = 0.023; RR 2.30, 95%CI(1.10–4.81); HR 2.57, 95%CI(1.19–5.56), log-rank p = 0.013). Repeat medication injections were increased (RD 9.5 %, 95%CI(5.3–13.7), p < 0.001; RR 1.21, 95%CI(1.11–1.33); HR 1.33, 95%CI(1.18–1.50), p < 0.001). Opioid initiation rose by 6.0 % (RD 6.0 %, 95%CI(2.8–9.2), p < 0.001; RR 1.43, 95%CI(1.18–1.74); HR 1.48, 95%CI(1.20–1.83), p < 0.001), and first physical-therapy utilization increased by 8.4 % (RD 8.4 %, 95%CI(4.7–12.0), p < 0.001; RR 1.41, 95%CI(1.21–1.64); HR 1.52, 95%CI(1.27–1.81), p < 0.001). Functional decline markers were also higher: new dependence on a wheelchair or other assistive device (RD 2.4 %, 95%CI(1.2–3.7), p < 0.001; RR 3.60, 95%CI(1.80–7.22); HR 3.63, 95%CI(1.80–7.31), p < 0.001) and joint stiffness/limited range of motion (RD 1.8 %, 95%CI(0.2–3.4), p = 0.029; RR 1.63, 95%CI(1.05–2.55); HR 1.64, 95%CI(1.04–2.59), p = 0.031). By contrast, emergency-department visits showed a non-significant 2.3 % absolute reduction with PRP/ABI (RD –2.3 %, 95%CI(–5.2–0.7); HR 0.83, 95%CI(0.66–1.04), p = 0.111), and no meaningful differences emerged for long-term opioid use, abnormal gait, muscle contracture, or generalized/localized weakness (all p ≥ 0.17).

DISCUSSION: Despite theoretical biologic advantages, PRP was consistently associated with higher surgical conversion, repeat medication re-injection, opioid utilization, rehabilitation demand, assistive-device dependence, and joint stiffness compared with matched CSI, without benefit in emergency visits or chronic opioid avoidance.

SIGNIFICANCE/CLINICAL RELEVANCE: In a multicenter real-world setting, PRP did not outperform corticosteroid therapy across a spectrum of injection-treated musculoskeletal disorders and generated greater downstream resource utilization, challenging its routine adoption in everyday orthopedic practice.

Figure 1. Kaplan–Meier curves for repeat therapeutic injection and opioid initiation after index injection



Twelve-month cumulative incidence of (i) repeat medication injection (PRP=blue, CSI=orange) and (ii) first opioid prescription (PRP=grey, CSI=yellow) in the matched cohort (n = 1 064 vs 1 064).
Repeat injection: log-rank $\chi^2 = 21.37$, p < 0.001; HR 1.33 (95 % CI 1.18–1.50); proportionality test $\chi^2 = 0.21$, p = 0.65; assumption satisfied.
Opioid initiation: log-rank $\chi^2 = 13.57$, p < 0.001; HR 1.48 (95 % CI 1.20–1.83); proportionality test $\chi^2 = 0.32$, p = 0.57; assumption satisfied.