



BS Structured Summary



Article: Chondral Lesions Left In Situ During Arthroscopic Partial Meniscectomy

Structured Summary: Chondral Lesions Left In Situ During Arthroscopic Partial Meniscectomy

Original Article: Comparing 10-Year Follow-up Outcomes Among Patients Without Unstable Chondral Lesions Versus Those With Unstable Chondral Lesions (Left In Situ) at the Time of Arthroscopic Partial Meniscectomy

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INTRODUCTION / BACKGROUND

Meniscal tears are among the most common degenerative knee conditions managed by orthopaedic surgeons. American Academy of Orthopaedic Surgeons guidelines recommend conservative treatment as first-line therapy for degenerative tears associated with osteoarthritis; if non-operative management fails, arthroscopic partial meniscectomy (APM) may be considered. A population-based MRI study demonstrated cartilage damage in 69% of adults without radiographic osteoarthritis — a striking figure that illustrates how often the surgeon will encounter chondral lesions during arthroscopy.

The ChAMP Trial (Chondral Lesions and Meniscus Procedures) is a parallel (1:1), double-blind randomized controlled trial comparing debridement versus observation of unstable chondral lesions (CLs) found during APM. Because CL status can only be confirmed intraoperatively, the protocol also enrolled a control group of patients with normal cartilage or minimal damage (NoCL). Cumulative ChAMP evidence through 9 years suggests that debridement provides no long-term benefit, prolonging recovery without improving outcomes.

The NoCL group offers a unique opportunity to isolate the effect of the CL itself on APM outcomes — a clinically relevant question for preoperative risk stratification. At the 5-year follow-up, NoCL patients showed better scores in KOOS Sports and Recreation, SF-36 Pain, knee extension, and quadriceps circumference, with no differences in joint space narrowing or rate of subsequent surgery. The present study extends this comparison to approximately 9 years of follow-up, with the addition of weightbearing radiographs to objectively measure articular progression.

The authors hypothesized that patients without unstable CLs would have better long-term clinical outcomes, less joint space narrowing, and lower rates of additional knee surgery than those with unstable CLs left in situ.

OBJECTIVE

To compare, at 9 years following APM, patient-reported outcome measures (PROMs), physical examination, radiographic joint space narrowing, and rate of subsequent surgery between patients with unstable CLs left in situ (CL-NoDeb) and patients without unstable CLs (NoCL).

METHODS

This study is a subanalysis of the 9-year follow-up of the ChAMP Trial. Patients were screened and enrolled at a single university between January 2012 and April 2015 by six sports medicine fellowship-trained orthopaedic surgeons. Preoperative inclusion criteria were age ≥ 30 years, persistent meniscal symptoms for ≥ 3 months, MRI-confirmed meniscal tear, and election to undergo APM. Intraoperative randomization criteria required at least one meniscal tear and ≥ 1 unstable CL.

Unstable CL definition was reached through consensus among seven fellowship-trained surgeons: lesions $>1 \text{ cm}^2$ with flaps displaceable by $>5 \text{ mm}$ with a probe OR fibrillated cartilage involving $\geq 50\%$ of cartilage depth. Broad exclusion criteria were applied, including significant radiographic osteoarthritis, osteochondritis dissecans, ligamentous instability, inflammatory joint disease, cases requiring microfracture or meniscal repair, and grade 4 patellofemoral lesions $>4 \text{ cm}^2$. Patients with normal cartilage or minimal stable lesions (grade 1–2) formed the NoCL group.

PROMs included WOMAC (Pain, Stiffness, Function), KOOS (Pain, Symptoms, Sports/Recreation, Quality of Life), pain VAS, SF-36, and physical measures (range of motion, quadriceps circumference, and effusion). Weightbearing radiographs (bilateral AP, posteroanterior flexed weightbearing, bilateral patellofemoral, and lateral views) were obtained preoperatively and at 9 years. Two trained fellows, blinded to allocation, independently measured joint space across all compartments.

Patients undergoing arthroplasty or repeat arthroscopy were excluded from PROM and radiographic analyses but retained for the analysis of subsequent surgery rates. Comparisons used t-tests and chi-square/Fisher tests; multiple linear regression adjusted for weight, BMI, and preoperative score. Multiple imputation (5-fold) was applied to address loss to follow-up. The MCID was calculated using the distribution-based method (half of the standard deviation of the 9-year change score).

MAIN RESULTS

Of 92 patients randomized to CL-NoDeb, 64 remained for analysis (3 deceased, 19 lost to follow-up, 6 declined). Due to subsequent surgeries, 50 were available for PROM analysis and 49 for radiographic analysis. Of the 76 NoCL patients, 51 remained for analysis (50 for PROMs

and 45 for radiographs). NoCL patients weighed less ($p=0.0009$), had lower BMI ($p=0.002$), and were less likely to be obese ($p=0.004$) compared with CL-NoDeb patients.

The rate of subsequent surgery emerged as the most clinically relevant finding. On the index knee, 21.9% of CL-NoDeb patients underwent additional surgery versus only 2.0% in the NoCL group ($p=0.00152$). Total knee arthroplasty occurred in 17.2% of CL-NoDeb versus 2.0% of NoCL ($p=0.0114$). A similar pattern was observed for the contralateral knee: 21.9% versus 3.9% ($p=0.00616$), with TKA rates of 17.2% versus 0% ($p=0.00111$).

Among patients who avoided further surgery, no significant differences were found between groups in WOMAC Pain (the primary outcome), WOMAC Stiffness/Function, or any KOOS subscore. SF-36 Pain favored the NoCL group after multivariate adjustment (MD = -9.7; 95% CI -17.9 to -1.5; $p=0.02$). After multiple imputation, KOOS Sports and Recreation also favored NoCL (MD = 9.3; 95% CI -18.1 to -0.6; $p=0.04$). The proportion of patients meeting MCID did not differ significantly across any PROM.

On physical examination, quadriceps circumference at the mid-patellar level was greater in CL-NoDeb on unadjusted analysis (MD = 2.6 cm; $p=0.0002$), losing significance after adjustment. There were no differences in range of motion or in the presence/severity of effusion.

Radiographic analysis showed no statistically significant differences in joint space narrowing in any compartment of the index knee between groups. Inter-rater reliability ranged from moderate to excellent. Mean joint space narrowing was less than 1 mm in both groups across the 9-year follow-up.

An exploratory analysis combining CL-NoDeb + CL-Deb confirmed a significantly higher arthroplasty rate in groups with CLs (14.3% vs 2% in the index knee; $p=0.017$), reinforcing the conclusion that the presence of the unstable CL — rather than debridement or its omission — appears to be the main driver of progression to arthroplasty.

AUTHORS' CONCLUSION

At nearly 10 years of follow-up, patients with unstable CLs left in situ at the time of APM had a significantly higher rate of subsequent arthroplasty (21.9% versus 2.0% in NoCL). Among patients who avoided arthroplasty, PROMs were equivalent and progressive joint space narrowing was minimal on weightbearing radiographs. The findings suggest that the presence of the unstable CL, rather than the APM itself, is the main driver of unfavorable long-term clinical progression.

BS DISCUSSION

ChAMP is currently one of the best-designed clinical trials available for discussing the actual role of cartilage debridement during partial meniscectomy. This 9-year analysis consolidates a message that has been building since the initial report: debridement of unstable chondral lesions found intraoperatively provides no measurable long-term clinical benefit. More than that, this publication adds a powerful new layer to the discussion — it isolates the effect of the chondral lesion itself.

The CL-NoDeb versus NoCL comparison is methodologically elegant. Since CL status can only be confirmed intraoperatively, all patients had clinical complaints and MRI findings consistent with meniscal tear and underwent APM. What separates the groups is, fundamentally, the cartilage status identified at arthroscopy. When we compare arthroplasty rates of 21.9% (CL-NoDeb) versus 2.0% (NoCL), the more-than-tenfold difference cannot be attributed to the procedure — APM was performed in both groups. It must therefore be attributed to the biological and mechanical terrain of that knee.

The most immediate practical implication is the importance of careful preoperative MRI reading. Identifying APM candidates without evidence of unstable CL allows the surgeon to offer a procedure with very favorable expectations: PROMs equivalent to healthy population controls and a 9-year arthroplasty rate of only 2%. Conversely, identifying significant cartilage damage before arthroscopy changes the prognosis — not necessarily the surgical indication, but certainly patient expectations and the surgeon's counseling approach. In this scenario, it is the surgeon's responsibility to openly address the increased risk of progression to arthroplasty.

For BS, there is also a reflection on what NOT to do. Additional debridement of unstable cartilage — historically performed out of habit or intuition — adds operative time, marginally increases risk, and provides no documented benefit. In an era of evidence-based medicine and surgical time optimization, this is a gesture worth revisiting.

Limitations are honestly disclosed: a modest sample with roughly 30% loss to follow-up, a consensus (non-validated) definition of unstable CL, a predominantly White single-center population, and the fact that operated patients were excluded from PROM and radiographic analyses — likely underestimating the magnitude of between-group differences. Nevertheless, the clarity of the central message remains. For BS Papers, this is a paper worth highlighting in conversations with residents, with patients, and in building preoperative counseling protocols for degenerative meniscal tears.

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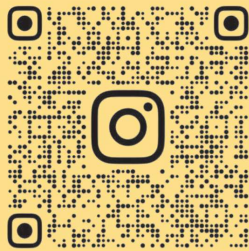
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