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BROWSER'S NOTES

Browser's notes

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The efficacy of platelet-rich plasma and platelet-rich fibrin in arthroscopic rotator cuff repair: a meta-analysis of randomized controlled trials.
Hurley ET, et al.
Am J Sports Med. (2019); 47(3):753–61

A meta-analysis of randomized controlled trials (RCTs) comparing augmentation of rotator cuff repairs with either platelet-rich plasma (PRP) or platelet-rich fibrin (PRF) to standard surgery included 18 articles evaluating 1147 patients. For all studies, tendon healing was assessed by MR imaging. Eleven of the 12 studies with PRP injections (9 leukocyte-poor PRP, 3 leukocyte-rich PRP) was performed with 1 to 16 ml injected into the bone-tendon interface at operation. The other study injected PRP by ultrasound guidance into the same site at 7 and 14 days following operation. The 6 studies employing PRF (4 leukocyte-poor PRF, 2 leukocyte-rich PRF) had 1–9 ml of fibrin clot stitched into the operative site. There were fewer instances of incomplete tendon healing following PRP injection than for controls (17.2% of the 355 PRP patients vs.30.5% of 352 control patients). The advantage of PRP was noted for both small and medium to large cuff tears. However, PRF studies showed no statistically significant difference between control group cuff repairs and those augmented with PRF. Further, one study suggested use of PRF may negatively impact outcomes. Earlier pain relief was found for the patients treated with PRP at cuff surgery. The authors conclude that intraoperative injection of PRP at the bone-tendon interface during rotator cuff repair may improve healing and reduce postoperative pain levels. Whether similar benefits can be achieved with non-operative or postoperative ultrasound guided injections remains to be shown.

Knee joint distraction compared with high tibial osteotomy and total knee arthroplasty: two-year clinical, radiographic, and biochemical marker outcomes of two randomized controlled trials.
Jansen MP, et al.
Cartilage. (2019); Feb 14 [Epub ahead of print] PMID: 30758214

Cartilage quality (dGEMRIC index) following knee joint distraction or high tibial osteotomy.
Besselink NJ, et al.
Cartilage. (2018); Jun 1 [Epub ahead of print] PMID: 29862834

These articles report the 2 year results from two independent randomized controlled trials of surgical knee joint distraction (KJD) treatment for advanced osteoarthritis (OA), Kellgren and Lawrence score > 2, but no bone-on-bone contact. One study (60 subjects) randomized patients being considered for total knee arthroplasty 2:1 to receive total knee arthroplasty (TKA, $n = 40$) or KJD ($n = 20$). The other study randomized patients with less severe, medial compartment knee OA and < 10° varus to receive high tibial osteotomy (HTO, $n = 46$) or KJD ($n = 23$). KJD was performed by placement of medial and lateral dynamic external fixators anchored in the femur and tibia that bridged the knee joint. Initially, 2 mm knee joint distraction was applied and increased to 5 mm postoperatively over 3 days. The KJD patients were discharged with immediate full weight bearing with crutch support, as needed; the hardware was removed after 6–7 weeks. HTO patients had their hardware removed at 18 months to allow for knee MR imaging. A number of patient reported outcomes, including the Western Ontario and McMaster University Osteoarthritis Index (WOMAC) and the Dutch Knee injury and Osteoarthritis Outcome Score (KOOS), were measured pre-surgery (baseline) and 3, 6, 12, 18, and 24 months postoperatively with WOMAC as the primary outcome. Imaging was performed pre-operatively and at 1 and 2 years with semi-flexed PA knee radiographs (for joint space width, JSW) and knee MR with delayed gadolinium enhanced MR imaging of cartilage (dGEMRIC) for cartilage glycosaminoglycan (GAG) estimation (20 KJD patients; 20 HTO patients). Postoperative imaging was not performed for TKA subjects. HTO patients skipped 1 year knee MRs since the hardware was still in place. All groups demonstrated statistically significant improvements in clinical outcomes that were considered clinically important and were sustained at year 2. Roughly half of the KJD patients had

pin tract infections, 86% of which were successfully treated with oral antibiotics.

Comparison of 2 year change from baseline in total WOMAC scores showed no significant difference between KJD with TKA treated groups and, therefore, non-inferiority of KJD. However, other clinical measures, including total KOOS, indicated better outcomes for TKA. Comparison of the KJD and HTO groups showed no significant differences in 2 year change of WOMAC and KOOS scores except for the KOOS quality of life subscore for which HTO had more improvement. Radiographs showed statistically significant increases in mean and minimum JSW from baseline to 2 years for the knees treated with HTO (Δ0.89 mm and Δ0.62 mm, respectively) and KJD for both studies (Δ0.83–1.01 mm and Δ0.94–1.06 mm, respectively) with no significant difference in JSW changes between treatment groups. Of interest, average cartilage dGEMRIC indices (which are proportional to cartilage GAG content and "cartilage quality") did not change significantly over 2 years and showed no statistically significant difference between KJD and HTO. Overall, the time related changes in dGEMRIC indices were considered small, only about 3% - 4%. Compartmental dGEMRIC analysis showed no differences over time for KJD. However, in the HTO group, there was worsening of the medial compartment and improvement of the lateral compartment cartilage. For the HTO lateral compartment, the change in dGEMRIC index correlated positively with the change in JSW. With the HTO and KJD groups combined, there was a significant positive correlation between the change from baseline of dGEMRIC indices and WOMAC scores (+1.59 ms dGEMRIC index per 1 unit increase in WOMAC score). The authors conclude that KJD and HTO promote the cartilage repair tissue formation with similar average dGEMRIC indices, and presumably similar GAG content, to the preoperative cartilage. Thus, in the proper patient group, KJD may be considered as an alternative to HTO for delaying TKA.

Abstracted by C. S. Winalski, M.D.
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