

Take home message from
“Arthroscopy Association of Canada Position Statement on Intra-articular Injections for
Knee Osteoarthritis”ⁱ

Arthroscopic surgery for knee OA is not recommended. The AAC recommends a 6- to 9-month trial of “appropriate and comprehensive nonoperative treatment” before considering surgical intervention such as arthroplasty. Alternative treatments including intra-articular injections will be discussed below. Although these guidelines discuss injections, it is important to remember that we also have other successful conservative tools to recommend:

- Weight loss is the first and probably most efficient way to help patients with knee osteoarthritis (OA)
- Modification of the patient’s activities to low impact such as switching from running to biking or swimming
- Sleeve braces
- Unloading braces
- Strengthening programs for quadriceps, hamstrings, gluteus and abdominal muscles by a physiotherapist
- Oral NSAIDs in acute flares
- Topical NSAIDs

These treatments should be optimized, encouraged and followed up on to ensure the patient has attempted all other options before referring to surgery. An active treatment program designed by a physiotherapist with several sessions of exercises & teaching (not only passive therapies such as heat, ice, TENS for the whole session) with an assigned, progressive home exercise program that the patient is compliant to for many weeks.

Corticosteroid injections:

While cortisone injections are commonly used in family medicine practice, there is still some conflicting evidence around its efficacy for pain and function due to small sample sizes and studies of poor methodological quality.

Highlights:

- More efficient pain relief and function improvement when the OA is less severe (Kellgren-Lawrence grades 1-2).
- On the other hand, patients with moderate to severe OA and obese patients tend to have limited improvement.
- The effects of corticosteroids are of a limited duration and commonly last up to 3 months with no benefit over 6 months.

We should also counsel the patient on having a maximum of “3 injections per year”. The rationale behind this recommendation was demonstrated in a study published in the JAMA 2017ⁱⁱ that tried to demonstrate the effects of repeated cortisone injections. The results showed an increase in cartilage volume loss on MRI (but of only 0.11mm) after 2 years of intra-articular triamcinolone injections given every 3 months when compared to saline injections. The cartilage volume loss was of 0.11 mm which has to be taken into consideration in the decision making with the patient as it might be of limited concern in an older patient with severe osteoarthritis, especially with contraindications for arthroplasty.

Recommendation: In patients with mild OA, intra-articular corticosteroid injections provide moderate short-term pain relief and restoration of function, as well as offer a cost-effective treatment option.
Strength of recommendation: Good – A

Hyaluronic acid (HA):

Highlights:

- HA increases viscosity of synovial fluid, compressive strength of articular cartilage and decreases inflammation
- Low risk of adverse effects: infection and granulomatous inflammation in 4-13% of injections
- High-molecular weight (HMW) (> 3000kDa) more efficient than low-molecular weight (LMW) or placebo^{iii, iv}
- Highly cross-linked more efficient
- Effect lasting up to 26 weeks but up to a year in some patients
- Improves pain, function & stiffness in mild to moderate OA

Recommendation:

In patients with mild to moderate knee OA, HMW HA intra-articular knee injection provides pain & function improvement.

Strength of recommendation: Good – A

Platelet-rich plasma (PRP):

Highlights:

- Plasma with a minimum of 1 million platelets per milliliter
- Pain & function improvement more significant than placebo (saline) at 6 & 12 months
- Equal effect to HA at 6 months but superior to HA at 12 months
- Safe, low risk adverse events (same as placebo)
- Better efficacy in low grade OA (Kellgren- Lawrence grades 1-2) & younger patients
- No evidence in severe OA

Recommendation: In mild to moderate knee OA, PRP injection potentially improves pain and functional outcomes up to 1 year after the injection.

PRP composition is affected by time of day & exercise, different PRP preparation systems, concentration of other constituents (WBC, growth factors, etc.). This makes preparations very heterogeneous and therefore harder to interpret, even in meta-analyses attempting to determine the optimal protocol and product. Further high-quality clinical studies are needed.

Strength of recommendation: Cf (f: for/in support of the intervention)

Stem cells:

Highlights:

- Potential good benefit in lower grades of OA
- Still very few studies with small sample sizes – more extensive research needed.

Recommendation:

MSC and BMAC injections limited to registered controlled trials only.

Strength of recommendation: Insufficient – I

In early stages of OA, sport medicine physicians prefer starting with weight loss, activity modification, bracing, strengthening exercises/physiotherapy, HA and PRP and then opting for cortisone injections because of the potential long-term effects of cortisone on articular cartilage. Of course, in all cases, treatment options should be personalized to the patient's needs, severity of pain, functional impact, economic status and other individual variables. Referral to a sport medicine specialist should be considered if assistance is required to guide the patient through the spectrum of management options for knee OA.

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ⁱ Arthroscopy Association of Canada Position Statement on Intra-articular Injections for Knee Osteoarthritis. *Orthop J Sports Med.* 2019 Jul; 7(7): 2325967119860110. Published online 2019 Jul 19. doi: 10.1177/2325967119860110, PMID: 31367647

ⁱⁱ McAlindon TE, LaValley MP, Harvey WF, et al. Effect of intra-articular triamcinolone vs saline on knee cartilage volume and pain in patients with knee osteoarthritis: a randomized clinical trial. *JAMA.* 2017; 317(19):1967-1975.

ⁱⁱⁱ Bhandari M, Bannuru RR, Babins EM, et al. Intra-articular hyaluronic acid in the treatment of knee osteoarthritis: a Canadian evidence based perspective. *Ther Adv Musculoskelet Dis.* 2017;9(9):231-246.

^{iv} Vannabouathong C, Bhandari M, Bedi A, et al. Nonoperative treatments for knee osteoarthritis: an evaluation of treatment characteristics and the intra-articular placebo effect. A systematic review. *JBJS Rev.* 2018;6(7).