

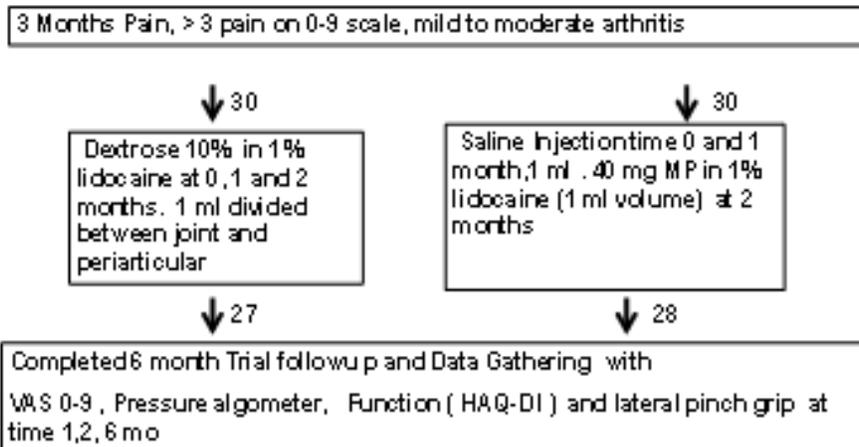
Thumb (TMC) OA 2014 Dextrose vs Steroid

- Jahangiri A, Moghaddam FR, Najafi S. Hypertonic dextrose versus corticosteroid local injection for the treatment of osteoarthritis in the first carpometacarpal joint: a double-blind randomized clinical trial. J Orthop Sci 2014 Aug 27. [Epub ahead of print]

[**Commentary by K. Dean Reeves, M.D.** www.DrReeves.com]

Jahangiri et al performed a well designed clinical trial comparing the use of steroid injection versus injection of dextrose for arthritis of the most commonly affected joint of the thumb (the base of the thumb, also called the carpometacarpal joint).

General Method 2014 Thumb RCT



The requirements for this study were age 40 or more, pain three months or more, pain at least 3 on a 0 to 9 pain scale for pain with movement, and X-ray evidence of mild to moderate arthritis.

96 subjects passed screening and agreed to participate and, of these, 60 were selected randomly and assigned with 30 in each of two groups.

All were 40 years old or older.

Prior steroid injection accepted but more than 3 months before anywhere and not more than 6 months before if TMC.

Patients taking NSAIDs at time of study were excluded.

This may have favored those who would not have responded as well to steroid

The worst thumb was chosen for treatment.

The clinical assessor and patient were blinded.

Dextrose solution was 10% concentration with 1% lidocaine.

The steroid group received saline only (no lidocaine) for first two injections and lidocaine in steroid for the third injection.

This had the potential to affect blinding if there was a difference in analgesia but, typically, injection of a joint results in analgesia. There was not test given on success of blinding but each group improved significantly which likely helped with masking, and, actually the saline group did better initially.

Hand function measure was via Health Assessment Questionnaire Disability Index (HAQ-DI) for eating, gripping and dressing, with the total of all three measures added together. Lateral pinch measured in pounds by a hydraulic pinch gauge, and pain with movement of the joint was measured by a 100 mm VAS from 0 (no pain) to 9 (worst pain).

The HAQ-DI is a widely used measurement tool. Those portions pertinent to the thumb were asked.

The dextrose was administered as 1 ml volume divided between intra and extrarticular. It is unclear if the saline was and the steroid was injected intraarticularly only.

This was a military study. (Army Univ Medical Sciences)

Between Group Comparison of Results in Thumb OA RCT – 6 months

- **VAS Pain with movement Improvement:**
47% steroid ; 76% dextrose. P = .02
- **Pinch improvement in percent (lbs)**
9% (1.1 lb) steroid; 19% (2.3 lbs) dextrose p = .45
- **Function Improvement Percent (HAQ-DI)**
41% steroid, 65% dextrose. P = .01

There was a well-described statistic analysis section. Mean age of participants was 63.6 years. 73% were female. There were no differences between groups overall in in any variable except pinch, with the dextrose group worse at onset. (9.6 vs 11.6). (Table 1 in article)

The results at 6 months are shown here. Clinical significance of pain improvement was seen in both groups exceeding twice the MCID for pain improvement, but the dextrose group improved significantly more. Pinch force improvements were not significantly different. Functional improvement on the HAQ-DI (Hand assessment questionnaire- Disability Index) improved significantly more in the dextrose group.

This was a randomized controlled trial with subjects and the clinical assessor blinded as to the treatment received.

The authors in the full article conclude that both methods improve pain and function and there is no important difference between dextrose and steroid use regarding costs. However, side effects of steroid use and apparent benefit of dextrose suggests that dextrose injection is a better treatment than steroid injection. However, further research with a large sample size is needed to compare possible complications of LC vs DX injections in the management of OA.

Here is the abstract:

Purpose: To compare the advantages of prolotherapy in the treatment of first carpometacarpal osteoarthritis(OA) with those of corticosteroid local injection in the short and long term.

Methods: We performed a randomized controlled trial from March 2010 to March 2011 in an outpatient clinic at a university hospital. Sixty participants (60 hands) with OA of the first carpometacarpal joint were assigned equally to two groups. For the corticosteroid group, after 2 monthly saline placebo injections, a single dose of 40 mg methyl-prednisolone acetate (0.5ml) mixed with 0.5 ml of 2% lidocaine was injected. For the dextrose (DX) group, 0.5 ml of 20% DX was mixed with 0.5 ml of 2% lidocaine and the injection was repeated monthly for 3 months. Pain intensity, hand function and the strength of lateral pinch grip were measured at the baseline and at 1, 2, and 6 months after the treatment.

Results: Mean age(STD) was 63.6 (9.7) years, and mean(STD) visual analog scale (VAS) was 6(2). The two groups were comparable at 2 months, but significantly different at 1 month, with better results for corticosteroid, and at 6 months with apparently more favorable outcome for DX mean difference (95%CI) in VAS = 1.1 (0.2,

2.0), $p = 0.02$]. After 6 months of treatment, both DX and corticosteroid injection increased functional level, but DX seemed to be more effective [mean difference(95%CI) in total function score = 1.0 (0.2,1.8), $p = 0.01$].

Discussion: For the long term, DX seems to be more advantageous, while the two treatments were comparable in the short term. Because of the satisfactory pain relief and restoring of function, we would prefer DX prolotherapy for the treatment of patients with OA.

Level of evidence: Therapeutic studies – investigating the results of treatment; level I.

2014 THUMB RCT Strengths/Weaknesses

REC		
Good Size	Moderate Size	
Sig Clinically	Both Pain and Functional Measures	
Sig Statistically	Both Pain and Functional Measures	
Adequate F-UP	6 Months is a bit short	
Data Capture	10% or less dropout.	
Accepted Tool	Reasonable choices.	
Simple	Yes	
Inexpensive	Yes	
Min invasive	Yes	
Grade	I	

This is a summary of the strengths of this study, with size somewhat small, and complexity of injection amount the only observed limitations. The key is that this and the following study both indicate that dextrose injection is better than standard of care exercise. This study suggests another mechanism of dextrose other than repair alone, given speed of improvement in pain. However, as there were still significant numbers of partial responders, it also suggests that not all pain sources in the thumb were treated by this method.