

# Intraarticular Corticosteroid Injection for First Carpometacarpal Osteoarthritis

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**ABSTRACT. Objective.** To evaluate the efficacy of intraarticular corticosteroid injections for osteoarthritis (OA) of the first carpometacarpal (CMC) joint.

**Methods.** This was a prospective case series of patients presenting to a community rheumatology clinic with OA of the 1st CMC joint. A total of 0.25 ml of methylprednisolone acetate was injected into the 1st CMC joint in 25 patients, who were followed for one year.

**Results.** A significant improvement in the visual analog scale (VAS) for pain was noted at one month but not at 3, 6, or 12 months postinjection. However, 5 patients were pain-free at 12 months postinjection. Many patients noted improvement in tasks such as lifting a full cup and turning a faucet. Injections were well tolerated, with only 2 patients noting minor side effects.

**Conclusion.** These results suggest that intraarticular corticosteroid injection for 1st CMC OA is a well tolerated procedure. A significant longterm benefit of corticosteroid injection for 1st CMC OA was not observed. (J Rheumatol 2005;32:1305–6)

*Key Indexing Terms:*

OSTEOARTHRITIS    INJECTIONS    INTRAARTICULAR    METHYLPREDNISOLONE

Evidence for significant, longterm benefit of intraarticular corticosteroid injection for osteoarthritis (OA) of the first carpometacarpal (CMC) joint is anecdotal. Because there are no published data to support this contention, a prospective case series was designed to evaluate patients who presented to a single community rheumatology clinic.

## MATERIALS AND METHODS

**Study design.** All patients who presented to a community rheumatology practice with OA of the 1st CMC joint were eligible for the study. Patients were excluded if they required longterm anticoagulation, had a life expectancy under a year, had inflammatory arthritis, were unable to give consent, or refused consent for the study. Other treatment modalities, such as splinting, were discussed with patients before injection. This study was approved by the hospital ethics committee and informed consent was obtained from all patients. Followup was by office interview and physical examination or telephone interview at 1, 3, 6, and 12 months postinjection. The primary outcome measure was change in visual analog scale (VAS) pain score.

**Intraarticular corticosteroid injection.** Injections were performed as outlined in Canoso<sup>1</sup>. A total of 0.25 ml (10 mg) of methylprednisolone acetate was injected into the 1st CMC joint using either a 25 or 27 gauge needle. Patients were advised to rest the joint for 48 h after injection and contact their physician if any untoward effects occurred. If both 1st CMC joints were to be injected, the second injection was done approximately one month after the first, as a severe postinjection flare in both hands may have been significantly disabling.

**Postinjection assessment.** VAS score for pain was determined at each time-

point. Patients were also asked questions from the eating and grip subsections of the Health Assessment Questionnaire (HAQ), and evaluated by the investigating physician for improvements in the 1st CMC.

## RESULTS

The first patient entered the study in November 2001, and the last patient completed 12-month followup in August 2004. A total of 25 patients (22 women, 3 men) received 32 corticosteroid injections of 10 mg methylprednisolone acetate to the 1st CMC joint. Plain radiographs (reviewed by the author) confirmed 1st CMC OA in all patients. Data on radiographic severity of 1st CMC OA were obtained by retrospective chart review. Radiographic OA was noted in all patients; at least 5 had both significant joint space narrowing and osteophyte formation at the 1st CMC joint.

Followup data were available on 23/25 patients. Five patients had both 1st CMC joints injected and 4 had repeat injections 3–6 months after the initial injection. Average age of the patients was 54 years (range 46–88). Three patients each also had rotator cuff tendinitis, trochanteric bursitis, flexor tendon nodulosis, fibromyalgia, and chronic work related disability. Two patients who used splints before intraarticular injection, noted significant functional limitation, and no improvement in pain. Both elected to have corticosteroid injection at their followup appointment.

There was a significant decrease in the VAS pain score from 6.7 before the injection to 3.7 at 1 month ( $p < 0.001$ ; Table 1). There was no significant change in VAS pain at 3, 6, or 12 months. When patients with fibromyalgia and chronic work related disability were excluded from this analysis, no significant change in VAS pain was noted at 3, 6, or 12 months.

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Table 1. Average visual analog scale (VAS) score of pain at the first carpometacarpal joint just prior to injection with methylprednisolone acetate and at 1, 3, 6, and 12 months after injection.

Month	VAS
0	6.8
1	3.5*
3	5.2
6	5.9
12	5.1

p < 0.01.

Five patients had no pain at 12 month followup. There was no relationship between which hand was injected, dominant hand, age, initial pain score, and pain response at any timepoint after injection. One patient had bruising at the injection site and another had mild skin atrophy and hypopigmentation at the injection site. No other adverse effects were noted. Two patients were referred for surgery within the first year following injection. One patient with fibromyalgia noted an improvement in pain from 7.5 before injection to 3.5 one year later. Two of 5 patients with radiographically severe OA had no pain at 12 months.

Of the questions in the HAQ questionnaire specific to eating and grip, patients seemed to notice a significant improvement in lifting a cup (11/16) and turning a faucet (9/16). Physician quantification of pain at the injection site was not measured, but the overall impression was that all patients derived at least some benefit at each evaluation timepoint.

## DISCUSSION

Several limitations and sources of bias in this study should be noted. The questionnaire was administered by the investigator, either in person or by telephone interview. No actual measurement of hand function or strength, such as the Jebsen test of hand function<sup>2</sup>, was attempted, primarily because of the additional time demands this would place on a community rheumatology practice. Interestingly, there are no measures of hand function presented in the only study evaluating corticosteroid injection for 1st CMC OA in the literature<sup>3</sup>.

Many study patients had chronic pain conditions and their inclusion may have weakened the conclusions. However, since this was a natural history study of all patients with 1st CMC OA receiving corticosteroid therapy in a community rheumatology setting, it was not thought appropriate to exclude them. Further, when these patients were excluded from the analysis, there was still no significant difference in VAS pain at 3, 6, and 12 months.

Meenagh, *et al*<sup>3</sup> performed a study on intraarticular corticosteroid injection of the 1st CMC in OA in 40 patients. In that study, no significant difference in VAS pain was noted at 4 weeks until the conclusion of the study at 24 weeks. It should be noted that the patients in their study were older and had lower baseline pain scores than the patients in this study.

Results for a single prospective randomized controlled study of dexamethasone or hyaluronic acid injected into the trapeziometacarpal joint have been presented but not yet published<sup>4</sup>. Average patient age and VAS pain preinjection and at one month support the findings of this study.

Splinting is a commonly used conservative modality for 1st CMC OA. Only 2 patients in this study used splints for their 1st CMC OA; neither noted significant benefit in terms of pain and both noted increased functional limitation. Many patients expressed an unwillingness to pay for splints and given the degree of pain at baseline, it was believed by the investigator that intraarticular steroid injection would be more efficacious in this practice setting. Therefore, injections were often done before a trial of splinting could be attempted. Published data on splinting for 1st CMC OA are scant, and in light of these results, further study on splinting in 1st CMC OA would be valuable.

This study suggests that 1st CMC injection with corticosteroid is a safe and well tolerated procedure. Although there was a significant improvement in VAS pain at 1 month, no significant difference was noted at 3, 6, or 12 months. To further investigate a possible role of intraarticular corticosteroids in 1st CMC OA, larger study populations may be needed, as the current study as well as the only other study on this topic<sup>3</sup> are likely both underpowered. Objective measures of hand function should also be examined, as such measures may potentially be more sensitive to changes of hand function than pain VAS.

## REFERENCES

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