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5-7 October 2023

Intra-articular injections in the treatment of TMJ arthritis

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- “**Injectionists**”: modern **druids** playing with various interesting fluids on the lack of evidence-based guidelines???
- Social media MD “influencers” suggest: Patients, please, come around! We are the good ones: we do not recommend surgery. We want to save the patient from an amputating operation (a joint replacement). Seriously, who wants to get operated when they can avoid it or delay it?
- Here! Take a look at the magic filters for OA treatment!





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- Imagine! We can even “sell” (and not cheap) **THEIR OWN** blood (which does not cost anything to collect it) as the “magic cure” to **THEIR** disease
- PRP: A win-win situation of BIO (so trendy term nowadays...) treatment without the side effects of the “bad” corticosteroid? Are we all (patients & doctors) happy now?





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- But not just that! Overall, we “sell” cortisone injections, PRP injections, HA injections, collagen injections, BMAC injections, fat tissue, stem cells, magic cells, we “sell the sky and the earth”!!!
- But do we actually know for granted if all or any of these work?
 - What means “it works”?

DOES IT
WORK?



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Let's dive into the existing evidence...





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Our topic: Basal thumb arthritis: intra-articular treatment of a small but important joint





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Thumb base arthritis or TMJ arthritis

- Thumb base arthritis or trapeziometacarpal joint (TMJ) is the second most frequent site of hand osteoarthritis following the interphalangeal joints ^{1 2}
- It usually manifests itself in middle-aged patients ³

¹ Swigart. *Curr Rev Musculoskelet Med.* 2008;1(2):142-6.

² Dahaghin et al. *Ann Rheum Dis.* 2005;64(5):682-7.

³ Ghavami et al. *Plast Reconstr Surg.* 2006;117:116e-128e.



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TMJ arthritis clinically

- Despite affecting only a small joint, symptomatic thumb base arthritis may cause significant disability...
- ... as it restricts thumb opposition, renders the joint weak and unstable, and reduces pinch and grip strength ^{1 2}

¹ Bakri et al. *Plast Reconstr Surg.* 2015;135(2):508-20

² Patel et al. *Curr Rev Musculoskelet Med.* 2013;6(1):1-8



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How do we treat TMJ arthritis?

- Conservative treatment: mild to moderate forms: NSAID's, analgetics, braces, activity modification, injections, physios, acupuncture, etc...
- Operative (OR) treatment: in severe forms, non-responsive to conservative treatment: wide spectrum of surgical techniques ranging from trapeziectomy till TMJ arthroplasty: It is difficult to declare with any degree of certainty which procedure offers the best functional outcome and safety profile ¹
- Keep in mind: OR outcomes are far from optimal in TMJ arthritis ¹. Therefore, OR should be served strictly as last resort!

¹ Knightly N, Sullivan P. J Hand Surg Asian Pac Vol. 2021 Jun;26(2):245-264.



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How about a golden mean?

- In between conservative and operative means...
- ...there are the so-called minimally-invasive interventional procedures: **intra-articular injections**: Could they be the happy medium in the treatment of TMJ arthritis?!?
- Performed either as “anatomic landmark”-guided or as ultrasound-guided: Are there any differences in clinical outcomes and accuracy on target?!?



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Intra-articular injections in TMJ arthritis

- Recent reviews on the subject of treatment options for thumb base arthritis are recommending intra-articular injections for early to moderate stages of the disease
- However: most patients (even with severe form of the disease) are not so willing to be operated until conservative treatment totally fails



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What do we inject to treat (optimistic word?!) TMJ arthritis?

Three things up till now:

1. Corticosteroids
2. Hyaluronic acid
3. PRP

Any combinations of them???





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Any evidence of successful combinations?!?

- Perhaps, corticosteroid+hyaluronic in the same session?!?
- Or by turns? First session: corticosteroid; Next session: hyaluronic ...and continuing so on by repeating each drug every other session?!?
- PRP+hyaluronic?! In the same session?!? By turns?!? Any evidence?!?



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Questions regarding outcomes

- Which of the three therapeutic options (corti, HA, PRP) is associated with the best outcomes in the treatment of TMJ arthritis?
 - Which of the three lasts longer?
 - Which of the three leads to faster relief?
- Which of the three has minimum side effects? And which has the most?



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Parenthesis: outcomes regarding treatment of which disease??

- Keep in mind: A number of patients with radiographic/clinical signs of TMJ arthritis might suffer from undiagnosed (or diagnosed) autoimmune inflammatory arthritis (for example rheumatoid)
- These patients probably will have different outcomes compared to osteoarthritic patients post-intra-articular injection at TMJ (no PRP in these patients?!?)
- First step after the correct diagnosis and before any injection: regulation of the systematic disease by a rheumatologist



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Additional questions emerging...

- Single injection or consecutive sessions?
- If consecutive sessions: any evidence-based interval? Every week, 2 weeks, 3 weeks, 1 month, 3 months, 6 months or what? Is it all empirical?!?
- How many sessions at the maximum? How many at the minimum? Any evidence?
- How many ml is optimal to inject into the small TM joint? Any evidence? How many ml of local anesthetic in the joint? Anesthetic before PRP?



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Finally: Which result would make us happy? ...And the patients?

- Complete relief of symptoms? For how long? Are we/they happy with 1-month or 3-month or 6-month or 12-month relief and then recurrence?
- Partial relief (50% for example or less?): is it satisfactory? Do we really believe we treat the patients or do we just drug down the phenotype of the disease to be our Sleeping Beauty at a rather optimal scenario of not awakening every now and then?!?
- Or are we happy with a significant difference in a pain or functionality score in order to publish it?!? Is this enough? How about the clinical translation of a statistical difference? MCID is the solution or not even that?





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And an intriguing question regarding questions...

- If many of the previous questions have not been solidly addressed by the current literature, how much space is there left for us to establish evidence-based guidelines?

- Perhaps, an international Consensus Building approach including experts who vote (Delphi approach) after discussing all existing evidence? Should it “treat” gaps in current literature by providing experts’ recommendations before future studies try to address these gaps?

- Or should it just highlight the gaps and orientate future studies?





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Especially regarding PRP:

- Recent SRs and metas tend to analyze retrospective studies of huge heterogeneity in terms of treatment itself: PRP concentration, whole blood and PRP volume, leucocyte-poor or rich, activated or not, single or double centrifuge, different rpm, different time of preparation, etc.
- But how can we compare apples with pears? And which PRP is the “correct” one? In other words, what kind of science are we seeking for? A loose kind that all different PRPs should be considered as the same type of PRP?!?





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Our primary question simplified: Which type of injection is better in TMJ arthritis?





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Fact: Basal thumb arthritis: Lot of studies on corticosteroid injections – lack of studies on biologic injections





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Can we take advantage of the evidence regarding PRP injections in the knee joint to apply it in small joints, like TMJ?!?

- Not a clear answer
- Most probably, we should not, since we are talking about completely different joints regarding dimensions, shape, RoM, function, weight bearing, cartilage coverage and properties, etc...



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Corticosteroid injections

- Steroid injections are a useful conservative treatment modality prior to considering surgical treatment ¹
- Intra-articular injections of methylprednisolone and triamcinolone have been used for the treatment of thumb base arthritis ²
- They are thought to reduce pain and inflammation in early to moderate stages of the disease, but their effect is usually temporary and quite variable ³

¹ Meenagh et al. *Ann Rheum Dis*. 2004;63(10):1260-3.

² Stahl et al. *J Clin Rheumatol*. 2005;11(6):299-302.

³ Swigart CR. *Curr Rev Musculoskelet Med*. 2008;1(2):142-6.



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Hyaluronic acid intra-articular injections

- Clinical studies showcasing their efficacy in the knee joint
- AAOS, ESSKA: no evidence to use it even for the knee joint!!!
- Individual experience of many colleagues (and mine): clinical improvement of osteoarthritic patients (some times complete relief)!!
- Where stands the truth?!? Placebo effect? Does it really help by itself? How about the TM joint?



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PRP

- Platelets contain large number of growth factors and some of these regulate selected biological processes in tissue repair and may have an anti-inflammatory effect.
- It has been suggested that fibrinogen in PRP may be activated to form a fibrin matrix that may fill cartilage lesions and that PRP may have positive effects on cartilage repair.¹
 - However: up to date, very few PRP studies in TMJ arthritis

¹ Xie et al. *Arthritis Res Ther* 2014;16(1):204. doi: 10.1186/ar4493



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Clinical studies to examine efficacy of different intra-articular treatments in TMJ arthritis



Efficacy of corticosteroids for hand osteoarthritis - a systematic review and meta-analysis of randomized controlled trials

[Mahnuma Mahfuz Estee](#), [Flavia M. Cicuttini](#), [Matthew J. Page](#), [Anant D. Butala](#), [Anita E. Wluka](#), [Sultana Monira Hussain](#) & [Yuanyuan Wang](#) 

BMC Musculoskeletal Disorders **23**, Article number: 665 (2022) | [Cite this article](#)

- There was no significant effect of intra-articular corticosteroids on pain or function at 4-6 weeks in first carpometacarpal osteoarthritis.
- Corticosteroids had no significant effect on any outcomes over longer term (3-12 months) off treatment.
- No trials examined the effect of corticosteroids on disease progression.
- The role of corticosteroids in hand osteoarthritis is limited.

Original Article

Efficacy of Nonsurgical Interventions for Trapeziometacarpal (Thumb Base) Osteoarthritis: A Systematic Review

Tokiko Hamasaki, Sylvain Laprise, Patrick G. Harris, Nathalie J. Bureau, Nathaly Gaudreault, Daniela Ziegler, Manon Choinière ✉

First published: 10 October 2019 | <https://doi.org/10.1002/acr.24084> | Citations: 11

- Steroid intraarticular injections would not be more effective than saline injections!!!
 - Rehabilitative interventions (orthosis, exercises, nerve mobilization) would be efficacious.
- However, these findings must be treated with circumspection due to methodologic limitations in many studies.



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[Drugs Aging](#). 2016; 33: 119–133.

Published online 2015 Dec 9. doi: [10.1007/s40266-015-0330-5](https://doi.org/10.1007/s40266-015-0330-5)

PMCID: [PMC4756050](https://pubmed.ncbi.nlm.nih.gov/PMC4756050/)

PMID: [26650235](https://pubmed.ncbi.nlm.nih.gov/26650235/)

Intra-Articular Therapies in the Treatment of Hand Osteoarthritis: A Systematic Literature Review

[Féline P. B. Kroon](#), [Roxana Rubio](#), [Jan W. Schoones](#), and [Margreet Kloppenburg](#)

- 13 controlled trials (corti vs HA, HA vs placebo, corti vs placebo)
- Despite a beneficial short-term safety profile, IA corticosteroids or HA do not appear more effective than placebo in CMC OA

Efficacy, Safety, and Accuracy of Intra-articular Therapies for Hand Osteoarthritis: Current Evidence

[Win Min Oo](#)  & [David J. Hunter](#)

Drugs & Aging. 40, 1–20 (2023) | [Cite this article](#)

- Narrative review: Most of the short-term studies showed no significant difference between corticosteroids and hyaluronic acid in thumb-base OA, usually with a faster onset of pain relief in the corticosteroid group and a slower but greater pain improvement in the HA group.
- The majority of studies in investigational agents were limited by small sample size, short-term follow-up, and presence of serious side effects.
- Higher accuracy rates of drug administrations under imaging guidance than landmark guidance (blind method)

SCIENTIFIC ARTICLE | VOLUME 40, ISSUE 1, P16-21.E6, JANUARY 2015

Download Full Issue

Conservative Treatment of Thumb Base Osteoarthritis: A Systematic Review

Anne J. Spaans, MD • L. Paul van Minnen, MD, PhD • Moshe Kon, MD, PhD •

Arnold H. Schuurman, MD, PhD • A. R. (Ton) Schreuders, MD, PhD • Guus M. Vermeulen, MD, PhD

DOI: <https://doi.org/10.1016/j.jhsa.2014.08.047>

- SR: 23 heterogeneous articles
- There are only a few high-quality studies addressing the conservative treatment of trapeziometacarpal OA.
- Although both steroid and hyaluronate intra-articular injections can provide pain relief, most authors conclude that injection of hyaluronate is more effective.

A Comparative Study for Different Types of Thumb Base Osteoarthritis Injections: A Randomized Controlled Interventional Study

Hala Mohamed Abdelsabor Sabaah ¹, Radwa Abd El Fattah ¹, Dina Al Zifzaf ¹, Hana Saad ¹

- RCT: to compare the effectiveness of single PRP versus single hyaluronic acid injection (HA) versus single corticosteroid injection in TMJ joint osteoarthritis based on clinical and functional outcome measures (4, 12 weeks).
 - All groups (15 p-15 p-15 p) showed a significant improvement after 4 weeks.
 - However, these improvements were not sustained for the PRP and steroid groups after 12 weeks, while the HA group showed a highly statistically significant improvement at 12 weeks on all items evaluated.

[Arch Rehabil Res Clin Transl](#). 2023 Mar; 5(1): 100257.

PMCID: PMC10036221

Published online 2023 Jan 29. doi: [10.1016/j.arct.2023.100257](https://doi.org/10.1016/j.arct.2023.100257)

PMID: [36968169](https://pubmed.ncbi.nlm.nih.gov/36968169/)

Platelet-Rich Plasma Injection for Thumb Carpometacarpal Joint Osteoarthritis

[Ike B. Hasley, MD,^a](#) [Michael M. Bies, DO,^a](#) [John H. Hollman, PT, PhD,^a](#) [Karina Gonzales Carta, MD,^b](#) [Jacob L. Sellon, MD,^{a,b}](#) and [Jeffrey S. Brault, DO^{a,c}](#)

- Nineteen adult patients (9 women; average age 65.0 [\pm 6.3 years]) who received a PRP injection for OA of 1 or both thumb CMCs (N=19).
- Subjects reported moderate or excellent symptom improvement in 68.8% of injected joints and were moderately or very satisfied with 68.8% of the procedures. Mean patient-reported duration of benefit was 15.6 months (\pm 19.5) months (mean duration of follow-up: 32.4 [\pm 18.1] months).
- Conclusion: PRP injection appears to be a safe and potentially effective treatment option for pain related to first CMC OA. Further study is needed to optimize treatment protocols and better understand which patients are most likely to benefit.

Leukocyte-Reduced Platelet-Rich Plasma Treatment of Basal Thumb Arthritis: A Pilot Study

[Markus Loibl](#),^{1,*} [Siegmond Lang](#),¹ [Lena-Marie Dendl](#),² [Michael Nerlich](#),¹ [Peter Angele](#),¹ [Sebastian Gehmert](#),³ and [Michaela Huber](#)¹

- Ten patients with TMC joint osteoarthritis (OA) that were treated with 2 intra-articular PRP injections 4 weeks apart.
- VAS significantly decreased from 6.2 ± 1.6 to 5.4 ± 2.2 at six-month follow-up ($P < 0.05$). The DASH score was unaffected; however, the Mayo Wrist score significantly improved from 46.5 ± 18.6 to 67.5 ± 19.0 at six-month follow-up ($P = 0.05$).

Effects of intra-articular Platelet-Rich Plasma (PRP) injections on osteoarthritis in the thumb basal joint and scaphoidtrapeziotrapezoidal joint

Elin Sward, Maria Wilcke

Published: March 8, 2022 • <https://doi.org/10.1371/journal.pone.0264203>

- A retrospective analysis was performed of 29 patients treated with intra-articular PRP injection for painful osteoarthritis in the thumb basal joint (21 patients) and STT-joint (9 patients). The patients received two consecutive, radiologically guided PRP injections at an interval of 3-4 weeks.
- PRP injections had no effect on reported pain, PRWHE score, grip strength or key pinch. 16/28 patients experience a positive effect according to a yes/no question.
- The short-term effect of PRP for osteoarthritis in the thumb base and STT-joint is doubtful and needs to be properly investigated in placebo-controlled studies.



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Cartilage
Cartilage

SAGE

[Cartilage](#). 2021 Jan; 12(1): 51–61.

Published online 2018 Oct 20. doi: [10.1177/1947603518805230](https://doi.org/10.1177/1947603518805230)

PMCID: PMC775966

PMID: [30343590](https://pubmed.ncbi.nlm.nih.gov/30343590/)

Platelet-Rich Plasma versus Corticosteroid Intra-Articular Injections for the Treatment of Trapeziometacarpal Arthritis: A Prospective Randomized Controlled Clinical Trial

[Michael-Alexander Malahias](#),^{1,2} [Leonidas Roumeliotis](#),^{1,3} [Vasileios S. Nikolaou](#),¹ [Efstathios Chronopoulos](#),¹

[Ioannis Sourlas](#),¹ and [Georgios C. Babis](#)¹

[Cartilage](#). 2021 Jan; 12(1): 51–61.

Published online 2018 Oct 20. doi: [10.1177/1947603518805230](https://doi.org/10.1177/1947603518805230)

PMCID: [PMC7755966](#)

PMID: [30343590](#)

Platelet-Rich Plasma versus Corticosteroid Intra-Articular Injections for the Treatment of Trapeziometacarpal Arthritis: A Prospective Randomized Controlled Clinical Trial

[Michael-Alexander Malahias](#),^{1,2} [Leonidas Roumeliotis](#),^{1,3} [Vasileios S. Nikolaou](#),¹ [Efstathios Chronopoulos](#),¹ [Ioannis Sourlas](#),¹ and [Georgios C. Babis](#)¹

- The first randomized controlled study on PRP vs corti efficacy in TMJ arthritis
- patients: 2 treatment groups using the sealed envelope method for randomization
- The members of group A received 2 ultrasound-guided IA-PRP injections (16 patients), while group B (17 patients) were subjected to 2 ultrasound-guided intra-articular corticosteroid injection

[Cartilage](#). 2021 Jan; 12(1): 51–61.

Published online 2018 Oct 20. doi: [10.1177/1947603518805230](https://doi.org/10.1177/1947603518805230)

PMCID: [PMC7755966](https://pubmed.ncbi.nlm.nih.gov/PMC7755966/)

PMID: [30343590](https://pubmed.ncbi.nlm.nih.gov/30343590/)

Platelet-Rich Plasma versus Corticosteroid Intra-Articular Injections for the Treatment of Trapeziometacarpal Arthritis: A Prospective Randomized Controlled Clinical Trial

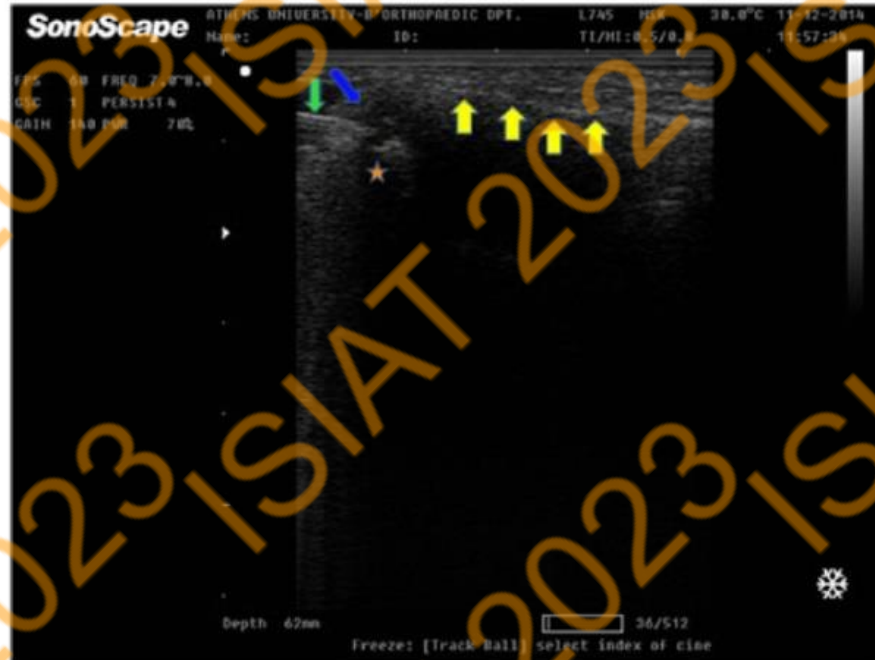
[Michael-Alexander Malahias](#),^{1,2} [Leonidas Roumeliotis](#),^{1,3} [Vasileios S. Nikolaou](#),¹ [Efstathios Chronopoulos](#),¹ [Ioannis Sourlas](#),¹ and [Georgios C. Babis](#)¹

- US-guided technique: The infiltration was undertaken under sterile conditions by a physician who simultaneously managed the ultrasound device (free hand one man's technique)
- Under continuous imaging the tip of the needle was inserted inside the joint, where infiltration with PRP or corticosteroid was performed
- The synovial swelling during and after infiltration was recorded to confirm the correct application of the technique



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Ultrasound-guided intra-articular carpometacarpal (CMC) injection. The needle (green arrow) is recorded, as it is inserted into the joint (anechoic area, blue arrow). The star illustrates the trapezium bone and above the yellow arrows lies the first metacarpal bone (For interpretation of the references to colours in this figure legend, refer to the online version of this article).

Platelet-Rich Plasma versus Corticosteroid Intra-Articular Injections for the Treatment of Trapeziometacarpal Arthritis: A Prospective Randomized Controlled Clinical Trial

[Michael-Alexander Malahias](#),^{1,2} [Leonidas Roumeliotis](#),^{1,3} [Vasileios S. Nikolaou](#),¹ [Efstathios Chronopoulos](#),¹ [Ioannis Sourlas](#),¹ and [Georgios C. Babis](#)¹

- A second doctor evaluated the patients during the follow-up period (3, 12 months). This physician was blinded to the procedure (PRP or corticosteroid injection) and to the preinjection scores of each patient.
- Instructions for return to usual activities from the following day without the additional use of wrist splints were identical for all patients.
- Despite there are some no-high level evidence studies supporting orthoses, patient education in joint protection, and exercise as treatment options, we avoided to use these conservative means in order to evaluate only the therapeutic impact of IA-PRP.

Platelet-Rich Plasma versus Corticosteroid Intra-Articular Injections for the Treatment of Trapeziometacarpal Arthritis: A Prospective Randomized Controlled Clinical Trial

[Michael-Alexander Malahias](#)^{1,2} [Leonidas Roumeliotis](#)^{1,3} [Vasileios S. Nikolaou](#)¹ [Efsthathios Chronopoulos](#)¹ [Ioannis Sourlas](#)¹ and [Georgios C. Babis](#)¹

Results

- Paired comparisons showed that both treatment modalities significantly improved pain management at 3 months compared with their respective preintervention VAS score values ($P = 0.004$ for PRP vs. $P = 0.001$ for steroid and LA); however, at 12 months this effect was maintained only for the PRP treatment ($P = 0.005$ vs. $P = 0.105$, respectively).
- VAS scores for the PRP group have actually improved further between the 3- and 12-month follow-up at a nonsignificant level ($P = 0.28$), while for the steroid- and LA-treated patients the median pain score had significantly deteriorated during the same time period ($P = 0.002$).

7th

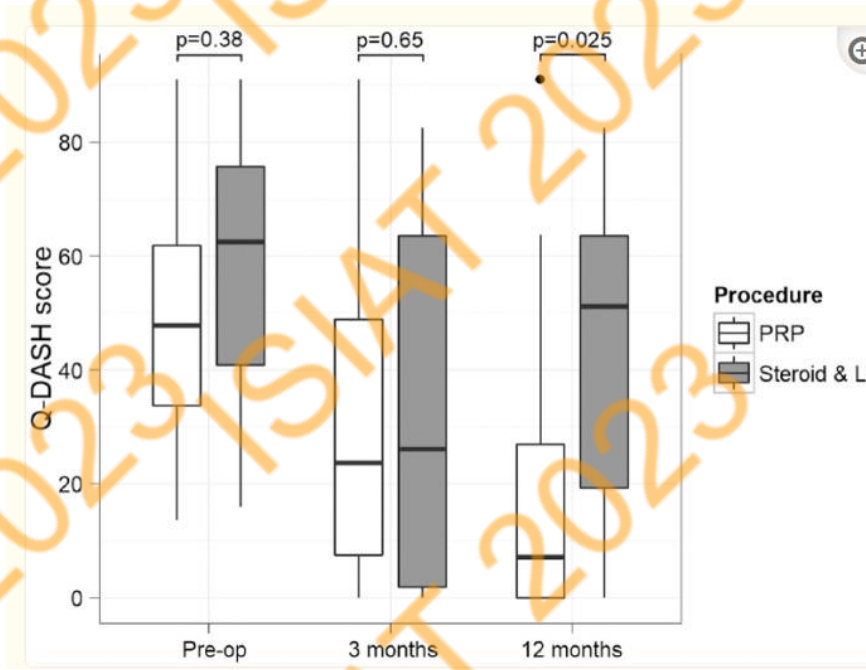
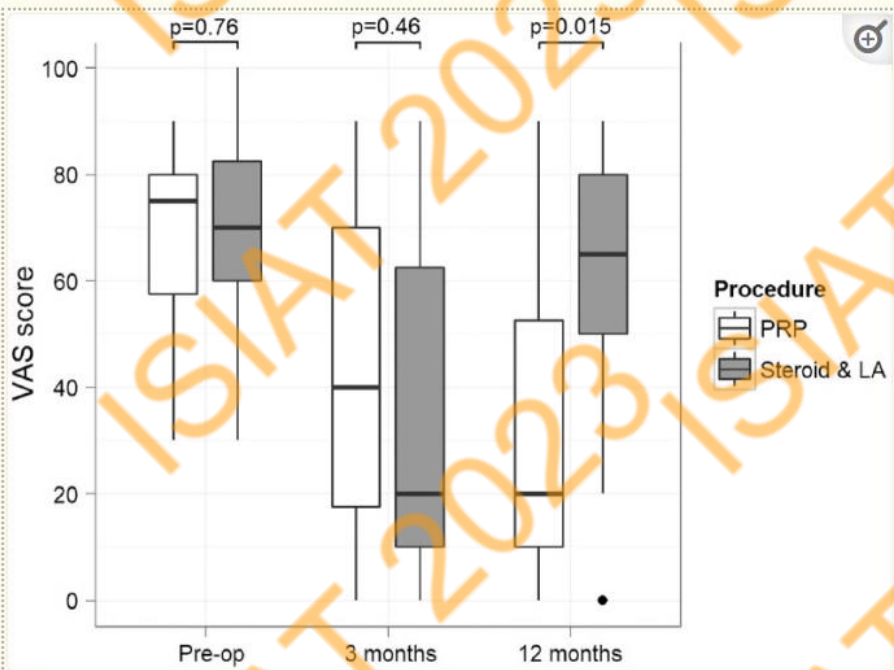


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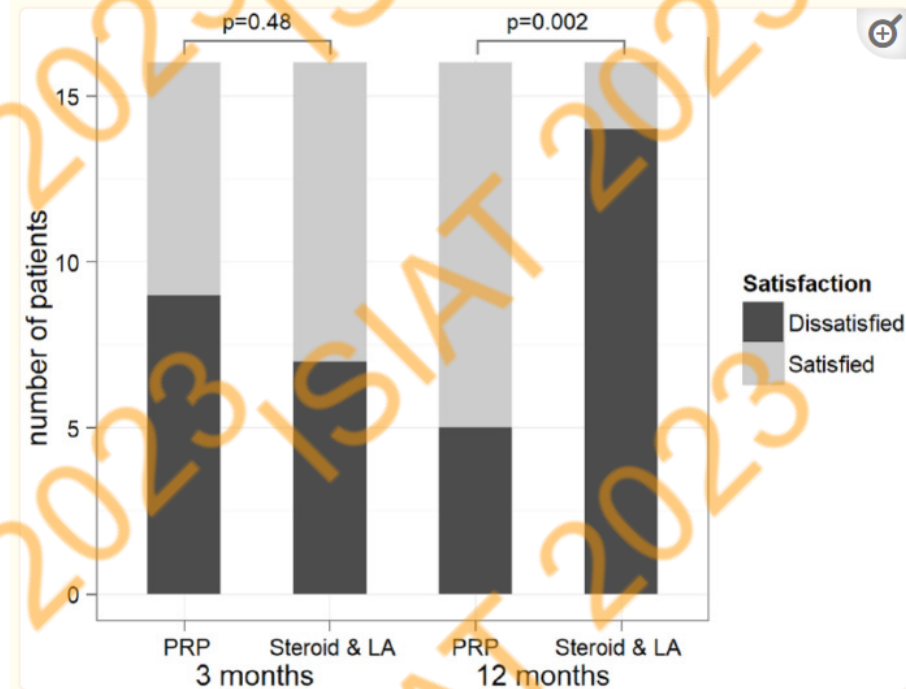




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- Less than half of the patients treated with PRP injections (44%) declared themselves as satisfied 3 months after the initial procedure, compared to 56% of those, who were injected with steroid and LA ($P = 0.48$).
- However: By 12 months, the PRP treatment yielded significantly higher patients' satisfaction rates compared with the alternative option (69% vs. 12.5%, $P = 0.002$)



Platelet-Rich Plasma versus Corticosteroid Intra-Articular Injections for the Treatment of Trapeziometacarpal Arthritis: A Prospective Randomized Controlled Clinical Trial

[Michael-Alexander Malahias](#),^{1,2} [Leonidas Roumeliotis](#),^{1,3} [Vasileios S. Nikolaou](#),¹ [Efstathios Chronopoulos](#),¹ [Ioannis Sourlas](#),¹ and [Georgios C. Babis](#)¹

Conclusions of our study

- Our study showed that IA-PRP injections significantly improve pain and function from mild to moderate thumb TMJ (CMCJ) arthritis and achieve significantly better results 3 months after injections compared to the traditional treatment with intraarticular steroid injections.
- We support that a randomized controlled trial comparing PRP with hyaluronate injections would contribute in the ongoing debate regarding the most efficient injectable agent for the symptomatic treatment of mild to moderate thumb CMCJ arthritis.

Minimal invasive treatment of trapeziometacarpal osteoarthritis: Results of a blinded, randomized controlled trial.

Winter, Raimund MD^{1*}; Tuca, Alexandru-Cristian MD¹; Justich, Ivo MD¹; Tschauner, Sebastian MD²; Friedl, Herwig PhD³; Girsch, Werner MD¹; Lebo, Patricia MD¹; Zrim, Robert MD¹; Lumenta, David Benjamin MD¹; Kamolz, Lars-P. MD MSC^{1,4}

Author Information 

Plastic and Reconstructive Surgery ():10.1097/PRS.00000000000010516, April 11, 2023. | DOI:

- A blinded, randomized controlled trial was conducted. 95 patients with CMC1 arthritis were included in the study.
- The mean follow-up period was 2 years. Participants were injected with 1.5ml of autologous fat, PRP, autologous fat and PRP, or saline solution 0.9% into the CMC1 joint depending on the group allocation.
- The combination of fat and PRP was the only treatment that resulted in a significantly greater reduction in pain compared to 0.9% saline (p=0.003).

Autologous Fat and Platelet-Rich Plasma Injections in Trapeziometacarpal Osteoarthritis: A Systematic Review and Meta-Analysis

Winter, Raimund MD¹; Hasiba-Pappas, Sophie K.¹; Tuca, Alexandru-Cristian MD¹; Zrim, Robert MD¹; Nischwitz, Sebastian MD¹; Popp, Daniel MD¹; Lumenta, David Benjamin MD, PhD^{1,2}; Girsch, Werner MD, PhD¹; Kamolz, Lars-P. MD, MSc, PhD^{1,3}

[Author Information](#) 

Plastic and Reconstructive Surgery 151(1):p 119-131, January 2023. | DOI: 10.1097/PRS.00000000000009789

- Only SR up to date on autologous concentrate injections in TMJ OA: 8 articles included: 6 examining fat tissue injections and 2 examining PRP inj.
- Conclusion: Both platelet-rich plasma and autologous fat infiltration offer an efficient and long-lasting, minimally invasive therapy option in the treatment of carpometacarpal arthritis of the thumb.



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Take home message

- HA might be more beneficial, especially in the long run compared to corticosteroid injections for the treatment of TMJ arthritis
- Corticosteroid injections: controversial results / recent SRs and meta- suggesting that there is no benefit compared to placebo or if there is, it won't last more than 3-12 weeks
- PRP injections: poor evidence, contradictory results in TMJ arthritis: A call for better designed clinical studies
 - Combined injections: no evidence regarding TMJ arthritis



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Does the Number of Preoperative Corticosteroid Injections Affect Clinical and Radiographic Outcomes of TMJ arthritis surgery?

- 1 study: Thomas et al, J Hand Surg Am 2022: retrospective chart review of 60 patients (divided in 1, 2, 3 or more injections performed)
- This study demonstrates no apparent detrimental effect of an increased number of preoperative corticosteroid injections on radiographic thumb metacarpal subsidence, increase in extension of radiolunate angle, patient-reported outcomes, or revision rates
- Con: It does not examine the time prior to operation as a risk factor



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Any evidence to suggest ultrasound guidance for improved accuracy of drug delivery at the TMJ?

Leading Article | [Published: 12 January 2023](#)

Efficacy, Safety, and Accuracy of Intra-articular Therapies for Hand Osteoarthritis: Current Evidence

[Win Min Oo](#)  & [David J. Hunter](#)

Drugs & Aging **40**, 1–20 (2023) | [Cite this article](#)

- Higher accuracy rates of drug administrations under imaging guidance than landmark guidance (blind method)
- But is this clinically relevant?!?



[Hand \(N.Y.\)](#). 2021 Jan; 16(1): 86–92.

Published online 2019 May 1. doi: [10.1177/1558944719846572](https://doi.org/10.1177/1558944719846572)

PMCID: [PMC7818029](https://pubmed.ncbi.nlm.nih.gov/PMC7818029/)

PMID: [31043083](https://pubmed.ncbi.nlm.nih.gov/31043083/)

The Effect of Image-Guided Corticosteroid Injections on Thumb Carpometacarpal Arthritis

[Grigory E. Gershkovich](#),¹ [Haroutioun Boyadjian](#),¹ and [Megan Conti Mica](#)¹

- Big Data study: 62,000 patients
- Image-guided thumb CMC injections do not result in significant increases in time between injections and do not lead to a meaningful delay to surgery.



[Ultrasound](#). 2018 Nov; 26(4): 245–250.

Published online 2018 Jul 25. doi: [10.1177/1742271X18789711](https://doi.org/10.1177/1742271X18789711)

PMCID: PMC6243451

PMID: [30479639](https://pubmed.ncbi.nlm.nih.gov/30479639/)

Accuracy of ultrasound-guided versus palpation-based carpometacarpal joint injections: A randomized pilot study in cadavers

[Armen Derian](#),¹ [Julia Amundson](#),² [Karl Abi-Aad](#),³ [Ricardo Vasquez-Duarte](#),¹ and [Douglas Johnson-Greene](#)¹

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- **Conclusion:** Ultrasound guidance did not improve the accuracy of carpometacarpal joint injections in cadavers.



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The Accuracy of Common Hand Injections With and Without Ultrasound: An Anatomical Study

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- Cadaveric study: 4 participants (2 “blind”, 2 US-guided) / 40 specimens
- Success rates were similar for each injection site, except the thumb CMC joint, where U/S participants had 25% higher accuracy. In the setting of thumb CMC arthrosis, the incidence of success was 38% for participants with no U/S aid and 72% for participants with U/S aid.
- There was a significant difference between participants who used U/S with the participant with more U/S experience being more successful.



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Overall: Ultrasound guidance in TMJ arthritis

- Controversial results regarding accuracy to target
- Further studies required to clarify accuracy and correlation to clinical outcomes



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Thanks for your patience

