

4. Say F, Gürlü D, Yener K, et al. Platelet-rich plasma injection is more effective than hyaluronic acid in the treatment of knee osteoarthritis. *Acta Chir Orthop Traumatol Cech* 2013;80:278-283.
5. Filardo G, Kon E, Pereira Ruiz MT, et al. Platelet-rich plasma intra-articular injections for cartilage degeneration and osteoarthritis: Single- versus double-spinning approach. *Knee Surg Sports Traumatol Arthrosc* 2012;20:2082-2091.
6. Vaquerizo V, Padilla S, Aguirre JJ, et al. Two cycles of plasma rich in growth factors (PRGF-Endoret) intra-articular injections improve stiffness and activities of daily living but not pain compared to one cycle on patients with symptomatic knee osteoarthritis. *Knee Surg Sports Traumatol Arthrosc* 2018;26:2615-2621.

### Editors' Note:

*The Editors very much appreciate the letter from Drs. Saiz and colleagues and the reply by Drs. Sanchez et al. We have done our best to investigate and adjudicate the situation. We are unable to confirm definitive evidence of unethical outcome measure manipulation, malicious or otherwise. Time has passed, some of the primary documents are in Spanish, and in the end, there are two sides to the debate. After consultation with an editor of an independent, high-impact orthopaedic subspecialty journal, communication with AANA and Journal Board of Trustees leadership, and careful review of the International Committee of Medical Journal Editors (ICMJE) Recommendations and Committee on Publication Ethics (COPE) Guidance, our decision is to not retract the initial publication. Rather, we have invited and published the Letter to the Editor from Saiz et al. and the Authors' Reply by Sanchez et al. to bring transparency to the issue. The published letters will refer to the original article, online and in perpetuity.*

*James H. Lubowitz, M.D., Editor-in-Chief  
Jefferson C. Brand, M.D., Assistant Editor-in-Chief  
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### Association Between Rotator Cuff Tears and Calcific Tendinopathy



With great interest, we have read the article of Brinkman and colleagues, "Calcific Tendonitis of the Shoulder: Protector or Predictor of Cuff Pathology? A Magnetic Resonance Imaging-Based Study." The authors concluded that the incidence of cuff tears in patients with calcific tendonitis who underwent magnetic resonance imaging is higher than previously reported.<sup>1</sup>

Cloudy-appearing calcified lesions showed an association with rotator cuff tears.

It seems that the authors conclude that there are conflicting results and conclusions in current literature. We think that most studies confirm that calcific tendinopathy and rotator cuff tears are expressions of the age-related continuum of rotator cuff tendinopathy.

1. Previous studies have hypothesized different etiologic theories regarding calcific tendinopathy. One theory is that it is caused because of failed cell-mediated healing and another theory hypothesizes that excessive mechanical loading is needed for developing calcific tendinopathy.<sup>2</sup> If mechanical loading is significant, it could only mean that the rotator cuff tendon containing a calcification has sufficient strength to withstand this excessive loading without rupturing. This may be an explanation for the relationship between the presence of calcifications and partial cuff tears<sup>1</sup> and the inverse relationship with full thickness cuff tears.<sup>3</sup> A recent study of Beckmann et al. concluded that calcific tendinopathy is not a predisposing factor for rotator cuff tears resulting from a lower amount of full-thickness rotator cuff tears in patients suffering from calcific tendinopathy.<sup>3</sup>
2. The tensile load may be necessary for the calcification to continue to exist. So, in theory, the calcification could resorb in case of a full-thickness tear, similar to an osteopenia of the greater tubercle due to off-loading,<sup>4</sup> leading to fewer calcifications in full-thickness tears.<sup>3</sup> This would also explain why physiotherapy is beneficial for patients with calcific tendinopathy as well as rotator cuff tears. It helps offload the affected tendon by strengthening the surrounding muscles. Furthermore, the authors conclude that cloudy-appearing calcified lesions, frequently associated with the resorption phase,<sup>5</sup> showed an association with rotator cuff tears. So, the calcifications in partially teared cuffs may be in the resorption process, which progresses to complete resorption in full-thickness tears.
3. That calcific tendinopathy is more common in younger patients as opposed to patients with a full-thickness tear could support the theory that calcific tendinopathy, like tendinopathy without calcifications, is an ongoing process that could finally result in a rupture. This last statement may be confirmed by earlier studies but also by the findings of the authors.<sup>1,6,7</sup>

The objective of this letter is to formulate another "philosophy" as an explanation why calcific tendinopathy is a protector and also a predictor for a rotator cuff tear. The pathology can start with a calcific tendinopathy and may end with a full-thickness tear, this with phase of partial tears and resorbing cloudy-appearing calcifications in between. We realize that our "philosophy," like the alternatives proposed in the original paper, also need more evidence to support.

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## References

1. Brinkman JC, Zaw TM, Fox MG, et al. Calcific tendonitis of the shoulder: Protector or predictor of cuff pathology? A magnetic resonance imaging-based study [published online January 30, 2020]. *Arthroscopy*. doi:10.1016/j.arthro.2019.11.127.
2. Sansone V, Maiorano E, Galluzzo A, Pascale V. Calcific tendinopathy of the shoulder: Clinical perspectives into the mechanisms, pathogenesis, and treatment. *Orthop Res Rev* 2018;10:63-72.
3. Beckmann NM, Tran MQ, Cai C. Incidence of rotator cuff tears in the setting of calcific tendinopathy on MRI: A case controlled comparison. *Skeletal Radiol* 2019;48:245-250.
4. Jiang Y, Zhao J, van Holsbeeck MT, Flynn MJ, Ouyang X, Genant HK. Trabecular microstructure and surface changes in the greater tuberosity in rotator cuff tears. *Skeletal Radiol* 2002;31:522-528.
5. Gärtner J, Heyer A. Calcific tendinitis of the shoulder. *Der Orthopäde* 1995;24:284-302.
6. Yamaguchi K, Ditsios K, Middleton WD, Hildebolt CF, Galatz LM, Teefey SA. The demographic and morphological features of rotator cuff disease: A comparison of asymptomatic and symptomatic shoulders. *J Bone Joint Surg Am* 2006;88:1699-1704.
7. Ottenheijm RPG, van't Klooster IGM, Starmans LMM, et al. Ultrasound-diagnosed disorders in shoulder patients in daily general practice: A retrospective observational study. *BMC Fam Pract* 2014;15:115.