



LETTER TO THE EDITOR

Platelet-rich plasma in the management of trigger finger: A case report

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To the Editor,

The stenosing tenosynovitis of the digital flexor tendons or so-called trigger finger is a common condition seen in consultation by hand specialists with a reported incidence of around 28 cases per 100,000 population per year, and a lifetime risk of 2–3% in the general population.^[1] Trigger finger involves a particularly characteristic painful tendon snap or click on flexion and extension, and/or locking of the metacarpophalangeal (MCP) or proximal interphalangeal joints of the involved digit, most cases being idiopathic. Entrapment of the affected tendon usually occurs at the first annular (A1) pulley due to certain thickening of the flexor tendon and its sheath. Chronic repetitive mechanical stimulus between the tendon and its sheath may lead to a visible, palpable intratendinous nodule at the abovementioned pulley.^[2]

Despite its high prevalence rates, trigger finger approach lacks a well-defined treatment algorithm that might be based on a variable clinical presentation or underlying contributing factors. This conflicting space, pulley-in-nature condition has been traditionally managed with surgical release until corticoid injections became standard first-line approach by the end of the XX century.^[3] However, a number of adverse effects have been described through the years when injecting corticosteroids inside or surrounding the tendons, including hypopigmentation, adypoc-

ite or vascular necrosis, subcutaneous atrophy, or even tendon or pulley ruptures.^[4]

Platelet-rich plasma (PRP) is considered an autologous blood product produced by the centrifugation of whole blood yielding a concentration of platelets above baseline levels.^[5] The previous research has shown promising results when approaching tendon pathology^[6] using PRP. Nonetheless, not too many randomized controlled studies with the use of PRP exist, and its efficacy is still controversial. To the best of our knowledge, PRP for treating trigger finger has not been previously reported in the literature. We present a 63-year-old woman with trigger finger refractory to conservative measures that was successfully treated with PRP injection.

A 63-year-old right-handed Caucasian woman, retired, presented with pain, and intermittent triggering of the right fifth digit of several months duration. The onset was gradual over the 1st week and she did not experience any other symptoms, illnesses, or comorbidities that could be associated with trigger finger. The patient had no previous history of trigger fingers or antecedent trauma, and no family history of bony tumors existed. Physical examination revealed inability to actively flex and extend the fifth finger, and passive motions produced pain and clicking. Palpation of the A1 pulley and joint play of the MCP joint reproduced and exacerbated the reported sensations. Palpable nodule was noted in the flexor

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digitorum tendon of her right fifth finger adjacent to MCP joint line. Six months earlier, the patient was diagnosed with stenosing tenosynovitis and received a conservative approach based on 2 months of treatment with ultrasound, activity modifications, bracing, and supervised occupational therapy. All these measures failed to significantly relieve her pain and to improve her range of motion (ROM).

The subject had 27 ml of blood withdrawn from an antecubital vein and the plasma separated into PRP and platelet poor plasma fractions, with a centrifuge based separation system. The procedure originally described by Sánchez et al.^[7] was used for the preparation and injection of the platelet concentrate and for the post-injection phase. Blood was collected on 5 mL tubes containing 3.8% (wt/vol) trisodium citrate, then centrifuged at 447 g (2000 rpm) for 8 min on a table-top centrifuge, and the lower third plasma fraction located just above the buffy coat was aspirated and dispensed into an empty tube under vertical air flow conditions. Before each injection, 10% of calcium chloride ($\text{Ca}^{2+}=0.22 \text{ mEq} \times \text{dose (ml)}$) was added to the PRP unit to activate platelets shortly before inoculation. Through sterile technique, 3 ml of inactivated PRP in a single depot were introduced into the nodule, which coexist with the highest tender point, with use of a 25-gauge 1-inch needle. The affected tendon was identified by palpation, the needle tip inserted through the palmar skin at a slight oblique angle, both laterally and medially to the nodule. The patient was asked to flex and extend the finger. If the needle and the syringe moved, then the injection was given. Supratendinous space was also irrigated after retracting the needle and reproducing the flexion/extension maneuver. A non-moving needle or syringe confirmed tendon was not inserted.

A total of three PRP applications were performed on the subject once a week for 3 consecutive weeks. Patient was refrained from taking nonsteroidal anti-inflammatory drugs and resistance activities, such as grasping, carrying heavy objects, opening jars, and bottles, during this period.

After the first session and right after second inoculation, the subject had increased ROM; however, moderate discomfort was still present at end range along with a subtle clicking with flexion or extension. At 6

week follow-up, there was minimal discomfort upon palpation and the ROM was full without any pain, snapping or clicking. By the 12 week follow-up, complete symptom resolution was observed; there was full pain free ROM, no evidence of bowstringing, and only minimal weakness/fatigue arose with repeated flexion. The patient referred no fatigue nor cramping pain with prolonged manual activity and found no difficulties with writing. She was able to return to her all daily activities and her level of self-reported satisfaction was high. Three months after discharge, she was contacted by telephone and reported no re-aggravations or triggering episodes, with complete resolution.

The results of this case demonstrate improvements in ROM, pain, and function within three PRP applications on the flexor digitorum tendon. Patient's subjective reported satisfaction was high and no treatment complications nor adverse effects/recurrence were identified during the follow-up period. To the best of our knowledge, this is the first case reported in the literature on the use of PRP for the treatment of an MCP/A1 trigger finger.

Trigger finger or stenosing tenosynovitis of the digital flexor tendons is considered one of the most common causes of hand pain and disability in daily clinical practice. Nowadays, a conservative approach such as limitation of the use of the disordered digits, avoidance of previously identified and associated activities, anti-inflammatory analgesic ointments, and different forms of splinting might be initially recommended.^[8] Many studies have documented the efficacy of corticosteroid injection for trigger fingers, ranging from 47 to 87% for a single injection, with the efficacy decreasing with additional treatments.^[9] Surgical procedures have reported to have an efficacy range of 89–97 percent, although commonly associated with higher cost and risk, or longer absence from work.^[10] On the other hand, a non-success conservative management have been more commonly described in young population, male gender, with multiple digit involvement, and suffering concomitant chronic diseases, this failure usually occurring in the 1st 2 years.^[11] This multiple digital involvement has been also advocated to be managed operatively due to high failure rates obtained from conservative approaches.^[12]

The vast majority of triggering is due to a disproportion between the size of the flexor tendon and its corresponding pulley at the metacarpal head level, along with a compensatory fibrocartilaginous metaplasia. This pulley thickening usually involves tendon reaction, creating a palpable nodule which is commonly responsible for triggering. The presence of this nodule have shown to reduce the success rate of the steroid injection.^[12] Oppositely, PRP applications have proven to reduce tendon thickness in the mid and long term by reducing tendon inflammation, contributing to alleviate any conflict of space between tendons and surrounding structures, along with its positive effect on tendon appearance and homeostasis.^[6] In our case presentation, this nodule formation disappeared progressively in time, being clinically absent by the time of the last follow-up evaluation. This nodule reduction occurred in parallel and directly proportional to clinical improvement.

This case presentation suggests that targeted PRP injection can be a safe and effective treatment method for A1 trigger finger. Larger, high-quality studies are needed to corroborate these promising results.

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