Editorial Commentary: Platelet-Rich Fibrin Matrix—Is This Stuff for Real?!

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Abstract: The use of biologic augments such as platelet-rich plasma and platelet-rich fibrin for tendon pathology has skyrocketed within the past 5-7 years amongst orthopaedic patients. Many retrospective series exist with small sample sizes and variable clinical applications. Patient psyche, price of product, and outcomes may be more intimately related than once thought. In this commentary, we briefly review the placebo and psychometric effect of medicine.

The use of biologic augmentation for enhanced tissue healing has exploded in the field of orthopaedics over the past decade. The definition of autologous platelet-rich plasma is any blood sample that has a higher than normal concentration of platelets, which is quite vague. By the addition of “factors,” such cellular collections can be converted into platelet-rich fibrin matrix (PRFM), which may serve as a scaffold to maintain platelets at the site of injection and extend the release time of growth factors. Although PRFM holds promise to enhance tissue healing, vague definitions have led to innumerable, unregulated, industry-inspired variations of centrifugation, leukocyte concentration, and platelet activation. Nonetheless, we as surgeons continue the noble pursuit of helping patients heal faster than before—for a small fee, of course.

An untapped procedure that may benefit from PRFM was described in the article titled “The Effect of Platelet-Rich Fibrin Matrix at the Time of Gluteus Medius Repair: A Retrospective Comparative Study” by Saltzman, Ukwuani, Makhni, Stephens, and Nho. In a well-designed and reported study, patients who underwent gluteus medius and/or minimus tendon repair either endoscopically or open were given the option to supplement their repair with PRFM, à la carte. The authors hypothesized that PRFM would accelerate abductor tendon healing, leading to superior clinical outcomes and lower clinically evident retear rates. No such difference was found between the cohorts at 1-year follow-up. Interestingly, however, their experimental group did experience a significant positive effect on postoperative subjective outcome measures (Short Form [SF]-12 Physical and International Hip Outcome Tool [IHOT]-12 scores), leading the authors to postulate a psychometric property influenced by the nonblinded treatment.

With the paucity of literature that describes the use of PRFM for tendon healing and no prior description of its use in gluteus medius and/or minimus tendinopathy, we believe that the highlight of the article by Saltzman et al., which used clear and concise methods, is patient perception of treatment value and its relationship with outcomes. What explains the experimental group scoring higher in both general health measures (SF-12) and hip specific scores (IHOT-12)?

A 2008 Master’s thesis from the Massachusetts Institute of Technology Department of Architecture Program in Media Arts and Sciences titled “The Role of Branding and Pricing on Health Outcomes Via the Placebo Response” by Waber and Ariely presents a clever study that analyzes the nonconscious effect of pricing and advertising on a placebo. Patients were offered placebo painkillers before and after small electric shocks were delivered to their arm. Approximately half of the patients were given expensive pills ($2.50) and half were given low-priced pills (10 cents). When results were compared, 85% of those given high-priced pills reported reduction in pain, versus 61% of those given low-priced pills. The experiment may help

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explain why some expensive therapies are popular when inexpensive alternatives are available.

A 2012 article from the Harvard Business Review titled “Consumers Will Pay More for Less” illustrates a learned behavior performed by our brains that has developed over centuries. Categorical reasoning, which dates back to the economist Herbert Simon’s ideas of bounded rationality, describes how people tend to make simple binary decisions in the face of complex information. This provides a mental shortcut to decision making that trades accuracy for reduced cognitive effort. In a sense, people classify products as either expensive or inexpensive, and this categorization influences how they judge products. When an expensive item is bundled with an inexpensive one, people categorize the bundle as less expensive, and this lowers their willingness to pay for it.

The above 2 studies illustrate how our patients may be inclined to believe in whatever treatment physicians believe in, particularly if it remains expensive. In a way, the physician is the product and PRFM or other biologic agents are the bundled item. When high-level evidence is lacking, we use what evidence we have to fulfill our duty as physicians to put the patient’s best interest first while maintaining our promise to do no harm.

In summary, to borrow from a review article on the placebo effect and clinical aspects of neurobiology by Oken, patient’s expectancy of improvement may influence outcomes as much as some active interventions and this effect may be greater for novel interventions and for procedures. Maximizing this expectancy effect is important for clinicians to optimize the health of their patient.” In the case of PRFM, this principle might tempt the clinician to think that maybe it does not matter if this stuff is real or not, as long as it helps the patient feel better. However, although harnessing patient psychology is clearly in the best interest of the patient, we must balance this with our duty as physician-scientists to continue rigorous scientific investigation. This is exemplified in the article by Saltzman et al., whose scientific rigor did not show a definitive clinical benefit of PRFM as an adjunct to abductor repair in the hip.

References