

# PLATELET-RICH FIBRIN (PRF)

## THE ULTIMATE BLOOD CONCENTRATE

### Dr Anil Rajani discusses his experience with PRF and how it differs from PRP

**F**ACIAL AGEING IS A COMPLEX process not yet fully understood. Synthetic facial fillers and collagen stimulators, while invaluable tools, do not represent the ideal solution. Many degrade with variability, unwanted illicit responses, and attract water to varying degrees. Thus, autologous blood concentrates have been popularized in aesthetics for several years as a synergistic tool to fill this gap.

Platelet-Rich Plasma (PRP) is by far the most widely utilized due to its ease of extraction, commercial availability, and volume of liquid created in preparation. This latter detail was important in the early stages when clinicians attempted to substitute PRP for facial fillers and equate their efficacy. The volume effect of the autologous concentrate however soon dissipated after injection and while patients enjoyed the improved skin glow and enhancement, the volume effect was short-lived. These supernatants are now being used to improve underlying skin quality, structure, and integrity.

Platelet-Rich Fibrin (PRF) is now becoming popularized as a



**ANIL RAJANI MD**  
Dr. Anil Rajani is the founder of RajaniMD. He specializes in minimally Invasive Aesthetic Medicine. Portland, OR

replacement and improvement for PRP in the quest for the ultimate autologous blood concentrate in aesthetics. The volume of fluid obtained is not as high as with PRP but the concentrate produced, however, seems to be highly efficacious for aesthetic applications. A review article from 2013 found PRF to be superior to PRP for wound healing, less costly, and easier to prepare!

I first started using PRF in my practice in Portland, OR, in 2015 along with PRP which I had used for many years. I have since moved to the sole use of ezPRF after comparing patient outcomes and satisfaction. Clinically, I find there is more volume effect, better skin rejuvenation and longevity of effect. Patients are more satisfied with their results, which are more obvious to their eye. Fewer treatment sessions are required thus increasing the appeal of such treatments to aesthetic seekers. Much of the clinical data for these blood products comes from orthopedic and dental applications but as the aesthetic virtues are being defined and refined we expect more data to surface in the aesthetics field.

We know that patients are increasingly seeking minimally-invasive

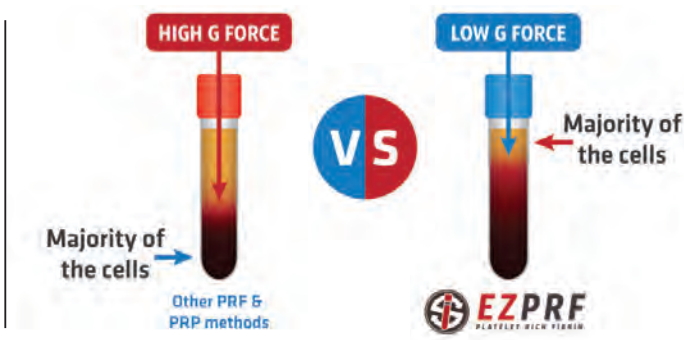
procedures instead of surgical ones. We also know that only a small percentage of patients who wish aesthetic procedures actually follow through with treatments in part due to the fear of unnatural products or results. Platelet-Rich Fibrin (PRF) seems to fill this void as it is 100% natural and free of additives. PRF has no gel separating plug or blood thinning chemicals which are usually found in PRP preparations. The safety of the gel separator, in particular, may raise a concern as its composition for most companies remains proprietary. There is also the possible interaction on the efficacy of the supernatant, which is speculated but as of yet unknown. PRF however, produced by a slow spin speed, no separating plug and no chemical additives has been shown to contain more growth factors over traditional PRP<sup>2</sup>.

The concentrate is typically richer in platelets and white blood cells. White blood cells are quite variable and typically low in concentration for traditional PRP concentrates despite the evidence for the efficacy of autologous concentrates. Tissue augmentation, in particular, seems to be influenced by these all-important cells<sup>3</sup>. The specificity of the low speed spin (around 700 rpm for 5 minutes), size and inner surface characteristics of the new PRF tubes allows for more important concentrations of white blood cells and growth factors found in PRF versus PRP.

Additionally, the absence of anticoagulant allows an all-important fibrin clot to form after injection<sup>4</sup> which allows for a slow release of the growth factors<sup>5</sup> over several days. This biologic



**Figure 1**  
EZMINISPIN is the smallest centrifuge on the market

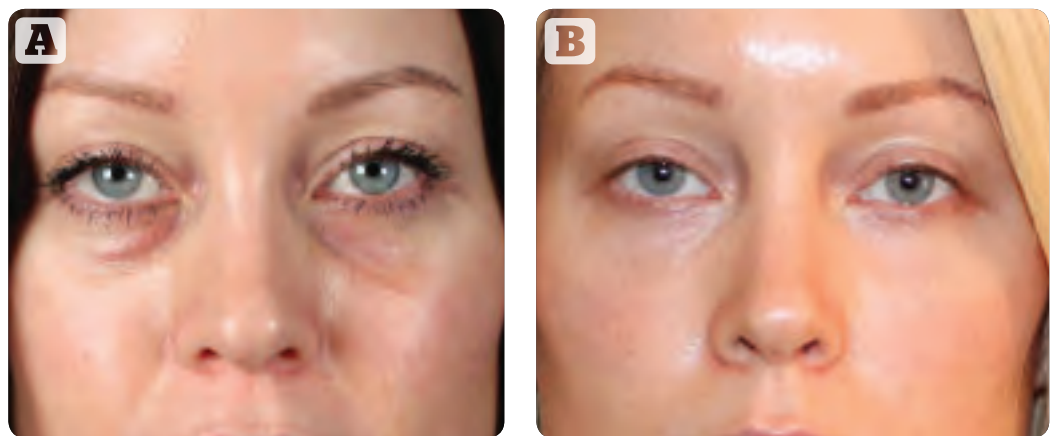


“Typical uses for PRF in my clinic include injection under the eyes with a 25 Gauge blunt microcannula, in or above the mucosa of the lip area for volume or vertical lines, microneedle treatments, and hair preservation and restoration.”

scaffold not only gives a sustained volume effect but seems to play a role in the longer-term health of the skin and fat in the injected areas<sup>6</sup>. Injections should occur within 10-15 minutes after preparation so the PRF can be injected as a liquid and allowed to clot once activated at the injected tissue site. To date, I have injected almost 500 under eyes with 1.5 cc per side of PRF with extremely high patient satisfaction with PRF alone. Downtime is minimal with an average of 2.5 days of swelling and almost no bruising. Vertical lip lines and lip mucosa are also successful regions for injection all showing reduction in fine lines, some volume enhancement and improved skin texture and radiance.

Hyaluronic acid or PLLA (Plasmasculpt™) can be added to the supernatant in specific concentrations for further volume and collagen enhancing effects. With an absence of anticoagulant in the PRF tubes, the working time is reduced once other substances such as these are mixed, but results are excellent with synergistic properties.

Typical uses for PRF in my clinic include injection under the eyes with a 25 Gauge blunt microcannula, in or above the mucosa of the lip area for volume or vertical lines, microneedle treatments, and hair preservation and restoration. The under eye is an area of particular interest to me since the majority of patients seeking aesthetic clinics identify it as a priority, and, in many cases, it is a driver to clinics. Outside of surgery, most aesthetic providers use hyaluronic acid fillers to address the area, which are less than ideal with a high rate of patient and



**Figure 2** (A) Before and (B) after PRF for dark circles in combination with filler. Images courtesy of Anil Rajani, MD



**Figure 3** (A) Before and (B) after treatment for brown spots and the tear trough. Images courtesy of Anil Rajani, MD

provider dissatisfaction. Hyaluronic acid by nature attracts water; a property ill desired in the periorcular region. Platelet-Rich Fibrin injected through a cannula to form a fibrin clot used as a stand-alone or combined with fillers represents an alternative leading to high patient satisfaction.

► **For more information, visit:** [ezprf.com](http://ezprf.com)

## Bibliography

1. Balaram N et al. Role of platelet rich fibrin in wound healing: a critical review. *J Conserv Dentistry* 2013; (16) 4:284-293
2. Nishimoto S et. Al. Growth factor measurement and histological analysis in Platelet Rich Fibrin. A pilot study. *J of Maxillofac Oral Surg* 2015; 14(4): 907-13.
3. Kawazoe T, Kim HH. Tissue augmentation by white blood cell-containing platelet-rich plasma. *Cell Transplant* 2012; 21(2-3): 601-7
4. Noori A, Ashrafi SJ, Vaez-Ghaemi R, Hatafian-Zaremi A, and Webster TJ. A review of fibrin and fibrin composites for bone tissue engineering. *Int J Nanomedicine*. 2017; 12: 4937-4961
5. Dohan D, De Peppo G, Doglioli P, Sammartino G. Slow release of growth factors and thrombospondin-1 in Choukroun's platelet-rich fibrin (PRF): a gold standard to achieve for all surgical platelet concentrates technologies. *Growth Factors* 2009; 27(1):63-9
6. Rachel JD et al. Incidence of complications and early recurrence in 29 patients after facial rejuvenation with barbed suture lifting. *Dermatol Surg* 2010; 36: 348-354
7. Balaram N et al. Role of platelet rich fibrin in wound healing: a critical review. *J Conserv Dentistry* 2013; (16) 4: 284-293