

NATIONAL LASER I N S T I T U T E

Microneedling & Platelet Rich
Plasma (PRP)- Injections

Course Objectives

- Fundamental knowledge of the wound healing process.
- Learn about the medical history of PRP use and how it's now being used in cosmetic medicine.
- Education on how PRP can be used to generate soft tissue and collagen, while also firming and improving skin tone.
- Protocol for drawing blood, placing it in the centrifuge and separating its different components.
- Knowledge of proper placement of PRP for optimal results.
- Understand how sun, acne and aging damage the skin.
- Learn how microneedling is used to correct skin damage and improve skin's texture and appearance.
- Understand protocols for client preparation with pre and post procedural care instructions.
- Understand how PRP has been used for many years in the tissue healing process.
- Possess knowledge that PRP can be used to grow new collagen, regenerate soft tissue and smooth and tighten skin.
- Understand how microneedling can be used in conjunction with topically applied PRP as well as with anti-aging and skin-improving serums and nutrients for optimal results.
- Client preparation, pre and post care instructions and safety protocols.

What is Platelet-rich Plasma (PRP)?

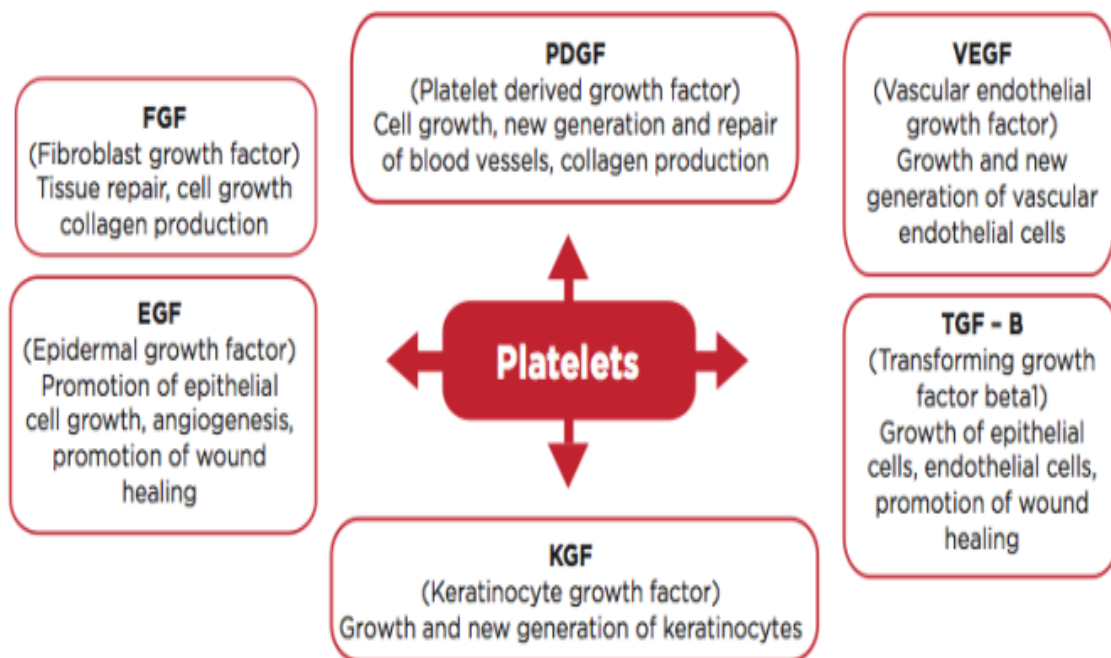
- PRP is a source of autologous platelet-derived growth factors, including transforming growth factor beta.
 - Stimulates expression of collagen & incorporation into extracellular matrix.¹
- The platelets are gathered via phlebotomy & centrifuged to separate them by gradient density.
- High concentration of growth factors stimulates angiogenesis & neocollagenesis.

COMPOSITION OF BLOOD

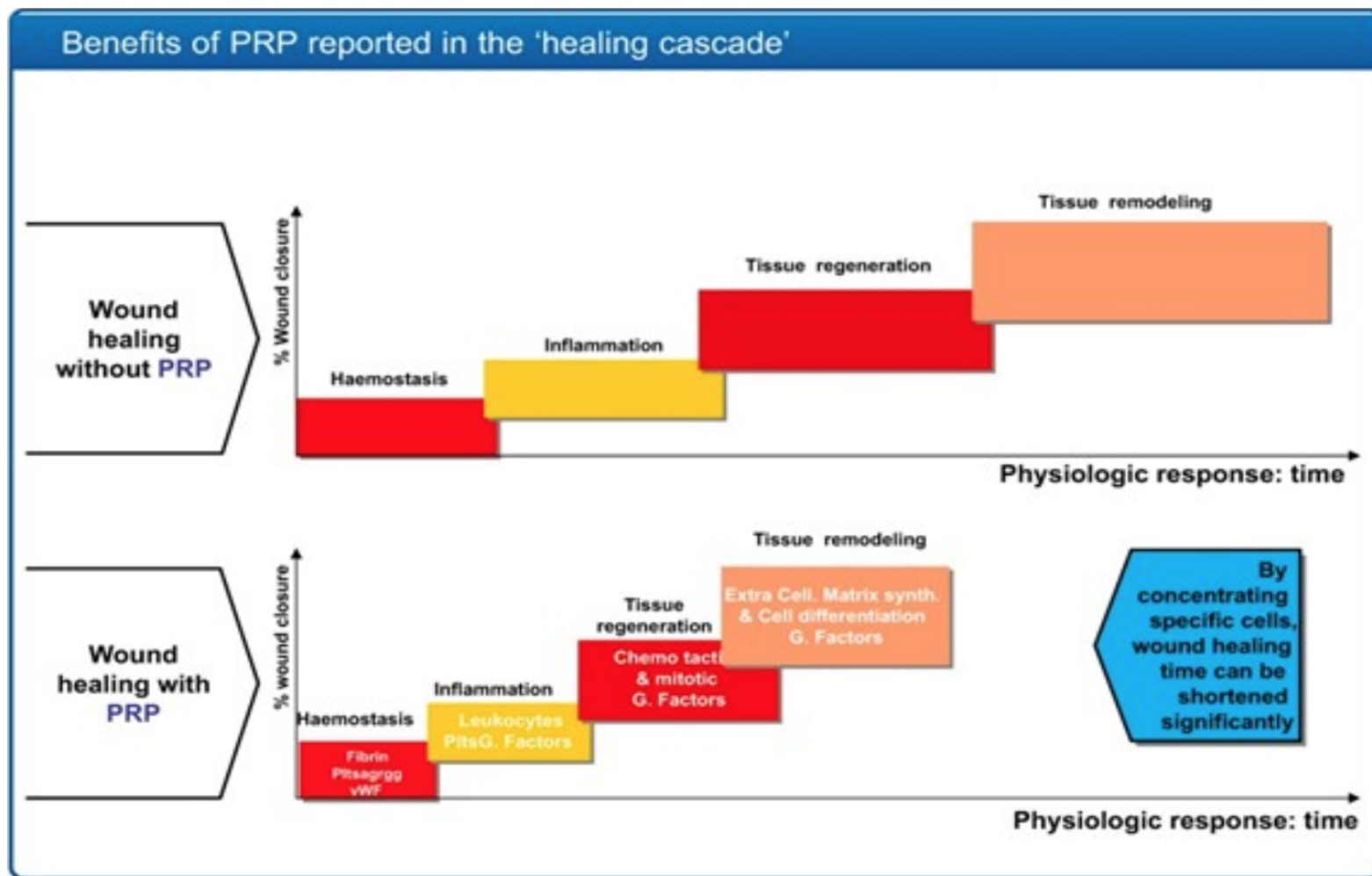


Why use PRP?

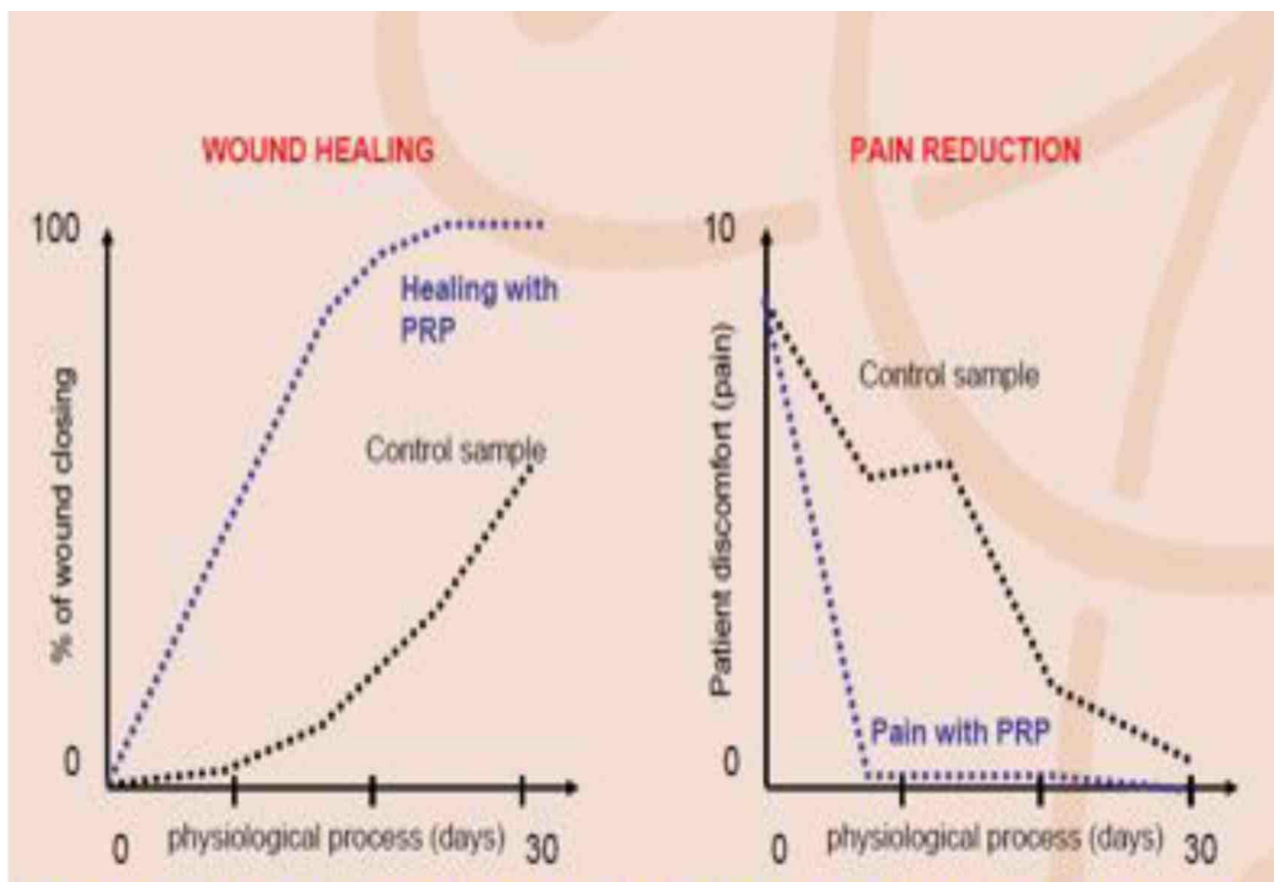
- To stimulate or enhance healing response by utilizing body's own healing mechanisms
- Platelets Release Growth Factors:²
- It takes 10 minutes for platelets to secrete these active growth factors and 1 hour to synthesize



Benefits Of PRP



Healing With PRP

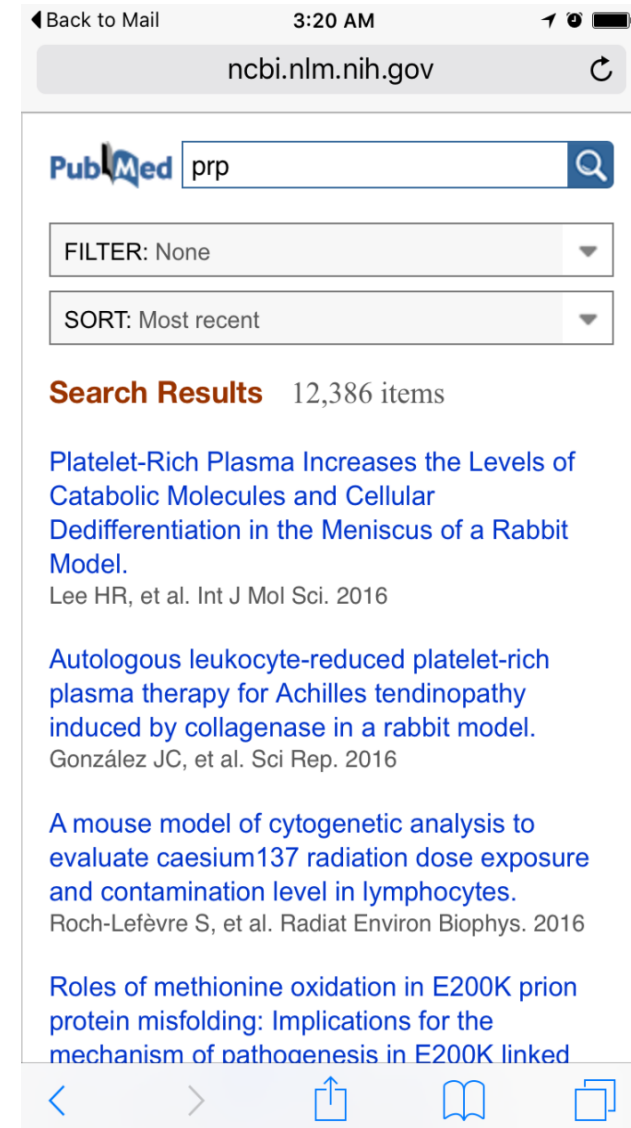


Why Choose PRP?

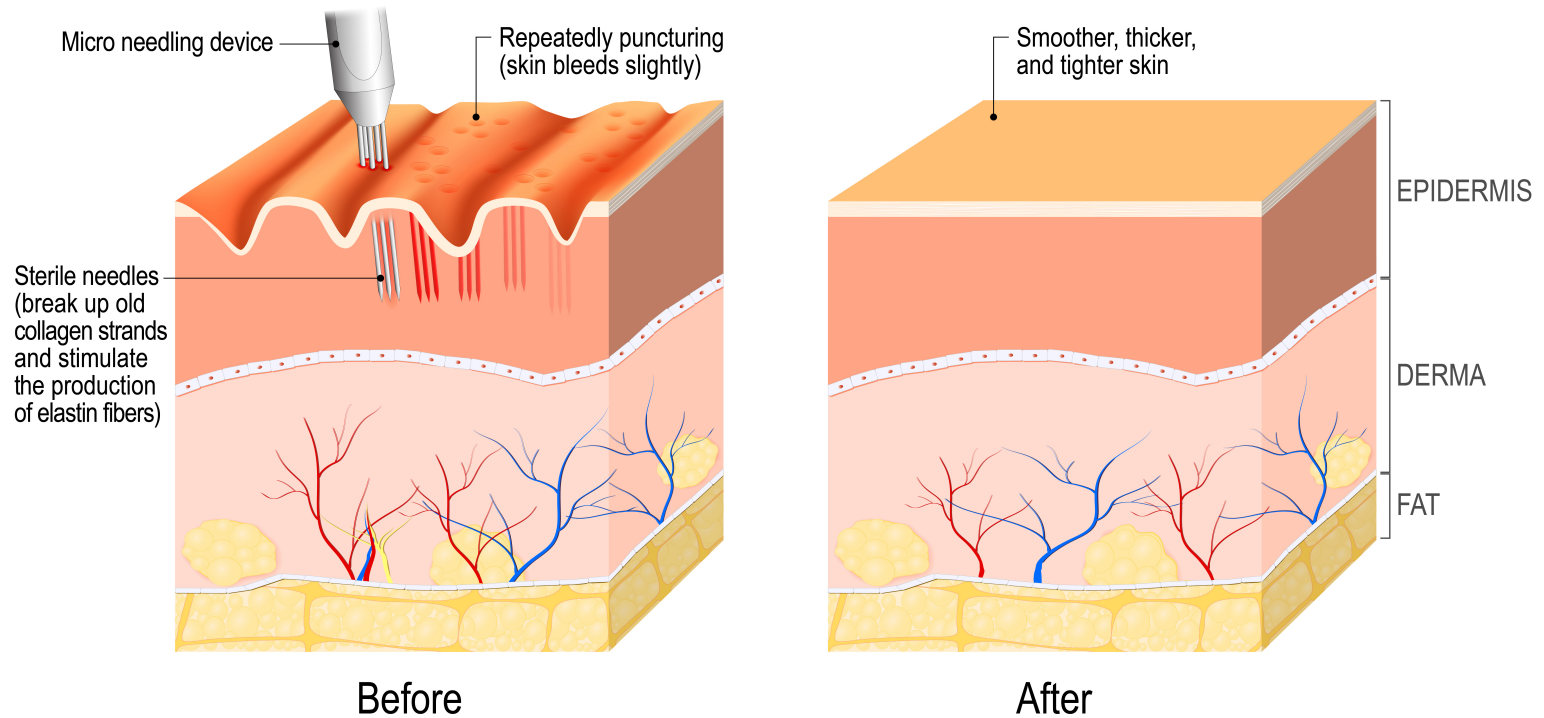
- Easy to Use:
Ready in just 12 minutes
- **3 Simple Steps :)**
 1. Draw Blood
 2. Spin Tubes
 3. Apply
- 10mL tube yields ~6mL's of PRP
- Most efficient: 87.5% (+/-9%)
Platelet Recovery with small
Optimal platelet concentration
1.7-2.7 times native level
- Red Blood Cells and Neutrophils
are virtually eliminated
- Platelet rich plasma (PRP)
offers a natural option to
improve skin tone, texture
and smooth fine lines
- PRP stimulates collagen
production and tissue
generation
- Also, its simple and safe!!

- **PRP**
Platelet Rich
Plasma
Collagen
Induction Therapy

....lets do a search



Collagen Induction Therapy

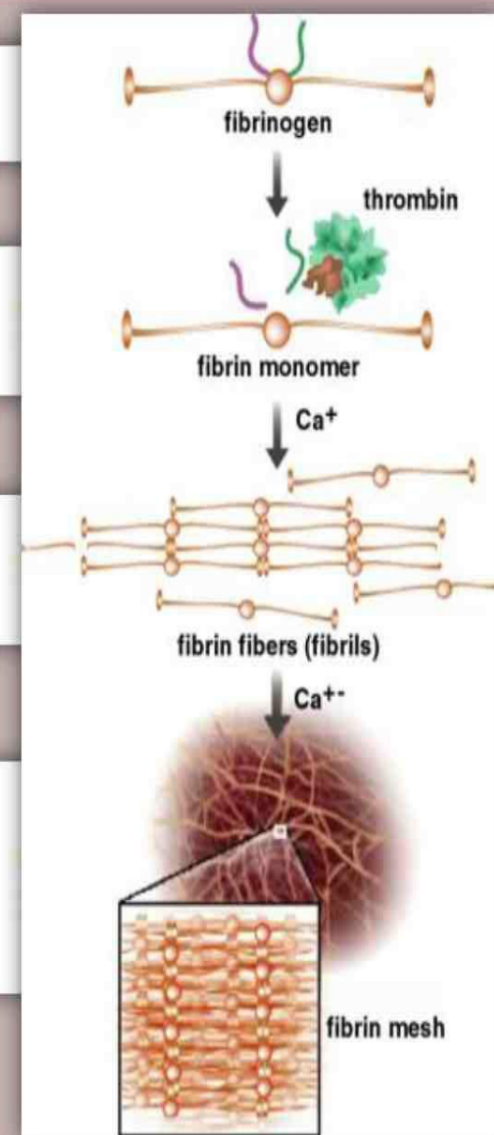




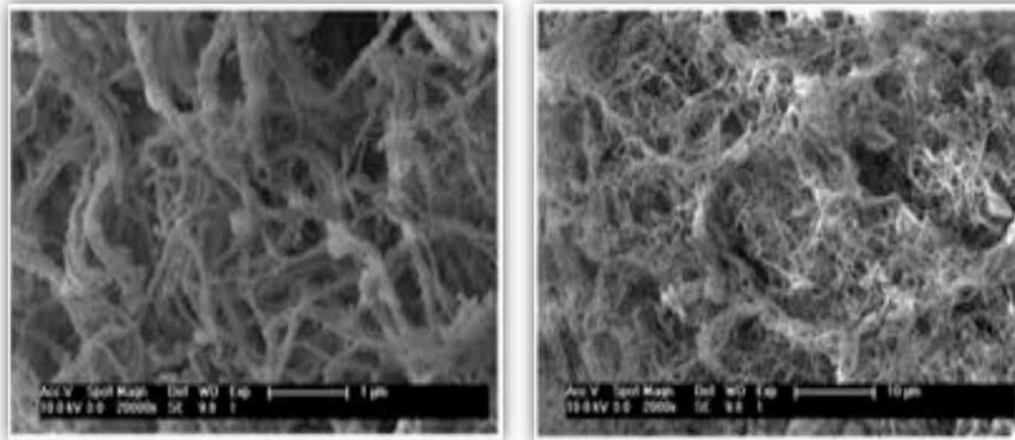
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Mechanism of Action

- Fibrinogen is present in plasma
- Fibrinogen activated and transformed into fibrin strands
- 3D polymeric mesh is formed through the binding of the fibrin monomers
- The mesh exhibits activated GF attracting stem cells, initiating tissue regeneration, proliferation of dermis cells & the production of collagen

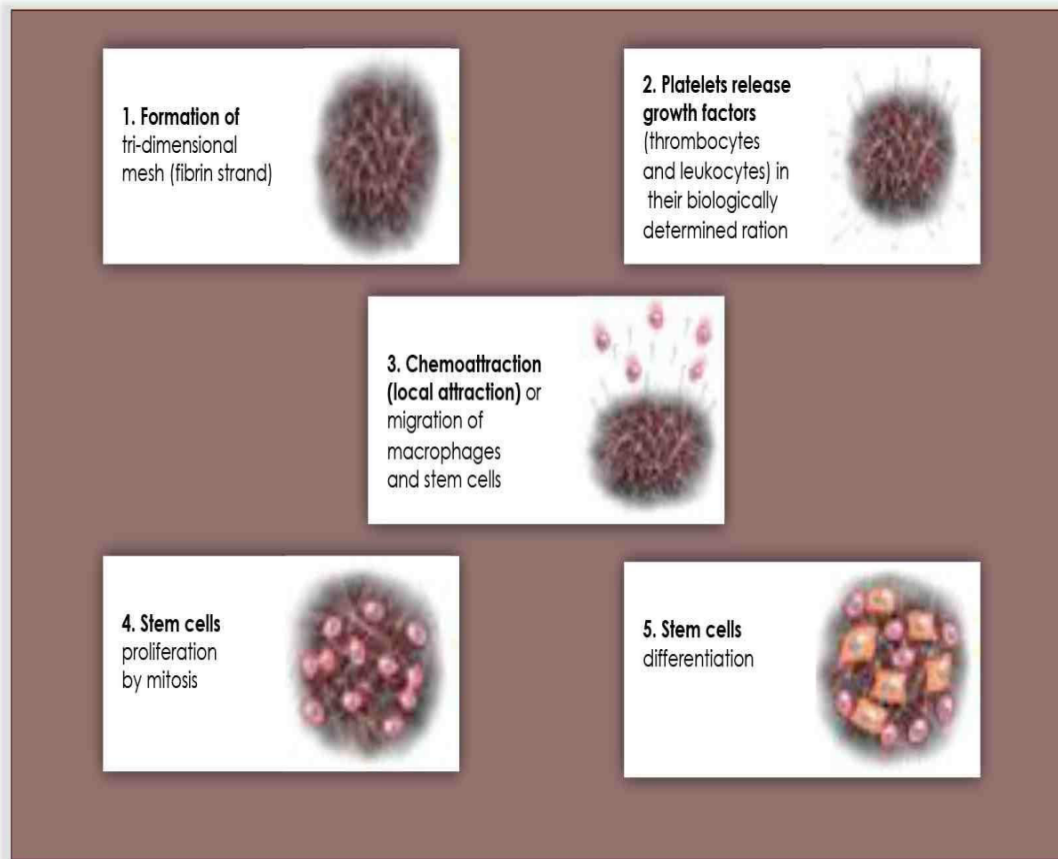


Fibrin Mesh Under Microscope



Courtesy of: Susan Lim, MD

Cycle Of Stem Cell Differentiation



Optimal Platelet Concentration For PRP

All PRP is not created equal.

Growth factor availability and functionality depends on the technique used for isolating and concentrating platelets.

What's required for Cellular Therapy?

- Scaffold for cell migration
- Progenitor cells which can be converted into bone or soft tissue
- Signal proteins to modulate the repair/regeneration process

Recent studies indicate that the optimal platelet concentration to stimulate angiogenesis ranged from 1.5 million to 3.0 million platelets per microliter ($1.5 - 3.0 \times 10^6$ platelets/ μL).

Source: <http://www.harvesttech.com/harvest-prp>

NATIONAL LASER INSTITUTE

Technology	Device Name	Concentration Factor	Platelet Recovery	Volume of Blood	Volume of PRP	Specific Apparatus	Processing Time	Cost per tube	Product
Separating Gel	Eclipse PRP	1.7-3x	87.5% +/-9%	10 mLs	~6 mLs	Drucker Centrifuge	12 min	\$90-\$115	Platelet suspension; lower value of WBCs; very low concentration of RBCs
Separating Gel	RegenLab	1.6x	80%	8 mLs	4 mLs	Drucker Centrifuge	6 min	\$96+	Platelet suspension; lower value of WBCs; very low concentration of RBCs
Separating Gel	Selphyl	1.2x	65%	9 mLs	4.5 mLs	Drucker Centrifuge	10 min	\$375+	Platelet suspension; lower value of WBCs; very low concentration of RBCs
Floating Buoy or Shelf	Harvest SmartPrep2	4x	72% +/-10	18 mLs	3 mLs	Yes; \$9950	16 min	\$395	Buffy coat product; concentrated platelets; concentrated WBCs and variable RBCs
Computer Aided	Angel (Arthrex)	4.3x	76%	40 mLs	4 mLs	Yes; Cytomedix \$10,950	25 min	\$495	Buffy coat product; concentrated platelets; concentrated WBCs and variable RBCs
Separating Gel	AutoloGel (Cytomedix)	1x	78%	Amt determined by phys	50% of amount of blood drawn	Yes, Cytomedix \$5000	1-2 min	\$325	Platelet suspension; lower value of WBCs; very low concentration of RBCs
Computer Aided	Magellan Arteriocyte	5x	65%	26 mLs	6 mLs	Yes, \$9950	17 min	\$450-495	Buffy coat product; concentrated platelets; concentrated WBCs and variable RBCs

PRP Preparation

PRP Kits

- Harvest PRP
 - 1-877-842-7837
 - <http://www.harvesttech.com/harvest-prp>
- Regen Lab
 - 1-800-220-9082
 - www.regenlabusa.com
- Eclipse PRP
 - 1-928-503-7814 (DJ Shooter, local representative)
 - <http://eclipseaesthetics.com/products/eclipse-prp/>



How Are Physicians Using PRP?



- Post Ablative Procedures
- Non Ablative Energy Devices
- Intradermal and Subcutaneous Injections
- Fat Grafting and Plastic Surgery
- Alopecia
- Wound Healing and Orthopedics
- Pain Management
- Feminine Rejuvenation
- Dental grafting
- Priapus
- Urinary Incontinence
- Vaginal Atrophy
- Dyspareunia

Indications For Non-Aesthetic Use of PRP

- Bone grafts: enhanced maturation & bone density
- Rotator cuff tears
- Knee osteoarthritis
- Spinal stenosis
- Muscle & ligament tears
- Plantar fasciitis, etc.

Indications For Aesthetic Use of PRP

- In conjunction with micro-needling for enhanced effects
- Aesthetic injections of PRP for facial rejuvenation
- Hair Restoration
- Enhancing female sexual sensation
- Stress Incontinence
- Priapus
- Acne scarring

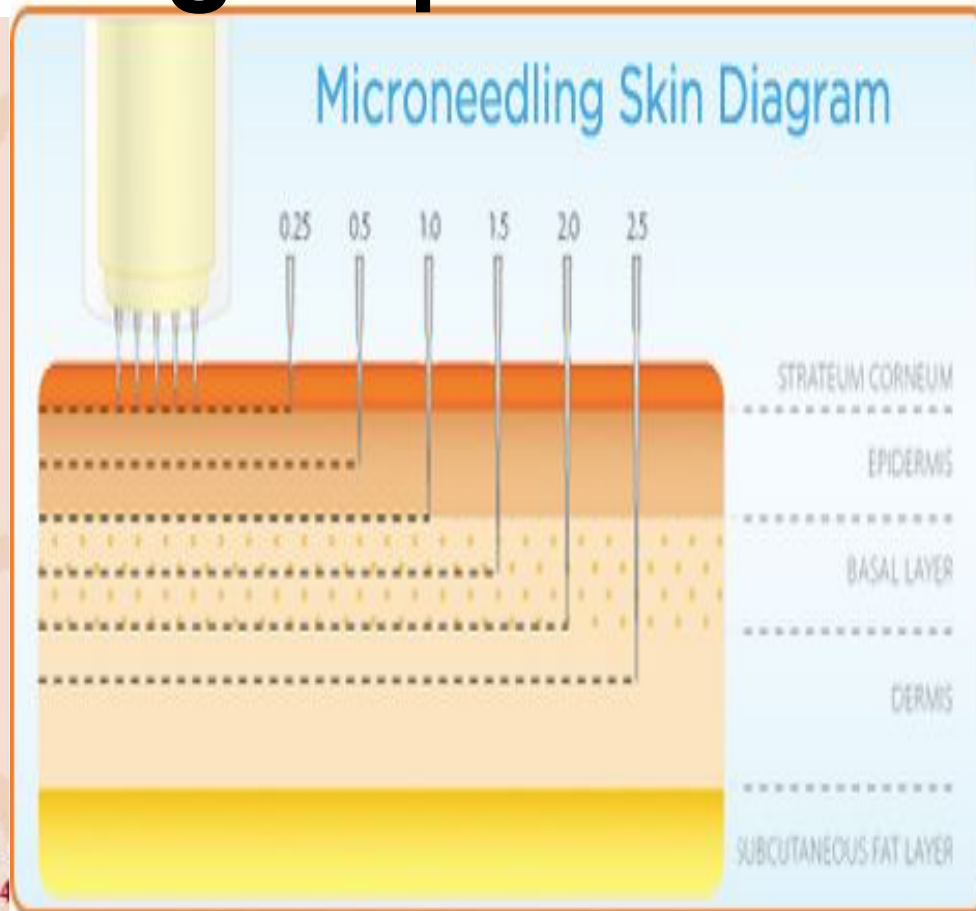
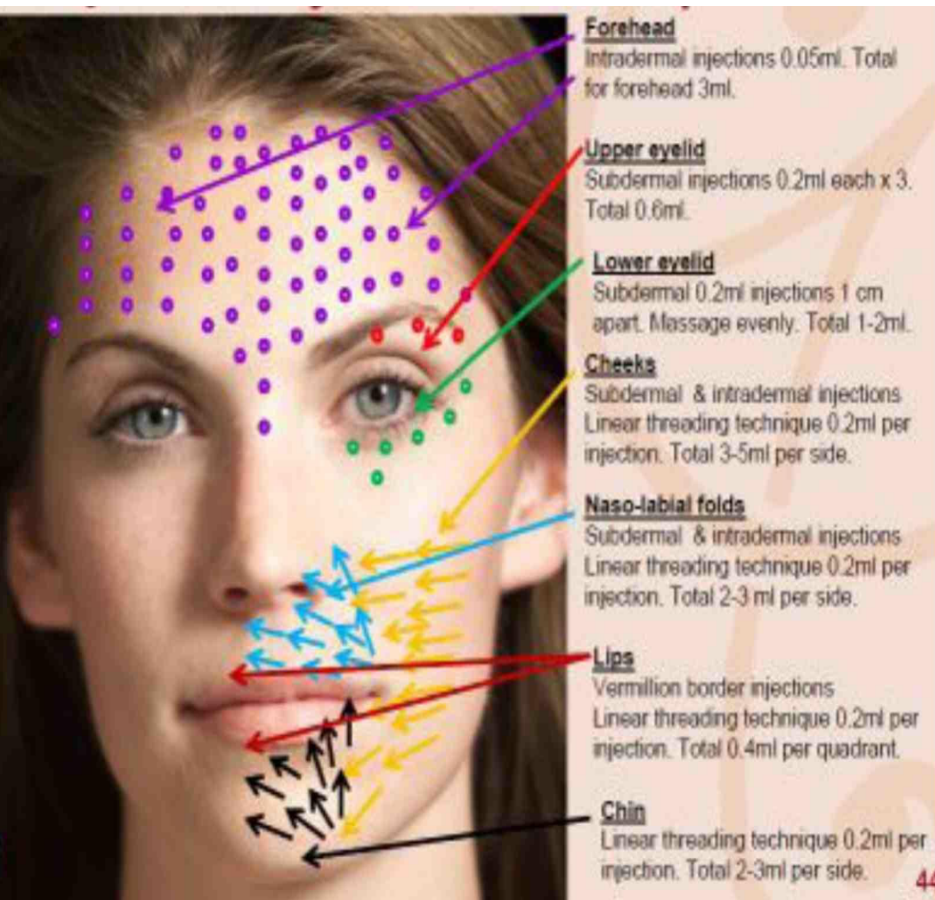
PRP is – in all cases – used for tissue regeneration!

Treatment Instructions



- 1) Draw blood for PRP collection (1 tube) (8-12 mL)
- 2) Invert tube 3-5x
- 3) Place blood in centrifuge spin for ten minutes
- 4) Cleanse area with Hibiclens or alcohol
- 5) Apply topical numbing cream (15-20 minutes)
- 6) Remove numbing cream with gauze
- 7) Draw 1cc PRP into 1 cc or 3cc syringe & remainder of PRP into 5cc or 10cc syringe
- 8) Inject PRP from 1cc or 5cc syringe into the subdermal area of face and/or drizzle PRP on skin to microneedle

Injection Technique For Face & Microneedling Depth



PRP Pre-Injection Guidelines

- Guidelines as outlined by the American academy of Orthopedic surgeons & America Association of Orthopaedic Surgeons website:³
 - Avoid anticoagulant use within 5 days of procedure
 - Increased fluid intake 24 hours prior to procedure
 - Consider discontinuing nonsteroidal anti-inflammatory drugs (NSAIDs) 1 week prior to procedure

Injections

Intradermal Injection

- Improves textural improvement of lines, wrinkles, and scars
- 3-4 treatments, 4-6 weeks apart
- May combine with sub-dermal injections

Subcutaneous (sub-dermal) Injection

- *Can be used as a foundation for collagen stimulation via PDGF's*
- *Use blunt tip cannulas (Magic Needle)/needles*
- *3-4 treatments or in combination with HA Fillers (1 treatment per 12-15 months)*

Within ~2 weeks, clinicians see a result in improvement in tone, texture and quality of skin

Scars & PRP



PRP With HA Filler



Tear Trough Alternative?



Microneedling & PRP

- One of today's most highly requested treatments, **microneedling** improves skin's firmness while reducing the appearance of fine lines and acne scars, all with minimal downtime.
- Considered a non-ablative treatment, **microneedling** treats deeper levels of the skin without removing the top layer.



How Does It Work?

- Microneedling uses a minimally invasive pen-shaped device studded with several very fine needles, which is passed over the treatment area(s). It is creating controlled micro injuries to the skin.
- The needles break down old tissue, causing deliberate minor injury to the skin's surface thereby stimulating the healing process.
- Over time, new collagen is produced and the result is younger, healthier, more beautiful looking skin.

Why Microneedle?

- **Microneedling is in high demand because results are noticeable and downtime is minimal. Other microneedling benefits include:**
- Cost effectiveness (less expensive than other resurfacing procedures)
- Improved efficacy of topical agents used in conjunction with microneedling
- Pore size reduction
- Scar reduction including acne scars
- Improved appearance of stretch marks
- Wrinkle reduction
- Suitable for most skin types
- May treat face and body i.e. neck, décolleté, arms, hands, legs abdomen and back
- Needle length will be adjusted throughout the treatment zone and dermal thickness

Microneedling Indications

- Acne Scarring (pigmented, pitting)



Microneedling Indications Continued

- Wrinkle Reduction



- Textural Improvement



Benefits Of The Platelet Rich Plasma Facial

- Many patients report that their face looked refreshed, their fine lines and wrinkles diminished, they had no visible bruising at the injections sites with very minimal discomfort, and their results were almost instant.
- **Younger looking color** to skin because of the new blood vessel formation.
- The outer most layer of skin or “epidermis” **will appear smoother.**
- The procedure stimulates **new collagen production** over time in the “dermis”. This will lift the face to a more youthful, firmer shape.
- **Quick procedure** lasting an hour to 90 minutes.

How Can Microneedling Be Used to Obtain Optimal Results?

- **Microneedling** can be used **alone or with serums** that are infused deeply into the skin.
- *What Types of Serums Can Be Used with Microneedling?*
- **Hyaluronic acid** to add moisture and reduce wrinkles
- **Vitamin C** to rejuvenate skin
- **Skin lighteners** to reduce hyperpigmentation
- Various **acne-fighting ingredients** that destroy bacteria

Precautions

- Blood borne disorders
- Liver disorders
- History diabetes
- Keloid scarring
- Collagen disorders
- History of genital Herpes Simplex infection
- Pregnant or nursing women
- Active local inflammatory conditions

Contraindications

- Scleroderma, collagen vascular disease or cardiac abnormalities
- Medications i.e. Accutane, Warfarin, Coumadin
- Rosacea (microneedling)
- Liver disorders such as Hepatitis C
- Blood clotting problems
- Immunosuppression
- Low platelet count³
- Septicemia or fever³
- Cutaneous infections in treatment area³
- Active acne i.e. Cystic acne (microneedling)
- Anemia³
- Malignancy (esp. with hematologic or bony involvement) ³
- Pregnancy or breastfeeding³

Risks

- Infection – Rare (prepared from autologous blood)
- Risk of injury to nerves or blood vessels
- Reaction to local anesthetic
- Reaction to anti-coagulant **(verify reagent in your PRP kit to address this & related questions)**
- No effect from treatment
- Acne breakout seen more with microneedling

Treatment Expectations

- Microneedling may have some pin point bleeding
- There may be some mild swelling, redness and bruising which typically dissipate in 1-3 days.
- The skin is pink and puffy for 24-48 hours after treatment
- Dryness may occur, daily moisturizer recommended
- Sunblock is highly encouraged the next day and throughout the healing process
- Since **PRP** is made from the client's own cells, there is virtually no risk of side effects.

Results

- Minimal downtime with both PRP injections and microneedling.
- Results typically begin to show 3-4 weeks after treatment and continue to improve over time. For best results, three treatments are generally recommended, spaced about 4-6 weeks
- Clients typically report smoother skin texture and improved tone, decreased wrinkles and fine lines and an overall firmer appearance.

PRP On The Doctors Show

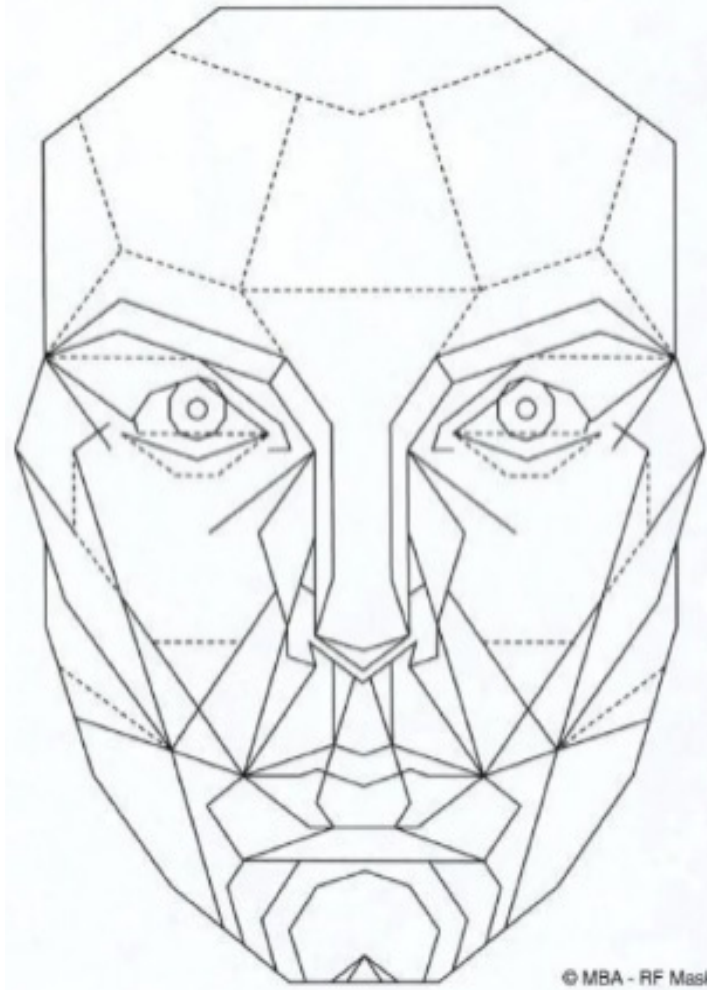
<https://www.youtube.com/watch?v=m8wFv-KOPkI>



3 Elements of Beauty Improved by PRP

- Shape (Droopy? Saggy? Loss of fat pads and collagen)
- Color (Grey, Dull, Sign of decreased blood flow and aging)
- Texture (worn, tired, rough)

Vectors Of The Face

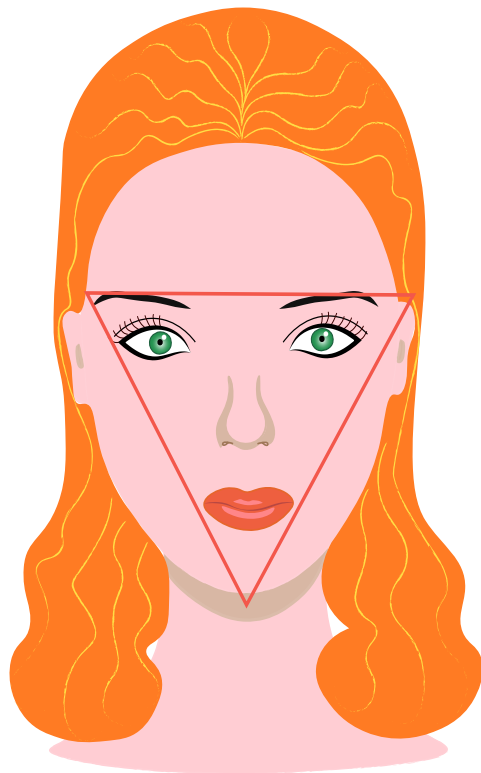


© MBA - RF Mask

Triangles Of Youth vs. Pyramid Of Aging

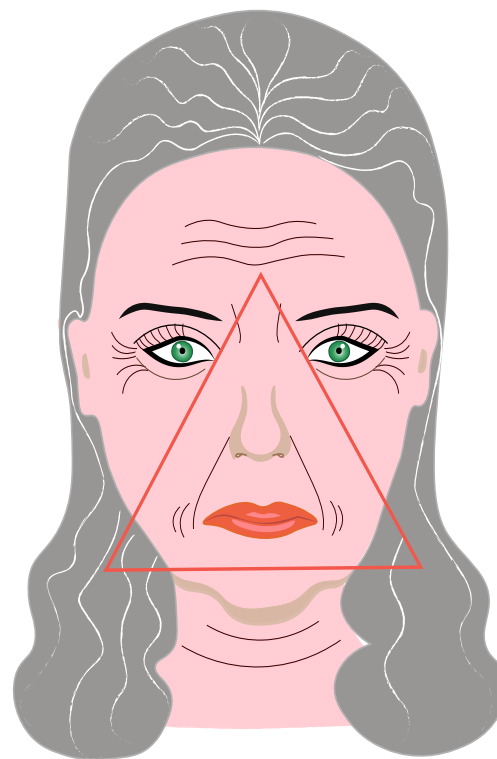
TRIANGLE OF YOUTH

HIGH CHEEKBONES
FULL CHEEKS
DEFINED JAWLINE

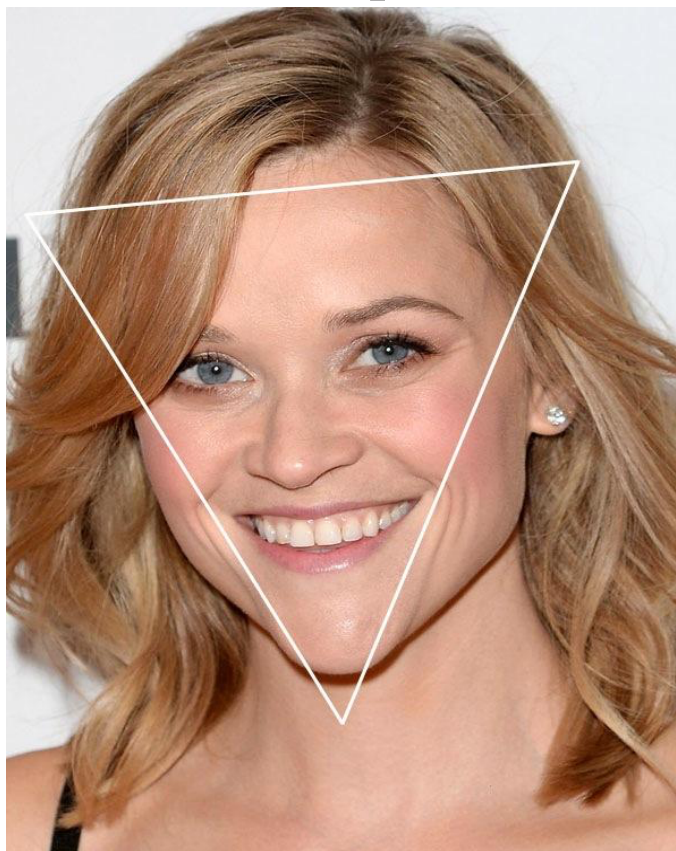


PYRAMID OF AGING

WORRY LINES
FROWN LINES
CROWS' FEET
NASOLABIAL FOLDS
DROOPING MOUTH CORNER
SAGGING CHEEKS
DOUBLE CHIN



Triangle of Youth; The Beautiful People



Before & After PRP Facelift Change In Complexion Color & NLF



What Changes Do You See?



How Long Do Results Last?

- After a patient undergoes a PRP facelift the results will usually last between 9-18 months. For best results, patients will revisit their practitioner for a touchup injection every 6-12 months.
- PRP “stand alone” should be done every 4-6 weeks and recommend 3-4 treatments.
- Microneedling with PRP will vary depending on issue
 - Preventative – 3 treatments every 4-6 weeks
 - Aging, laxity – 3-5 treatments every 4-6 weeks
 - Acne scarring – 4-6 treatments every 6-8 weeks
- Experts state results may last 12-16 months.

FDA Approval?

- The medical devices used during the PRP facelift procedure and centrifuge **ARE FDA approved** and regulated. It is important to remember that the FDA does **NOT regulate surgical or medical procedures**. Instead it regulates the equipment being used in those procedures.
- 1 case of death in China using non FDA approved tube; not sterile.

Clinical Support

Platelet-rich Plasma for Wrinkle Treatment

Effect of platelet-rich plasma on ultraviolet b-induced skin wrinkles in nude mice

- Study Design:
 - ~ 3 groups of each 10 UVB irradiated nude mice
 - ~ No treatment / saline treatment / PRP treatment
 - ~ 4 week follow up on wrinkle formation
- Results:
 - ~ Wrinkles in PRP-injected group- significantly reduced.
 - ~ PRP biopsy results- dermal layer remarkably thicker.
 - ~ *In vitro* assay, fibroblast proliferation and collagen production were increased through growth factors in the PRP.
- Conclusion:
 - ~ PRP is effective in the rejuvenation of photo-aged skin.

Effect of platelet-rich plasma on ultraviolet b-induced skin wrinkles in nude mice
Jeong Mok Cho, Yoon Ho Lee, Rong-Min Baek, Sang Woo Lee.,
Journal of Plastic, Reconstructive & Aesthetic Surgery,
(2010), doi:10.1016/j.bjps.2010.08.014



- Sciafani, AP, J Cosmet Dermatol, "Platelet-rich fibrin matrix for improvement of deep nasolabial folds", 9(1):66-71, March 2010 [official website](#)

J Cosmet Dermatol. 2010 Mar;9(1):66-71. doi: 10.1111/j.1473-2165.2010.00486.x.

Platelet-rich fibrin matrix for improvement of deep nasolabial folds.

Sciafani AP¹.

⊕ Author information

Abstract

BACKGROUND: Dermal augmentation continues to grow as an aesthetic facial procedure. Many exogenous filler materials rely on an autologous fibrotic response for volume augmentation.

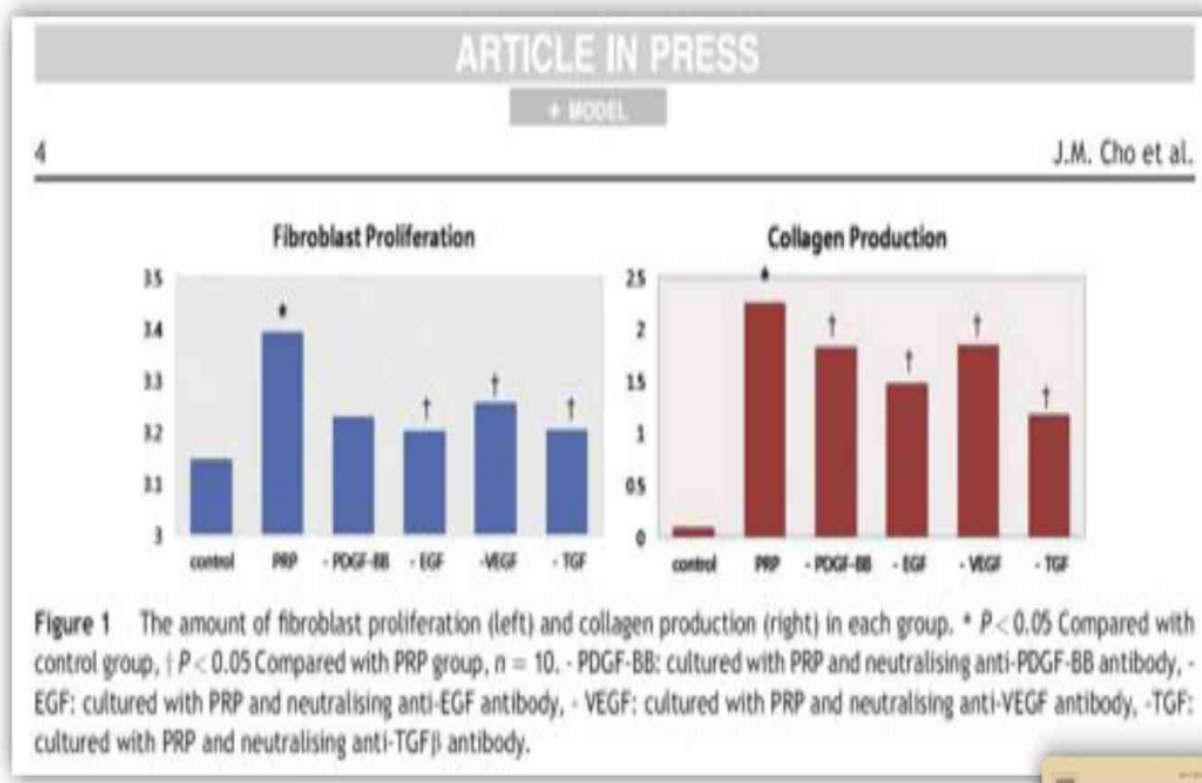
AIMS: To evaluate the efficacy of a single injection of autologous platelet-rich fibrin matrix (PRFM) for the correction of deep nasolabial folds (NLFs).

PATIENTS/METHODS: Whole blood was obtained from 15 adults, and an activated autologous PRFM produced using a proprietary system (Selphyl; Aesthetic Factors, Inc., Wayne, NJ, USA) was then injected into the dermis and immediate subdermis below the NLFs. Subjects were photographed before and after treatment; NLFs were rated by the treating physician before and after treatment using the Wrinkle Assessment Scale (WAS) and patients rated their appearance at each post-treatment visit using the Global Aesthetic Improvement Scale. Patients were evaluated at 1, 2, 6, and 12 weeks after treatment.

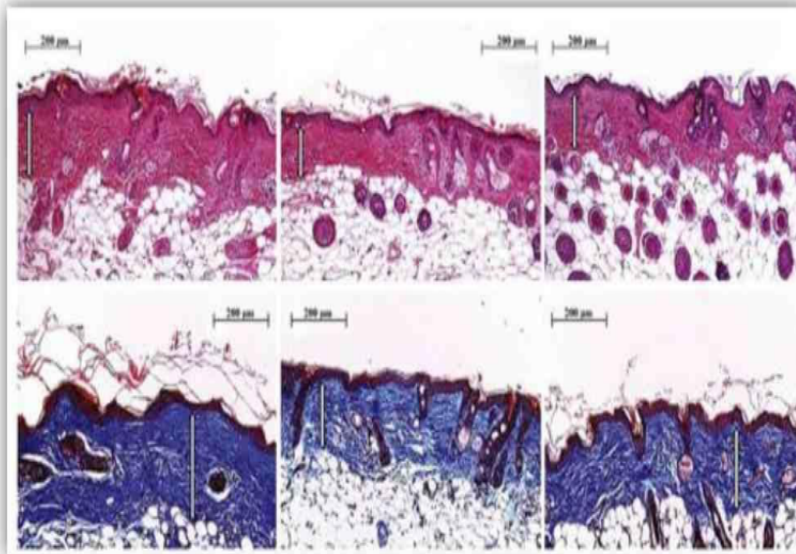
RESULTS: All patients were treated to maximal (no over-) correction, with a mean reduction in WAS score of 2.12 \pm 0.56. At 1 week after treatment, this difference was 0.65 \pm 0.68, but rose to 0.97 \pm 0.75, 1.08 \pm 0.59, and 1.13 \pm 0.72 at 2, 6, and 12 weeks after treatment, respectively ($P < 0.001$). No patient noted any fibrosis, irregularity, hardness, restricted movement, or lumpiness.

CONCLUSIONS: PRFM can provide significant long-term diminution of deep NLFs without the use of foreign materials. PRFM holds significant potential for stimulated dermal augmentation.

Effect of PRP on ultraviolet b-induced skin wrinkles in nude mice



Effect of PRP on ultraviolet b-induced skin wrinkles in nude mice



H&E staining: dermal thickness (pink) in PRP injected group (above, left) was thicker than those with no treatment (above, centre) and the saline injection group (above, right).

Masson's trichrome staining: (collagen fibers are stained blue) collagen increased in the PRP injected group (below, left) compared to those with no treatment (below, centre) and the saline injected group (below, right). {Scale bars are 200 mm}

Face and Neck Revitalization with Platelet-Rich Plasma (PRP): Clinical Outcome in a Series of 23 Consecutively Treated Patients

- Study Design:
 - ~ 23 consecutive patients were treated from September 2008 to December 2008
 - ~ Treated with one session PRP injection/month with total of 3 sessions
 - ~ For blood management, a steril RegenLab kit was used.
 - ~ Patient recieved 4ml of PRP, activated with calcium chloride, at standard injection points into face and neck skin.
- Results: ~ evaluated one month after the last session (January 2009)
 - ~ Surveys scored: 1. special spider improvement 2. photograph score 3. patient satisfaction 4. doctor's satisfaction
- Conclusion:
 - ~ Face and neck revitalization with PRP is an easy-to-perform technique in face and neck rejuvenation and scar attenuation.

References

1. Ignoriz RA, Massague J. Transforming growth factor-beta stimulates the expression of fibronectin and collagen and their incorporation into the extracellular matrix. The Journal of Biological Chemistry, March 25, 1986;261,4337-4345.
2. <http://eclipseaesthetics.com/products/prp/>
3. Santos F. Martinez, MD. Practical guidelines for using PRP in the orthopaedic office. American academy of Orthopedic surgeons & America Association of Orthopedic Surgeons website:
<http://www.aaos.org/news/aaosnow/sep10/clinical3.asp>

The background is a complex, abstract composition of various geometric shapes, including triangles, squares, and polygons. The color palette is dominated by shades of blue and purple, with some teal and green accents. The shapes are layered and overlapping, creating a sense of depth and movement. The overall effect is a modern, artistic, and somewhat chaotic visual field.

Thank you!