

PRGF AND PLASMAGEL FOR VULVO-VAGINAL RESTORATION

DR. EVGENII LESHUNOV

Plastic surgeon, urologist

Ph.D fellow Russian Medical Academy of Continues Professional Study (Moscow)

Active memembr of ISRAIT, WOSIAM, scientific director of EAAAMS



REGENERATION

There are three components considered essential for tissue regeneration:

1. Cells
2. Scaffold
3. Growth factors



CELLS



SCAFFOLD



GROWTH FACTORS



REGENERATIVE TECHNOLOGY

1. PPP
2. PRP
3. IPRF
4. PRGF
5. Cordon Blood PRP
6. Bone Marrow Stem Cells
7. Stromal Vascular Fracture
8. MicroFat, MiliFat, NanoFat
9. Peripheral Blood Stem Cells
10. Placenta extracts
11. Growth Factors
12. Autologous Fibroblasts



WHAT IS PRP?

PRP is autologous or derived from the same person, and is referred to as blood component therapy, rich in concentrated platelets (5 to 8 times)

- normal concentration of platelet: 200,000 per microlitre versus PRP: 1,000,000 per micro/L

PRP consist :

- Platelets: 94%
- Red Blood Cells: 5%
- White Blood Cells: 1%

PRP is also a concentration of the 7 fundamental protein growth factors that are actively secreted by platelets to initiate all wound healing.

PRP includes 3 proteins in blood known to act as cell adhesion molecules: fibrin, fibronectin, vitronectin.

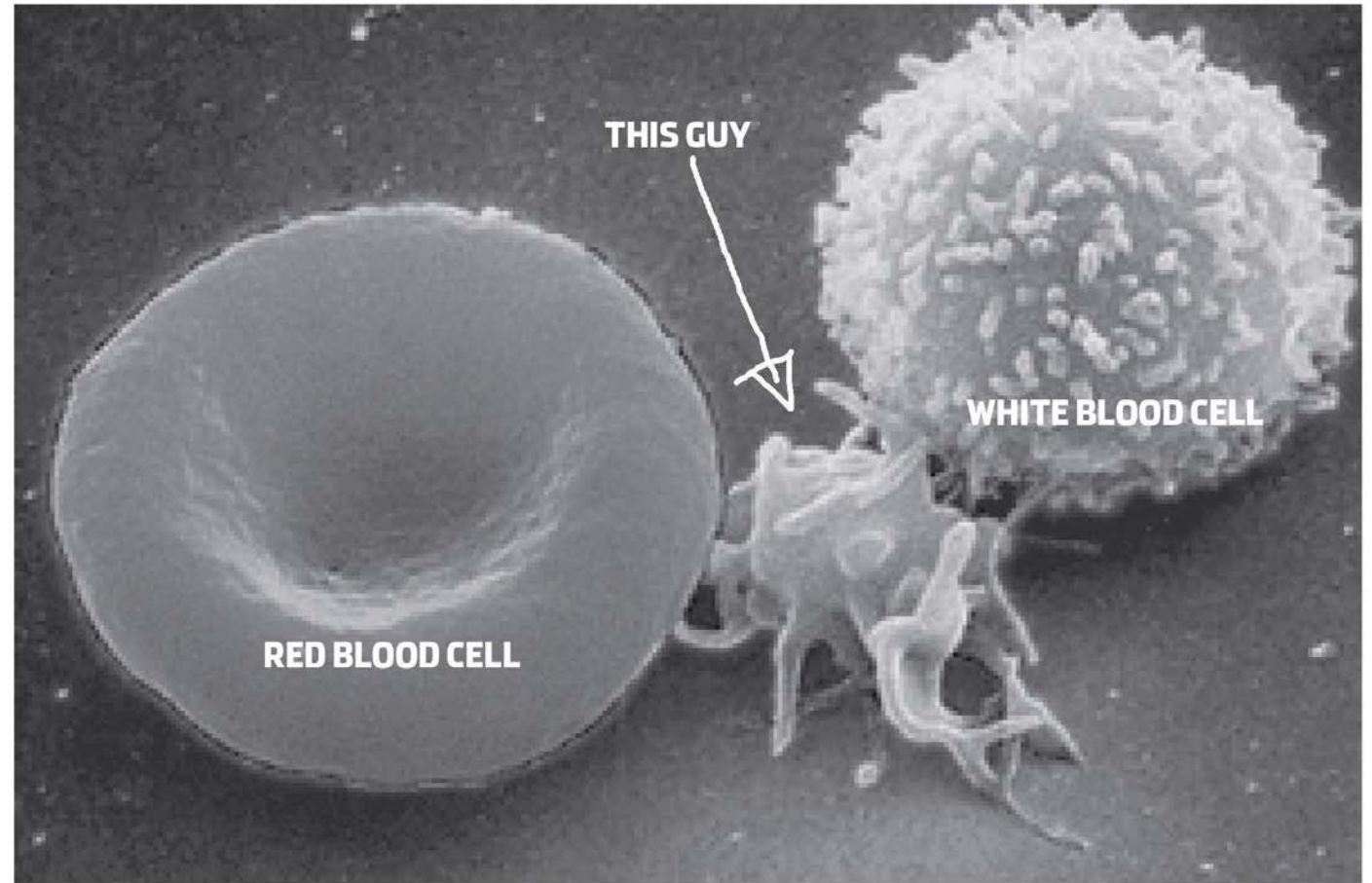


PLATELETS

Platelets are living but terminal cytoplasmic portions of marrow megakariocytes. They have no nucleus for replication and die in 5 to 9 days.

They actively extrude the growth factors, adhesion molecules, coagulation molecules, cytokines, chemokines, integrins involved with tissue repair and healing.

Growth factors also called cytokines are proteins, stored in alpha granules inside platelets.

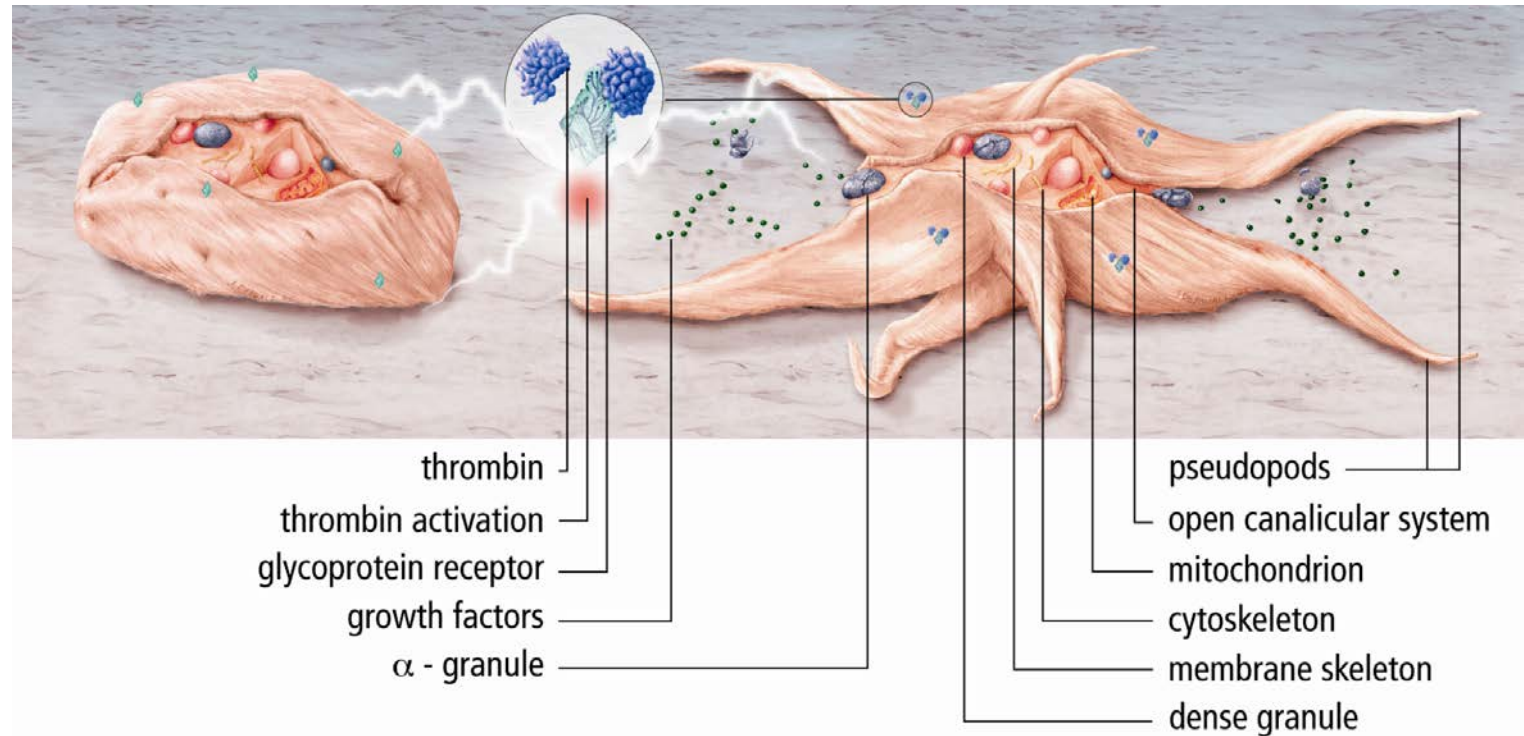


PLATELETS ANATOMY

Platelets are small (2 micrometers)

Consist of :

- Pseudopodial extensions
- Invaginations
- 3 types internal vesicles:
 - Lysosomal vesicle
 - Dense vesicle
 - **Alpha vesicle**



PLATELETS ANATOMY

Alpha vesicle store and releases the Growth Factors, these GF promote healing and regeneration (tissue healing and bio-cellular regeneration). Thus, the GF are relevant to wound-healing.

- PDGF_{aa}, PDGF_{bb}, PDGF_{ab} (Platelet Derived Growth Factor)
- TGF_{beta1}, TGF_{beta2} (Transforming Growth Factor Beta)
- VEGF (Vascular Endothelial Growth Factor)
- EGF (Epidermal Growth Factor)
- IGF (Insulin Growth Factor)

They are proteins and need to be biologically active to work. The alpha-vesicles also contain cell-adhesion molecules and involved with vitronectin, fibronectin, fibrin.



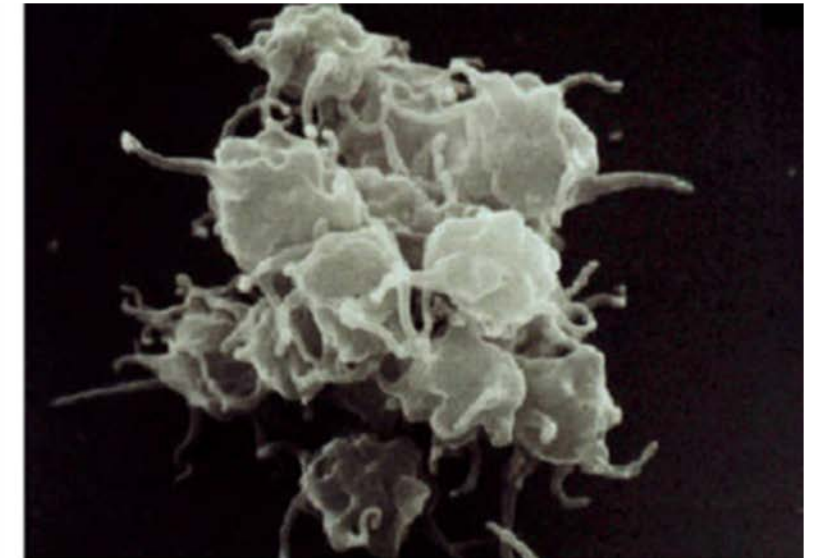
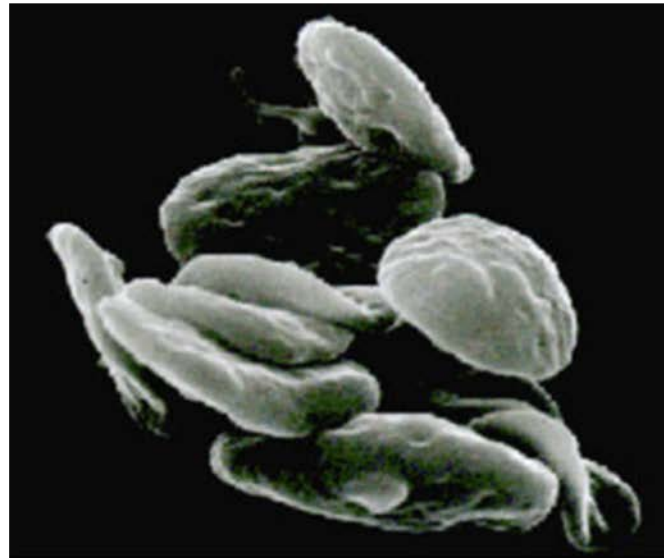
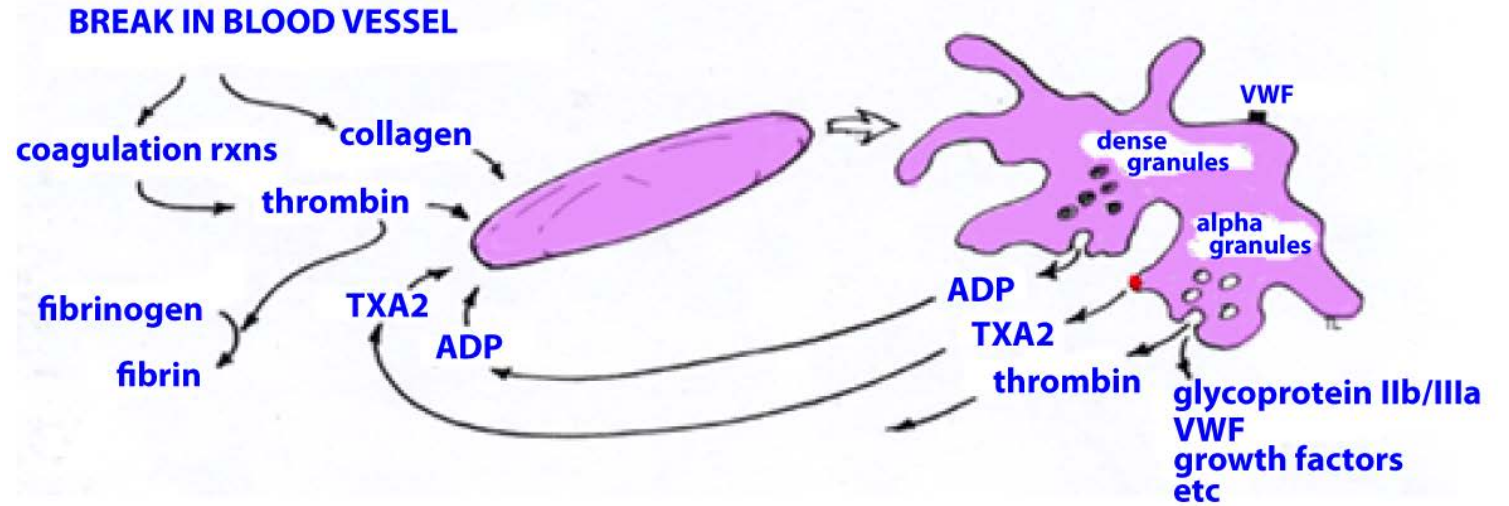
ACTIVATION OF PLATELETS

Inside intact, healthy endothelium platelets are in unactivated state

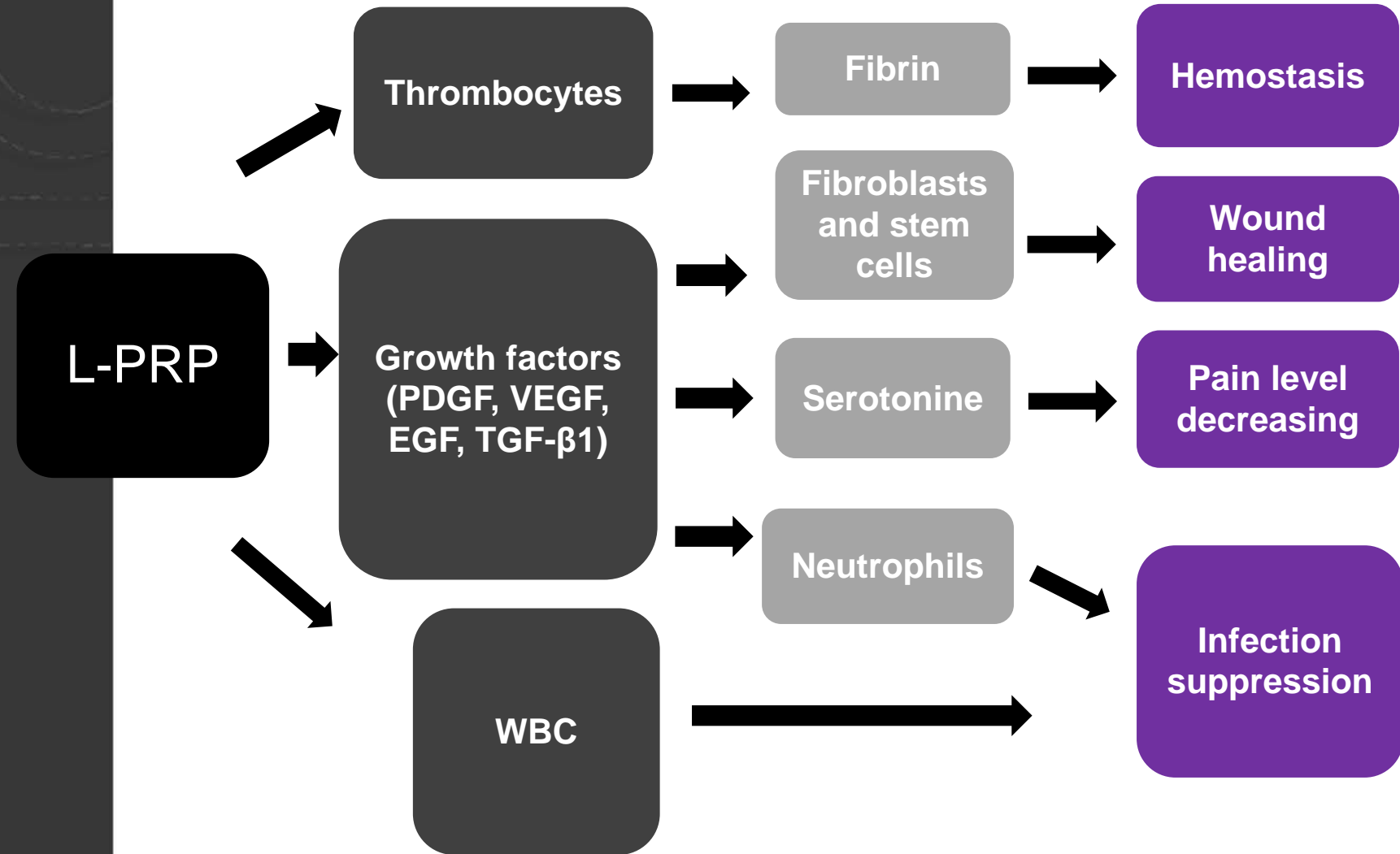
The absence of activating factors and the release of prostacyclin by healthy endothelium support their form

When platelets are in contact with collagen, they are activated

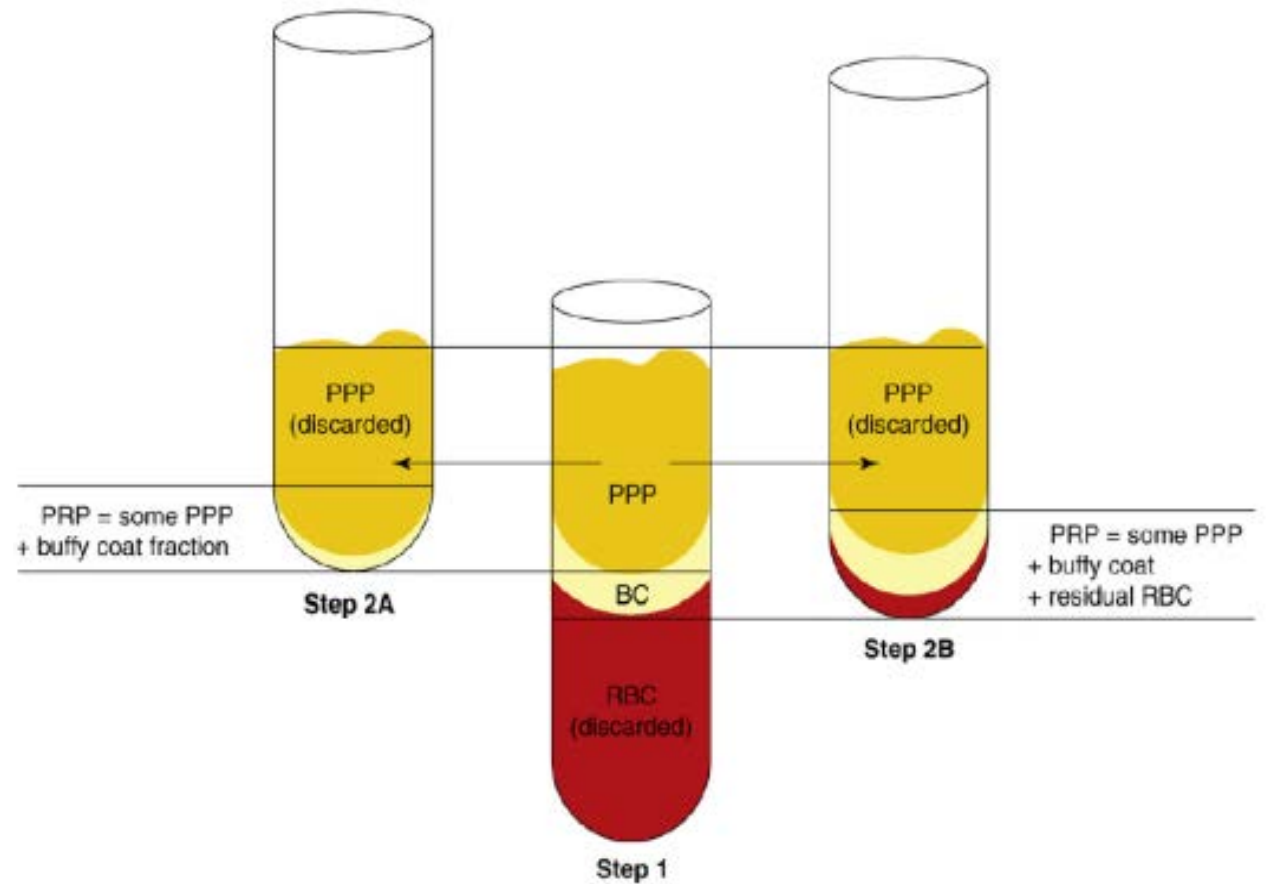
We can activate them with calcium or trombin



HOW IS PRP WORKING?



"HANDMADE" PRP



Dohan Ehrenfest et al., Trends Biotechnol 2009;27:158-167.



DR. EVGENII LESHHUNOV
intimate surgery

www.intimateplasty.ru

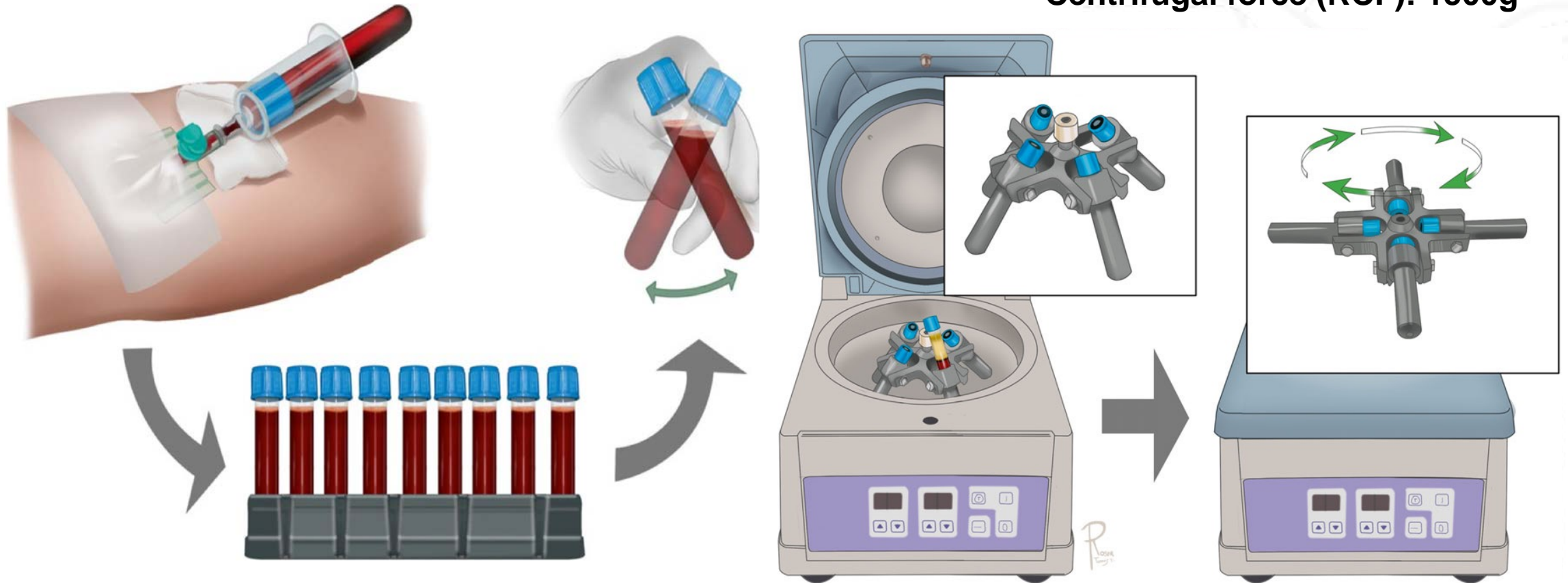
leshunov@bk.ru

[dr_leshunov](https://www.instagram.com/dr_leshunov)

PREPARATION PPP-PRP-PRGF

Time: 5 mins

Centrifugal force (RCF): 1500g



DR. EVGENII LESHHUNOV

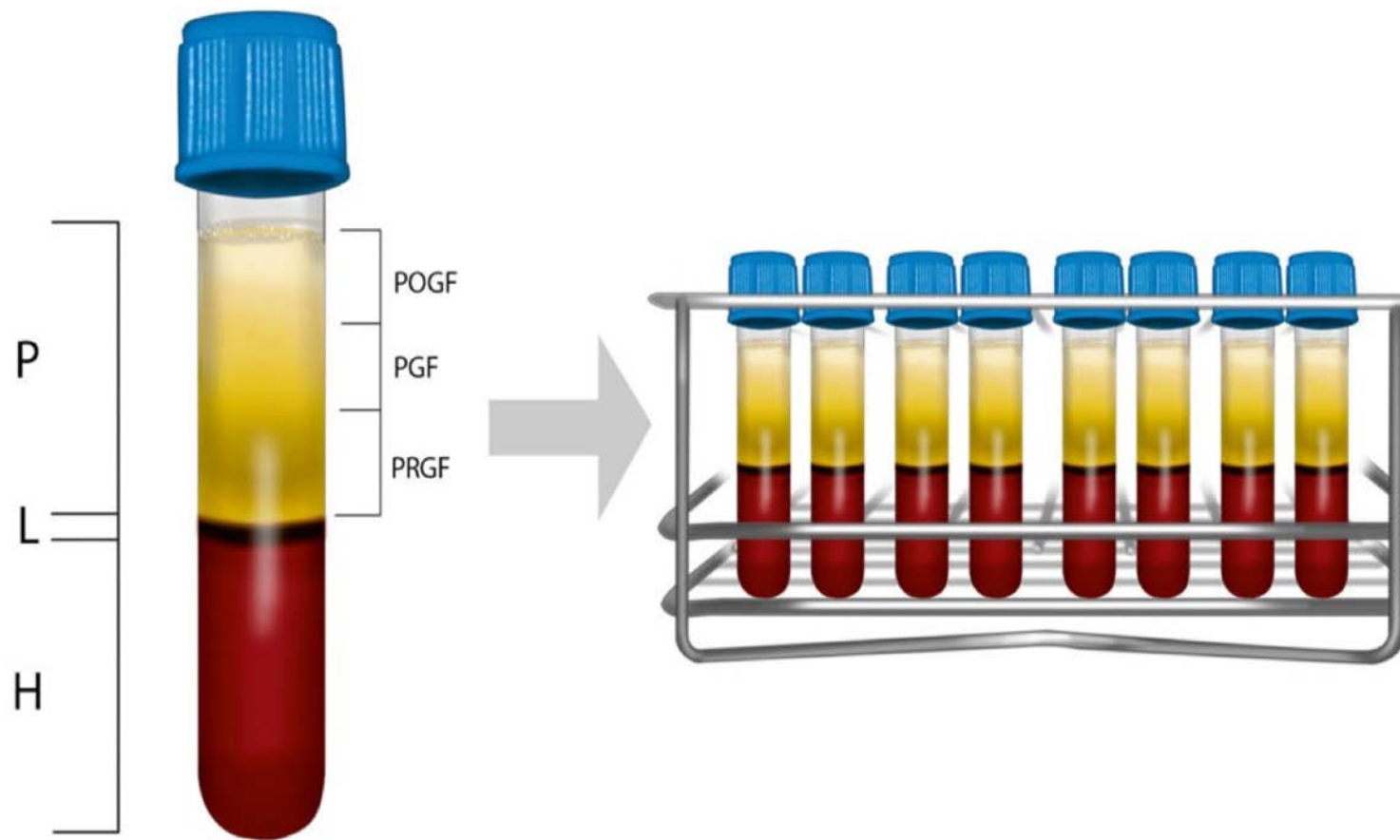
intimate surgery

www.intimateplasty.ru

leshunov@bk.ru

[dr_leshunov](https://www.instagram.com/dr_leshunov)

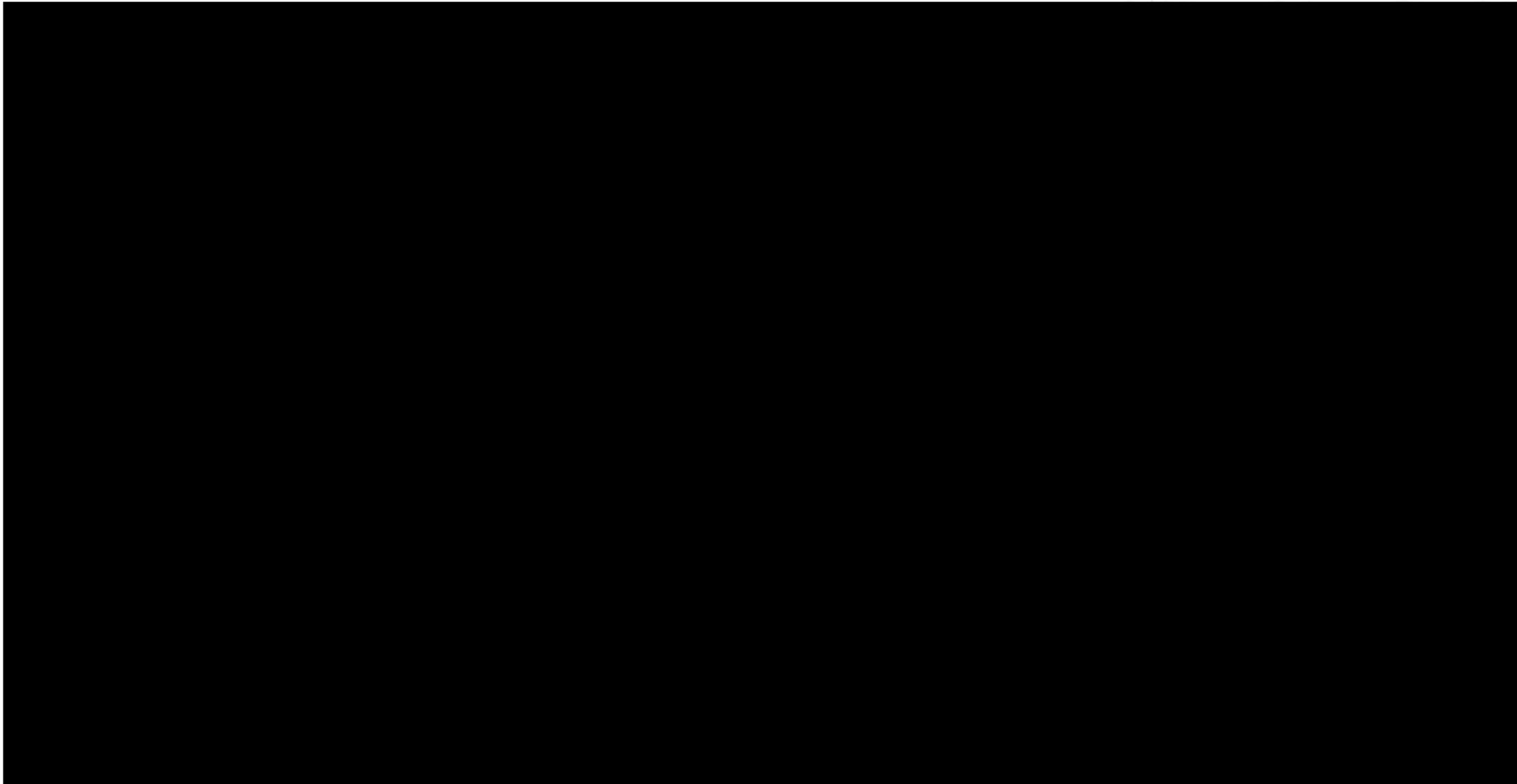
PRGF



POTENTIAL BENEFITS OF PRGF

- FEMALE ORGASMIC DYSFUNCTION;
- GENITAL-URETHRAL SYNDROME OF MENOPAUSE;
- INCONTINENCE;
- URETHRAL SYNDROME, INTERSTICIONAL CYSTITIS;
- LICHEN SCLEROSIS AND ANOTHER GENITAL DERMATOSES (LICHEN PLANUS AND ETC.);
- “DRY VAGINA” SYNDROME;
- DYSPAREUNIA – VULVODYNIA – VAGINISM;
- CHRONIC PELVIC PAIN;
- POST TRAUMATIC OR OPERATIVE SCARS IN PERINEUM, VAGINA, LABIA;
- POSTOPERATIVE REHABILITATION;
- VAGINAL PROLAPSE;
- HPV VULVA, VAGINA, CERVIX;
- LIPOFILLING.....





DR. EVGENII LESHUNOV

intimate surgery

 www.intimateplasty.ru

 leshunov@bk.ru

 [dr_leshunov](https://www.instagram.com/dr_leshunov)

SCIENTIFIC BACKGROUND

- 5000 search results on Pubmed lab and animal experiments 1957-1998
- Dental publications 1998 Marx;
- Wound healing 2001 Powell;
- Cardiac publications 2005 Englert;
- Orthopedic publication 2006 Anitua;
- Aesthetic publications 2007 Gondinet;



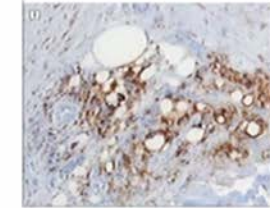
SCIENTIFIC BACKGROUND

ORIGINAL ARTICLE

ONLINE FIRST

Induction of Dermal Collagenesis, Angiogenesis, and Adipogenesis in Human Skin by Injection of Platelet-Rich Fibrin Matrix

Anthony P. Sclafani, MD; Steven A. McCormick, MD



MAY 2010

466

VOLUME 9 • ISSUE 5

COPYRIGHT © 2010

ORIGINAL ARTICLES

JOURNAL OF DRUGS IN DERMATOLOGY

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

Alessio Redaelli MD,¹ Domenico Romano MD,² Antonio Marcianò MD³

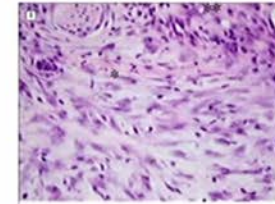


FIGURE 6. Dermoscope picture before the treatment of a cheek



FIGURE 7. Dermoscope picture after the treatment of a cheek



FIGURE 8. Volume increase of nasolabial folds in patient 4. Pre



FIGURE 9. Volume increase of nasolabial folds in patient 4. Post



FIGURE 10. Treatment of scars. Pre



FIGURE 11. Treatment of scars. Post



DR. EVGENII LESHUNOV
intimate surgery

www.intimateplasty.ru

leshunov@bk.ru

[dr_leshunov](https://www.instagram.com/dr_leshunov)

PLATELETS: ARE MORE REALLY BETTER?

PRP with near physiological concentration show better results for wound healing than too highly concentrated PRP:

“Those methods with lower concentrations of platelets – 1 to 3 times baseline – showed more robust healing rates than those with higher concentrations of 3 to 8 times baseline.”

Rappl LM et al. Effect of platelet-rich plasma gel in a physiologically relevant platelet concentration on wounds in persons with spinal cord injury. *Int Wound J* 2011; 8:18.7–195.



PLATELETS: ARE MORE REALLY BETTER?

Animal studies show negative effect of too high platelet concentration:

“The use of highly concentrated platelet preparations appeared to have an inhibitory influence on osteoblasts activity. Possible reasons could be unwanted inhibitory and cytotoxic effects of growth factors at such high concentrations.”

Weibrich G. et al., Effect of platelet concentration in platelet-rich plasma on peri-implant bone regeneration. *Bone* 2004; 34:665-671.



PLATELETS: ARE MORE REALLY BETTER?

“PRP might exert positive effects on intestinal anastomotic healing in a dose-dependent manner up to a certain level, but adverse effects occur when it is highly concentrated.”

Yamaguchi R. al., Effects of Platelet-Rich Plasma on Intestinal Anastomotic Healing in Rats: PRP Concentration is a Key Factor. J Surg Res. 2012 Apr;173(2):258-66.



DR. EVGENII LESHUNOV

intimate_surgery

 www.intimateplasty.ru

 leshunov@bk.ru

 [dr_leshunov](https://www.instagram.com/dr_leshunov)

PLATELETS: ARE MORE REALLY BETTER?

In vitro studies reach the same conclusion:

“Optimal results were observed at a platelet concentration of 1.7 X”

“Increased concentrations resulted in a reduction in proliferation and a suboptimal effect on osteoblasts function.”

Graziani F. et al., The in vitro effect of different PRP concentrations on osteoblasts and fibroblasts. Clin. Oral. Impl. Res. 17, 2006; 212–219.



DR. EVGENII LESHHUNOV

intimate surgery

 www.intimateplasty.ru

 leshunov@bk.ru

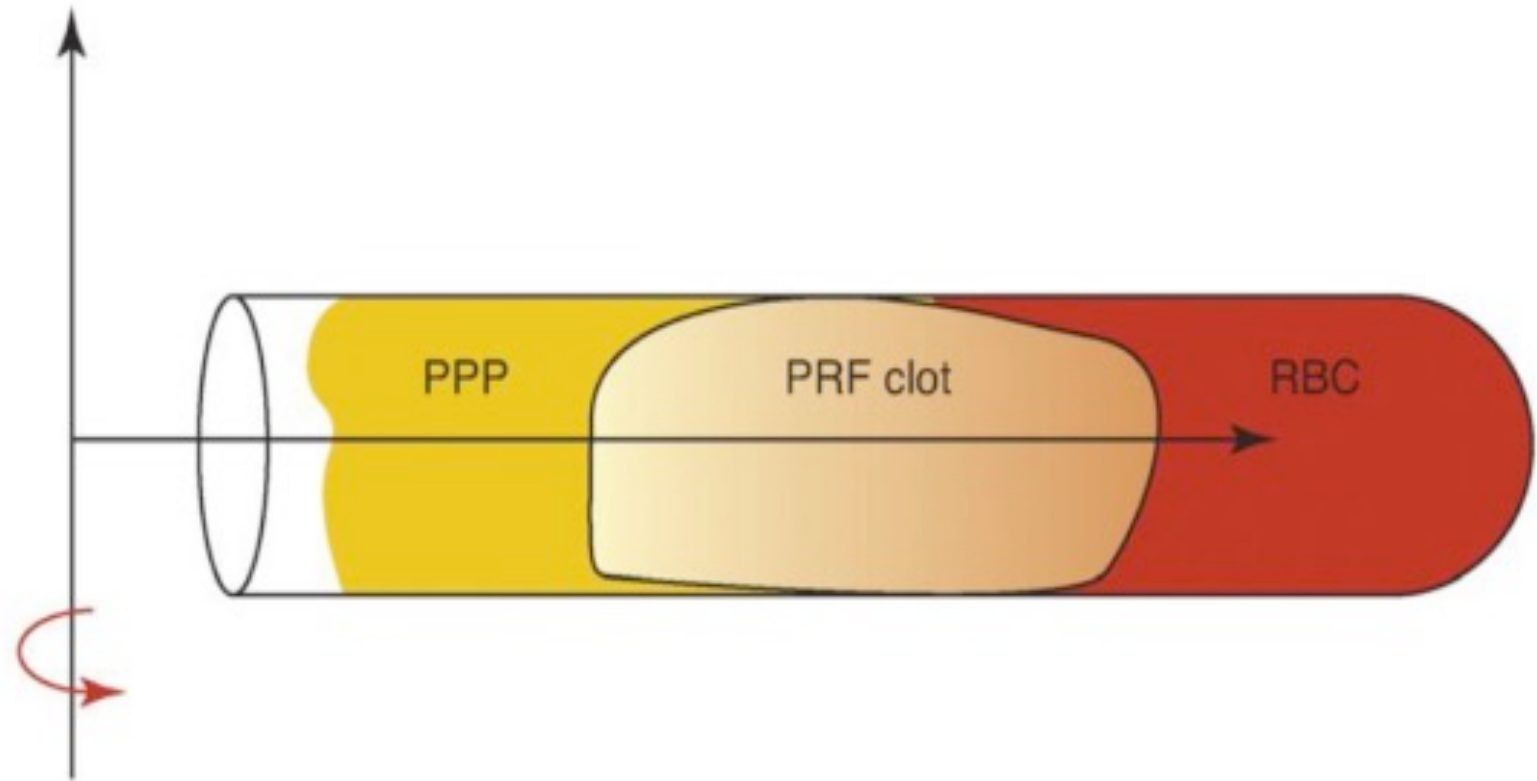
 [dr_leshunov](https://www.instagram.com/dr_leshunov)

SIDE-EFFECTS OF PRP TREATMENT

- **Minimal:** Expect minimal swelling, bruising and redness for 12-24 hours.
- **Modest:** Some patients may feel faint. A bruise at the venapuncture site may be visible for 2-3 days.
- **Severe:** A low morbidity procedure. In rare cases, skin cellulitis may occur which can be treated with antibiotics and cold compresses. Occasionally hospitalization is needed in these cases. Secondary skin infection is a rare complication.
- Intra-vascular injection (thrombus)
- Nerve trauma (very rare)
- Secondary infection (very rare)
- Almost no down time. No need for hospitalization. Anaphylaxis does not occur



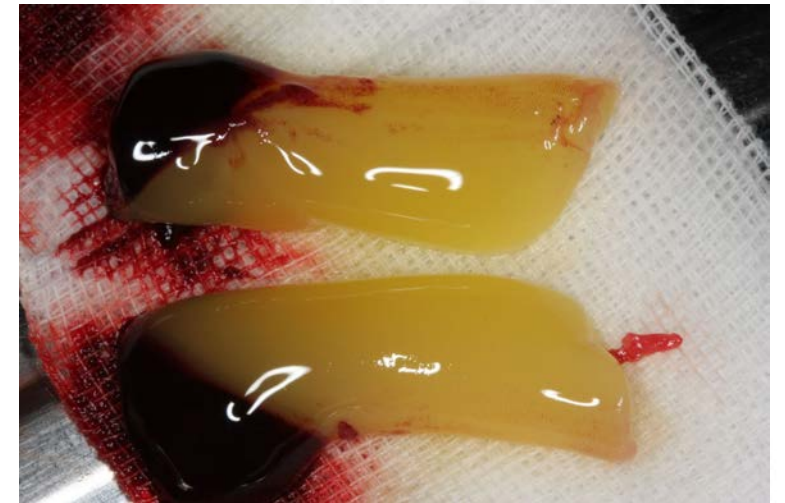
PRF



Platelet rich fibrin matrix (PRFM) for SUI

For SUI, a pediatric cystoscope and transurethral injection needle were used to inject PRFM into the urethral submucosa, distal to the bladder neck.

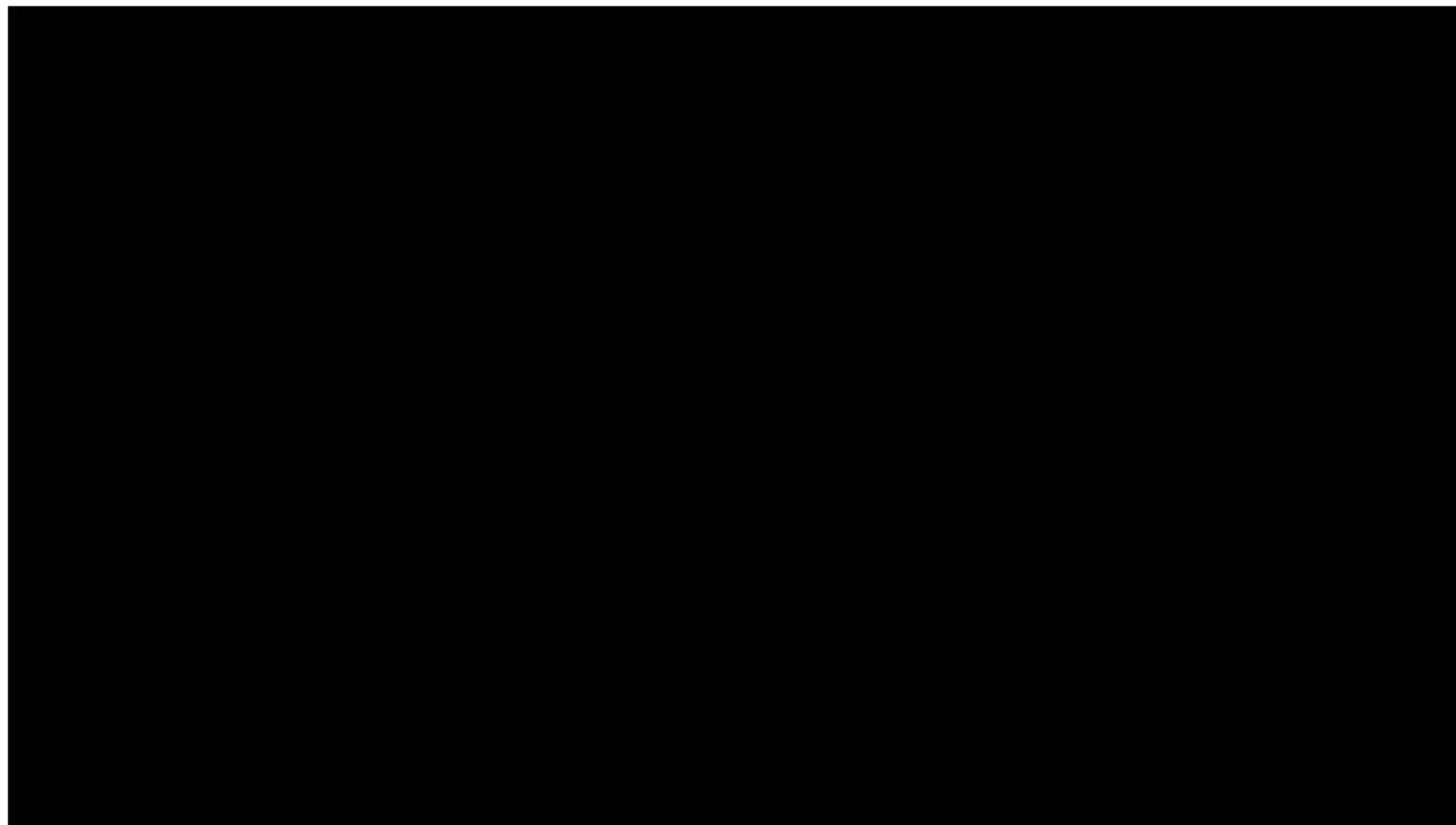
Two separate collection tubes were filled with 9mL of whole blood;
The samples were centrifuged at 6,000 RPMS for six minutes;
Ten percent calcium chloride solution was then added to the PRP in a 1:10 ratio, converting fibrinogen to fibrin.
This process would generally yield approximately 5.5 mL of injectable PRFM;



Theoretically, injection of autologous PRFM could provide both urethral bulking and potential regenerative effects to a damaged female urethra.



PLASMAGEL



DR. EVGENII LESHUNOV
intimate surgery

 www.intimateplasty.ru

 leshunov@bk.ru

 [dr_leshunov](https://www.instagram.com/dr_leshunov)

ADVANTAGES

Its medium/high viscosity around 220000 cP** (220 Pa · s)

With a G' value of above 1300 Pa**,

The medium extrusion force of about 12 N

With a single procedure, 3 ml of Plasma Gel are ready to infiltrate.

Due to its autologous nature Plasma Gel integrates in the tissue more naturally.

Gel stimulates the autologous production of hyaluronic acid and collagen for a more natural volume enhancing effect.

Adaptable biomechanical properties depending on the needs of the patient and the doctor's criteria.



DR. EVGENII LESHHUNOV

intimate surgery

www.intimateplasty.ru

leshunov@bk.ru

[dr_leshunov](https://www.instagram.com/dr_leshunov)



WWW.INTIMATEPLASTY.RU



LESHUNOV@BK.RU



[DR_LESHUNOV](https://www.instagram.com/DR_LESHUNOV)

