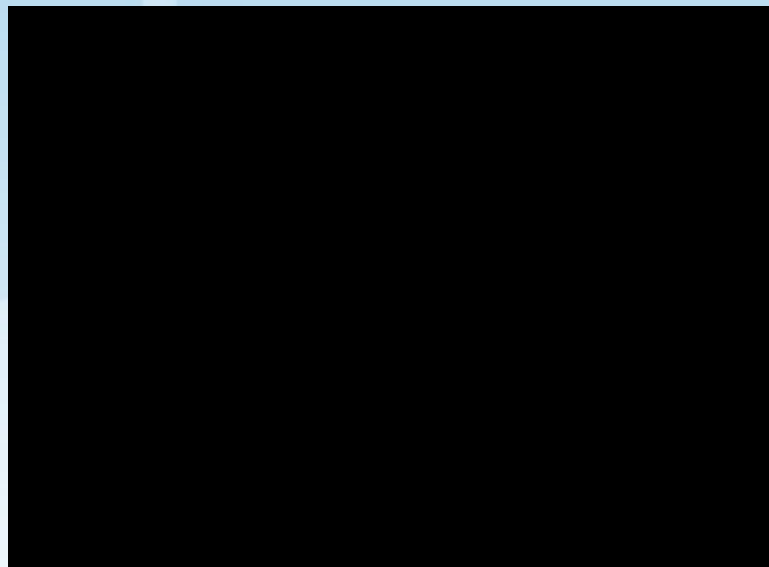


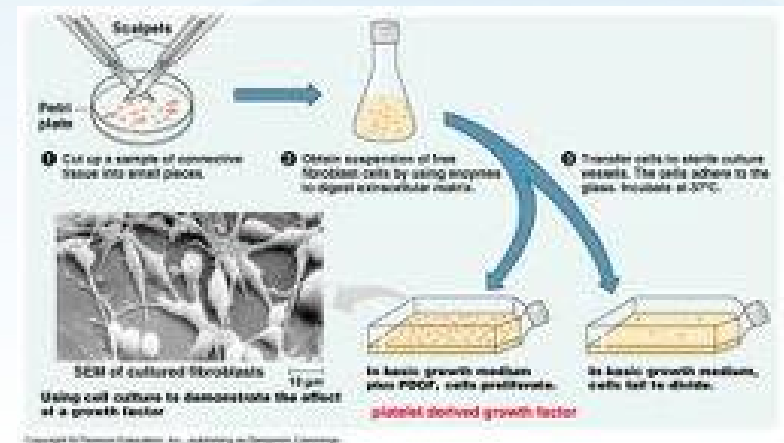


Platelet lysate injection combined with infrared treatment in facial skin rejuvenation

N. Zerbinati



- Per una corretta risposta clinica nell'applicazione topica, si richiede l'aumento delle concentrazione piastrinica di 5 -10 volte rispetto al normale.
- Victor Garcia dell'Università Autonoma di Barcellona in Spagna ha proposto, per la prima volta nel 2003, l'uso intradermico dei fattori di crescita piastrinici (biostimolazione cutanea).
- Ovviamente quanto era stato studiato per l'applicazione topica doveva essere rivisto alla luce dell'introduzione per via iniettiva nel derma.





REVIEW

Platelet-Rich Plasma: Support for Its Use in Wound Healing

Kathleen M. Lacci, MMSc, PA-C, and Alan Dardik, MD, PhD*

Department of Surgery, Yale University School of Medicine, New Haven, Connecticut, and the VA Connecticut Healthcare System, West Haven, Connecticut

Previous topical growth factor studies have shown that recombinant human platelet-derived growth factor-BB isomer (rhPDGF-BB†) is an efficacious treatment of chronic diabetic foot ulceration. A newer treatment, autologous platelet-rich plasma (PRP), represents a greater similarity to the natural healing process as a composite of multiple growth factors, is safe due to its autologous nature, and is produced as needed from patient blood. A review of the literature shows few studies performed with scientific rigor, although the safety of PRP appears to be validated. As the use of PRP increases, additional studies may establish PRP as an efficacious treatment modality and guide future treatment of chronic diabetic foot ulceration.





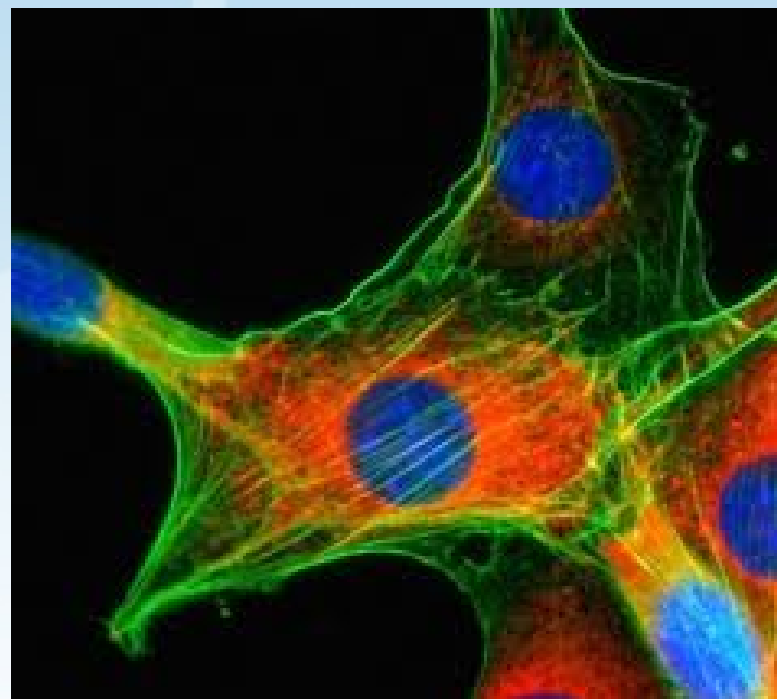




Application of Platelet-Rich Plasma in Plastic Surgery: Clinical and *In Vitro* Evaluation

Valerio Cervelli, M.D.,¹ Pietro Gentile, M.D.,¹ Maria Giovanna Sciolì, B.D.,² Monica Grimaldi, M.D.,¹
Carlo Umberto Casciani, M.D.,³ Luigi Giusto Spagnoli, M.D.,² and Augusto Orlandi, M.D.²

The clinical use of platelet-rich plasma (PRP) for a wide variety of application has been reportedly employed most prevalently in problematic wounds, maxillofacial and hemi-facial atrophy, Romberg Syndrome, and diabetic foot ulcers. To our knowledge, PRP has never been described in the enhancement of fat grafting during tissue-engineering application *in vivo*. The authors describe the preparation of PRP and its use in a series of 43 patients who underwent plastic, reconstructive, and maxillofacial surgery for chronic lower extremity ulcers ($n = 18$) and multiple facial applications ($n = 25$). PRP mixed with fat grafting was used in 76% patients affected by multiple facial diseases and in 88.9% patients affected by lower extremity ulcers. PRP injection alone was used in the remaining patients. The authors observed that after a 7.1-week and 9.7-week (average) course of twice-daily wound treatment with PRP suspended on a collagen base, 61.1% and 88.9% of chronic lower extremity ulcers underwent to 100% reepithelization compared with 40% and 60% of controls ($n = 10$) treated with hyaluronic acid and collagen medication. In patients treated with reconstructing three-dimensional projection of face by fat grafting and PRP, we observed a 70% maintenance of contour restoring and three-dimensional volume after 1 year compared to only 31% of controls ($n = 10$) treated with fat grafting alone. *In vitro*, PRP induced a significant increase in the number of adipose-tissue-derived stem cells compared to control cultures. These results documented that PRP accelerates chronic skin ulcer reepithelization and improves maintenance and function of fat graft in patients who underwent plastic reconstructive surgery, possibly by stimulating adipose-tissue-derived stem cell proliferation.



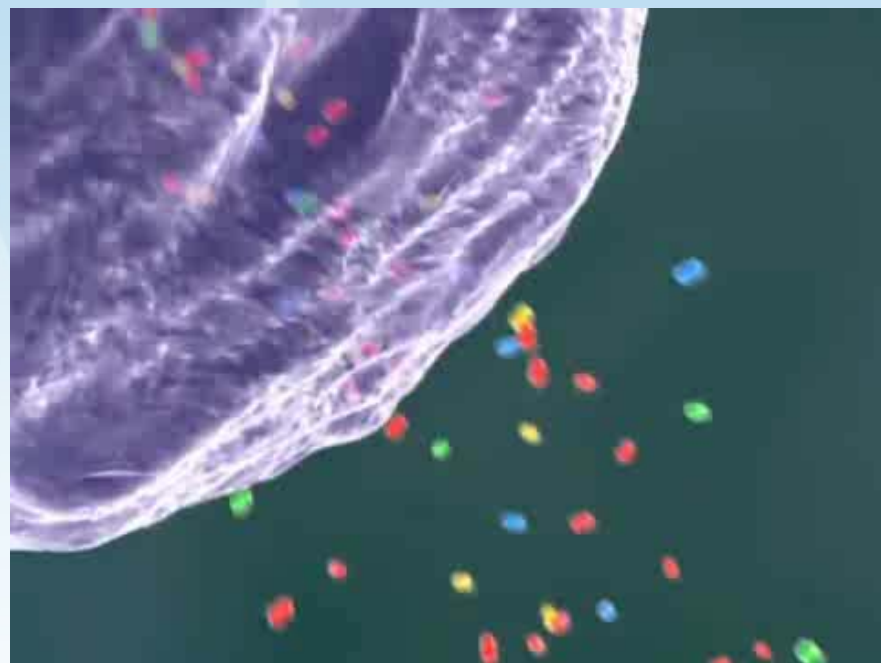


- Sull'effetto di attivazione biologica dei fibroblasti, un lavoro pubblicato su J.Biol Chem nel luglio del 2008 ci dice che:
- - Già con solo 5 ng/ml si ha una forte induzione alla proliferazione fibroblastica.
- E un lavoro pubblicato su Blood nell'agosto del 1984 ci dice che:
- - La concentrazione di PDGF, in un siero umano sano, dopo la degranulazione piastrinica, è di circa 20 ng/ml e che l'emivita del PDGF è molto breve, circa 2 minuti.





- Il PDGF agisce stimolando i recettori della tirosin-kinasi. Questo induce l'idrolisi dei polifosfoinositoli. Si libera l'1-3-difosfoinositolo che attiva un recettore del reticolo endoplasmatico. Si ha ingresso di ioni calcio che attivano la protein-kinasi C. Questo porta all'attivazione metabolica dei fibroblasti



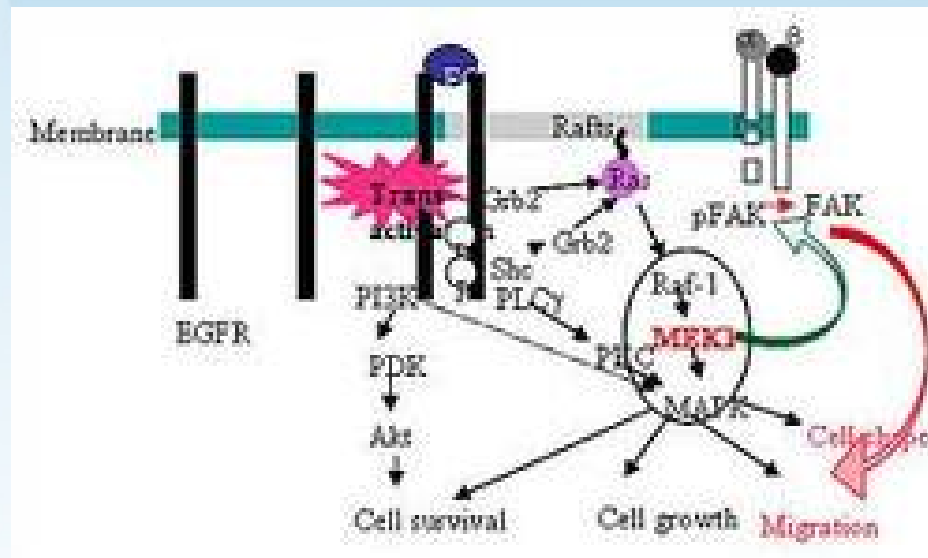


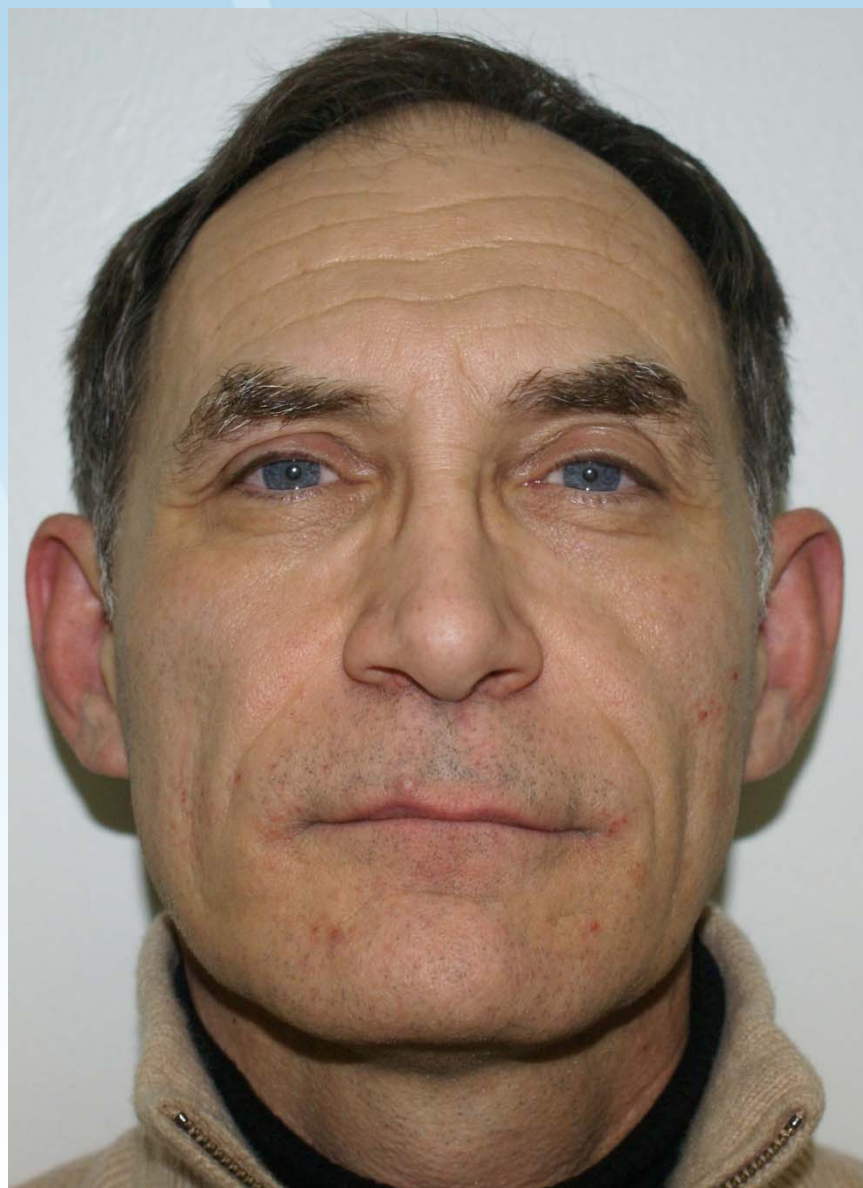
- Di particolare interesse è il lavoro del 2008 pubblicato su Communicative & Integrative Biology dove si legge che:
- - dopo 6-8 ore da una stimolazione fibroblastica con PDGF si ha un reclutamento di recettori della tirosin-chinasi sulla superficie cellulare e una seconda stimolazione con concentrazione di PDGF maggiore induce un risposta più importante.
- Quindi, trascorse 8 ore da una prima biostimolazione si ha un aumento di recettori della tirosin-chinasi. Quindi, una seconda stimolazione determina una maggiore risposta delle cellule connettivali.





- Il primo lavoro clinico e di ricerca fondamentale di biostimolazione cutanea con PDGF, fatto dal Prof. J. Victor Garcia e dal Dr. J. Antonio González-Nicolás ci dà delle importanti indicazioni istologiche.
- - Dopo 7 giorni dalla biostimolazione con PDGF abbiamo il massimo dell'angiogenesi.
- - Dopo un mese abbiamo il massimo di fibroblasti attivati.
- - Dopo due mesi abbiamo una neocollagenogenesi di collagene reticolare (III tipo) con ringiovanimento biologico della cute.





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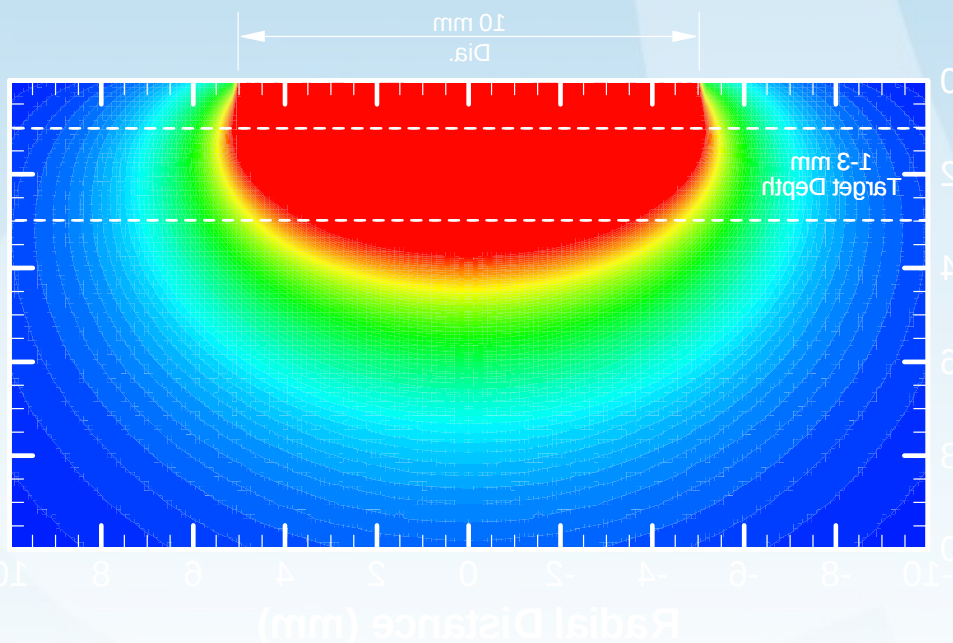
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The Efficacy of Autologous Platelet Rich Plasma Combined with Ablative Carbon Dioxide Fractional Resurfacing for Acne Scars: A Simultaneous Split-Face Trial

JIN WOONG LEE, MD,* BEOM JOON KIM, MD, PhD,* MYEUNG NAM KIM, MD, PhD,* AND SEOG KYUN MUN, MD, PhD[†]

BACKGROUND Ablative carbon dioxide (CO₂) fractional resurfacing is a promising therapeutic intervention for the treatment of acne scars, although this technique is associated with prolonged surgical site erythema and edema, which may affect the daily lives of patients. Autologous platelet-rich plasma (PRP) is known to enhance wound healing and has applications in many areas of medicine.

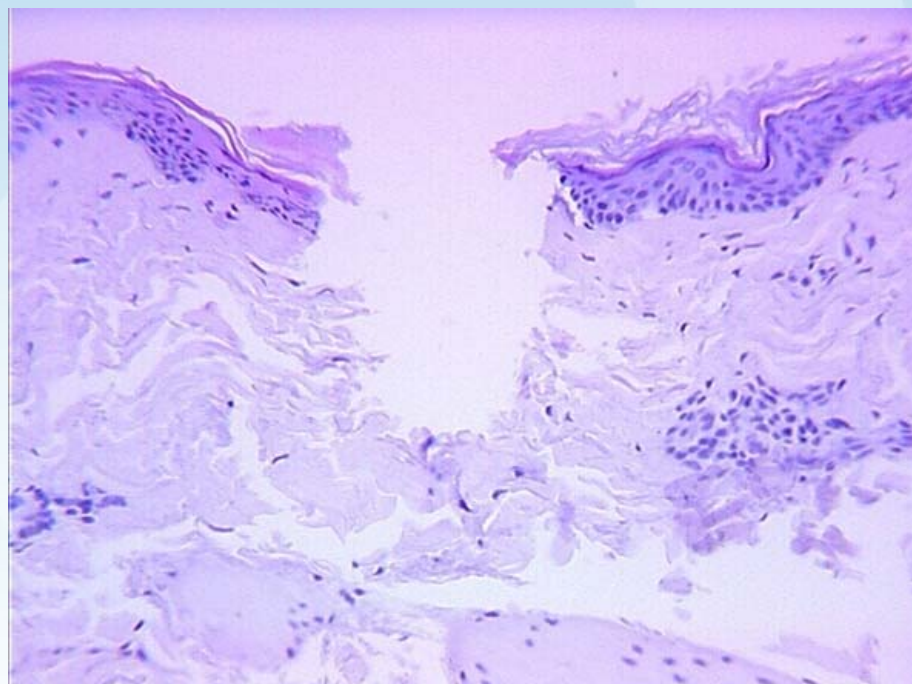
OBJECTIVES To evaluate the synergistic effects of autologous PRP with CO₂ fractional resurfacing for acne scars.

MATERIALS AND METHODS A split-face trial was conducted in 14 Korean participants with acne scars. All participants received one session of ablative CO₂ fractional resurfacing. Immediately after resurfacing, facial nerves were randomly assigned to receive treatment with autologous PRP injections on one side (experimental side) and normal saline injections on the other side (control side). The participants were monitored for degree of recovery and resurfacing-associated adverse events, including prolonged erythema, edema, and other effects on days 0, 2, 4, 6, 8, 15, and 30. The intensity of erythema was objectively measured using a chromometer at the same time intervals. After one additional treatment session using the same protocol, two independent dermatologists evaluated clinical improvement using a quartile grading scale.

RESULTS All participants completed the study. Erythema on the experimental side improved faster than on the control side and was significantly less at day 4 ($p = .01$). This difference was confirmed using a chromometer ($p = .049$). Total duration of erythema was an average of 10.4 ± 2.7 days on the control side and 8.6 ± 2.0 days on the experimental side ($p = .047$). Edema also improved faster on the experimental side than on the control side. The total duration of edema was an average of 7.1 ± 1.5 days on the control side and 6.1 ± 1.1 days on the experimental side ($p = .04$). Participants were also assessed for duration of post-treatment crusting, with a mean of 6.8 ± 1.0 days on the control side and 5.9 ± 1.1 days on the experimental side ($p = .04$). No other adverse effects were observed in any participant. Four months after the final treatment, overall degree of clinical improvement was significantly better on the experimental side (2.7 ± 0.7) than on the control side (2.3 ± 0.5) ($p = .03$).

CONCLUSIONS Treatment with PRP after ablative CO₂ fractional resurfacing enhances recovery of laser-damaged skin and synergistically improves the clinical appearance of acne scarring.

The authors have indicated no significant interest with commercial supporters.



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Fractional CO₂ laser: a novel therapeutic device upon photobiomodulation of tissue remodeling and cytokine pathway of tissue repair

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 M. TROIANO & T. LOTTI
 Department of Dermatological Sciences, Florence University, Florence, Italy

ABSTRACT: Minimally ablative fractional laser devices have gained acceptance as a preferred method for skin resurfacing. Notable improvements in facial wrinkles, photodamage, acne scarring, and skin laxity have been reported. The aim of the present work was to compare how different CO₂ laser fluences, by modulating the secretory pathway of cytokines, are able to influence the wound-healing process, and how these fluences are associated with different clinical results. Eighteen patients, all with photodamaged skin, were treated using a fractional CO₂ laser (ClearOne DDF, Deka M.E.L.A., Florence, Italy) with varying laser fluences (2.67 - 4.15 J/cm²). An immunocytochemical study was performed at defined end points in order to obtain information about specific cytokines of the microenvironment before and after treatment. The secretory pathway of cytokines changed depending on the re-epithelialization and the different laser fluences. Different but significant improvements in wrinkles, skin texture, and hyperpigmentation were definitely obtained when using 2.67, 2.77, and 4.15 J/cm², indicating fractional CO₂ laser as a valuable tool in photorejuvenation with good clinical results, rapid downtime, and an excellent safety profile.

KEYWORDS: cytokines, fractional CO₂ laser, immunohistochemistry, tissue repair





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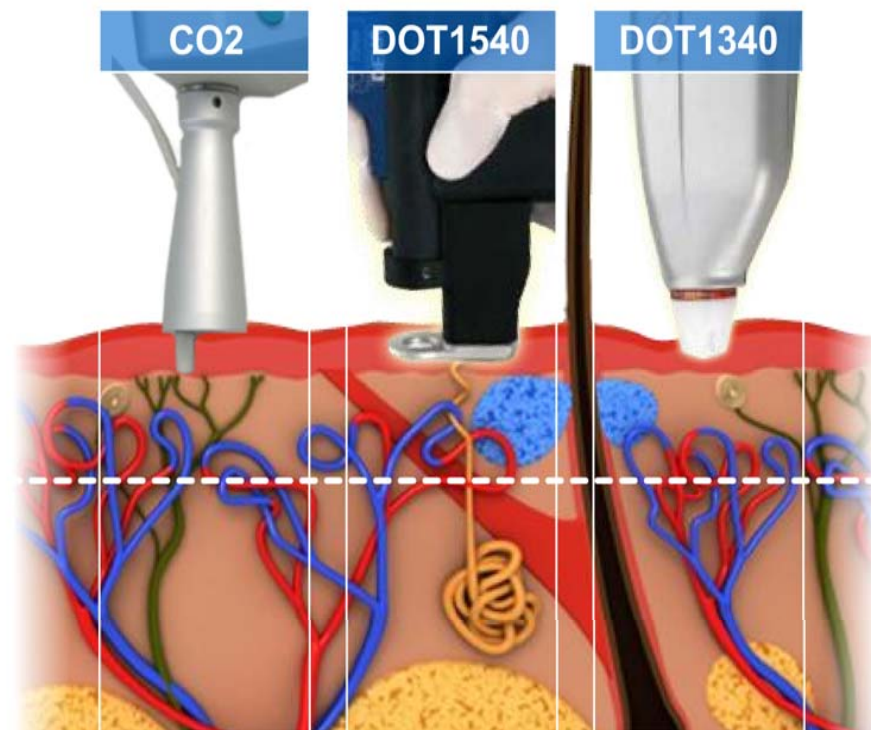
Platelet-Derived Factors Involved in Tissue Repair—From Signal to Function

Laura Mazzucco, Piero Borzini¹, and Rajalakshmi Gope

Topical treatment with platelet derivatives has increasingly been described as being capable of accelerating wound healing and to aid in tissue repair. In vitro data indicate that platelets and their contents have chemotactic, migration-inducing, and mitogenic activities, and a major role of these factors in tissue repair has thus been advocated. However, how platelet-derived factors orchestrate tissue repair at the cellular level remains quite obscure even to those individuals who prescribe platelet derivatives as topical wound healing therapy. The primary objective of this review was to provide the

practitioner, inexpert in biochemistry, an overview about signal transduction within cells in response to platelet-derived factors. Concepts from the literature were selected to illustrate how a relatively few units of information can be put together in specific order to allow for complex biologic functions to be elicited. To illustrate how functional complexity emerges from a narrow set of messengers, an analogy between signal transduction and language, or contrapunctual music, has been drawn.

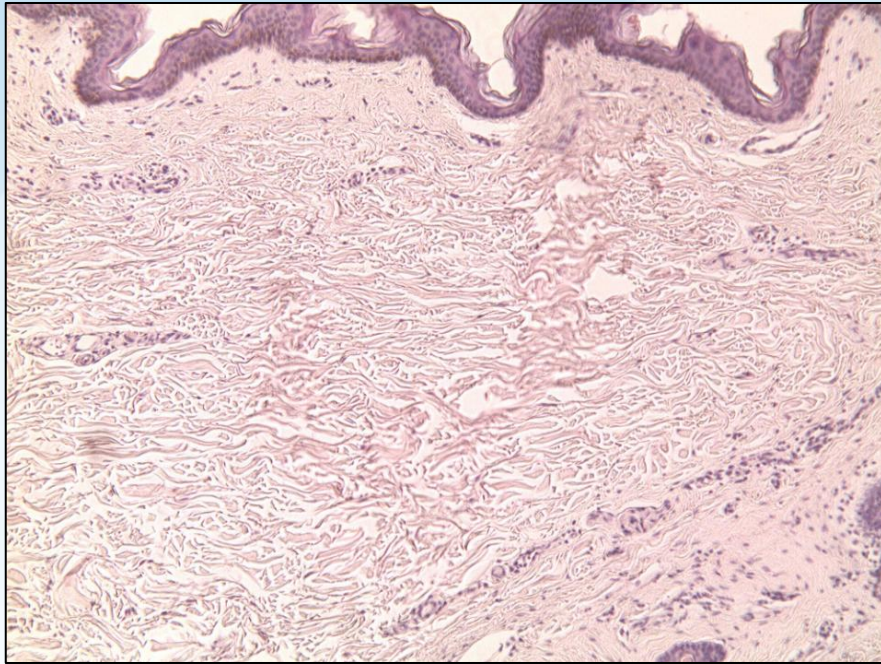
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ORIGINAL SCIENTIFIC PRESENTATION

Vaginal Fractional CO₂ Laser: A Minimally Invasive Option for Vaginal Rejuvenation

Adrian Gaspar, MD; Gabriel Addamo, MD; Hugo Brandi, PhD



Introduction: To provide evidence that the use of a fractional CO₂ laser in combination with platelet-rich plasma (PRP) locally in the vagina mucous with minimal to moderate atrophy and pelvic floor exercise with perineometer would have effects of greater impact in the 3 layers of vaginal walls, including an important decrease of discomfort during sex.

Materials and Methods: The study was composed of 2 groups: a study group and a control group. The main consultation purposes were vaginal dryness, dyspareunia, and local irritation. The study group underwent PRP, CO₂ laser, and pelvic exercise, whereas only PRP and pelvic exercise were applied to the control group. We used a special vaginal scanner, which was able to fractionize the laser and could be inserted in the vagina. Both groups were evaluated with a sexual questionnaire and vaginal biopsies.

Results: An important improvement of vaginal mucous histology and a decrease of discomfort during sex were observed in most patients in the study group compared with the control group.

Conclusion: Through the local use of vaginal fractional CO₂ laser, PRP, and pelvic floor exercises in women with symptoms of vaginal atrophy, beneficial effects are exerted in the 3 layers of the vagina rather than only the epithelium, as achieved with estrogens. We also observed a significant decrease of discomfort during sex. More data will be needed to better address the use of this new procedure.

causing painful or uncomfortable sexual intercourse.¹ A wide range of patients (15% to 45%) will show signs or symptoms associated with atrophic vulvovaginitis such as burning, pruritus, vaginal bleeding, or leucorrhoea, and approximately 25% of these patients will seek medical help.² While the use of estrogen in the treatment of atrophic vulvovaginitis is the treatment of choice,³ we consider that the search for a nonhormonal option for this condition represents an important alternative to the known limitations of hormone replacement therapy.

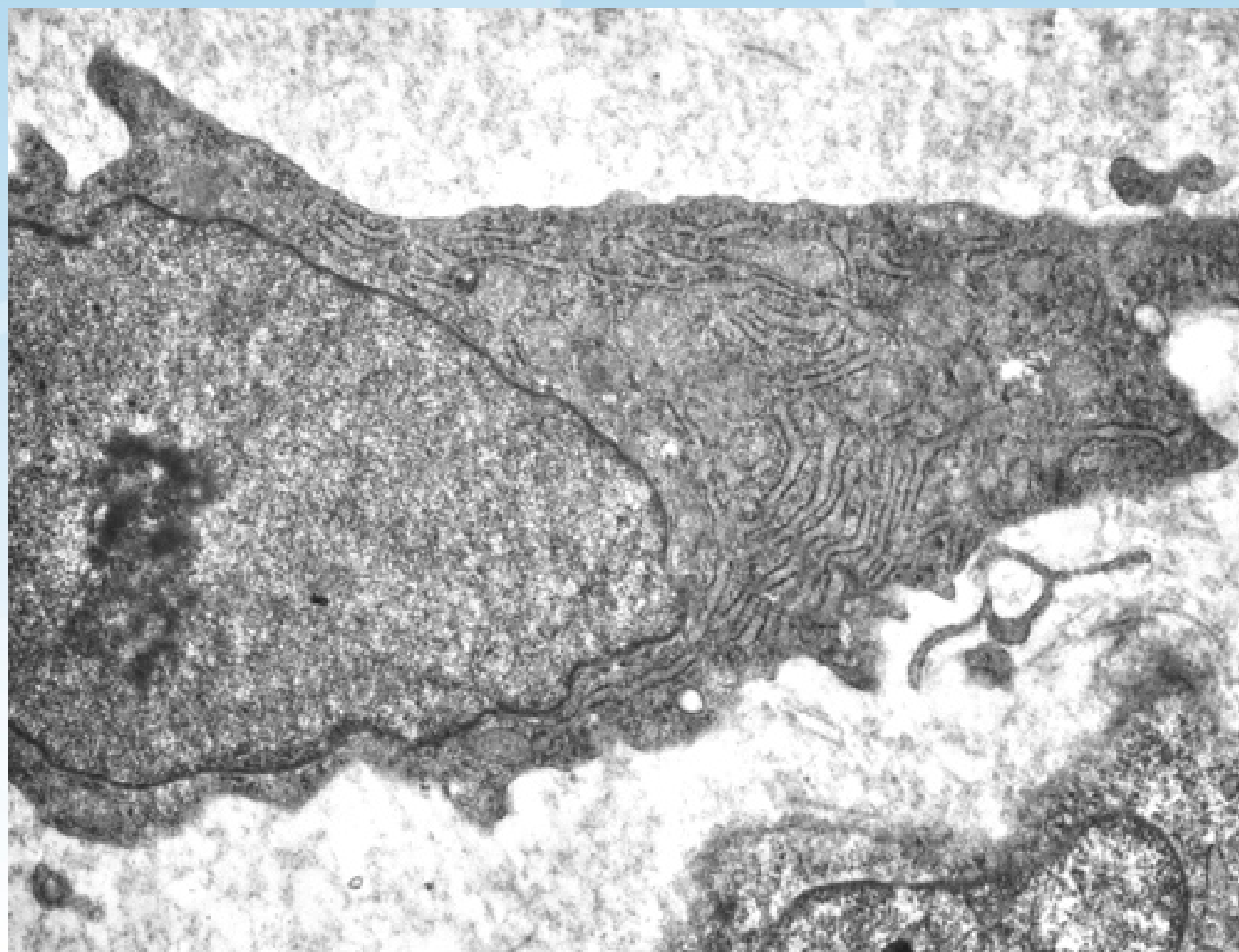
Objective

Our objective was to provide evidence that the use of a fractional CO₂ laser in combination with the local application of platelet-rich plasma (PRP) in the hypotrophic or atrophic vaginal mucosa, accompanied by pelvic floor exercise with a perineometer, would have beneficial effects of great impact in the layers of the vagina, including the epithelium, lamina propria, and muscularis. We noticed a marked decrease of discomfort during sex, unlike what happens with the use of local estrogen, which produces effects only on the epithelium of the mucous layer.

Materials and Methods

Between December 2009 and December 2010, a





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Biochemical and dynamic studies of collagen from human normal skin and keloid tissue.

- Indian J Biochem Biophys. 1999 Jun;36(3):158-64.
- **Biochemical and dynamic studies of collagen from human normal skin and keloid tissue.**
- [Prathiba V](#), [Suryanarayanan M](#).
- Central Leather Research Institute, Adyar, Chennai, India.
- **Abstract**
- Keloids are exuberant scars, in which collagen, fibronectin and glycosaminoglycans are overdeposited. Biochemical analysis of the collagen isolated from normal skin and keloid tissue by pepsin treatment, indicated an increase in the type III and GAG content. Viscosity measurements of collagen from normal skin and keloid tissue were used in the present study to establish the interaction between collagen and GAG. Physico-chemical properties such as intrinsic viscosity, reduced viscosity and hydrated volume were computed from viscosity measurements. These measurements were also used to determine the denaturation temperature of collagen which was further confirmed by DSC measurements. Chondroitinase has been used in this study to probe the influence of GAG on the physico-chemical characteristic of keloid collagen.



Grazie per l'attenzione



• Before



• After