

# SOFT SURGERY

THE REVOLUTIONARY SYSTEM THAT IS CHANGING AESTHETIC MEDICINE!

**PLEXR**  
**VIBRANCE**  
**O.F.F.**

- *Clinical Studies*
- *Soft Surgery System*
- *Articles*
- *Trainings*

# What is Plexr?

Both in Physics and Chemistry, plasma is defined as a state of matter without a defined volume and shape (like gases) and its electrically charged particles (ions and electrons) are free and not molecularly bound.

There are at least three definitions of plasma:

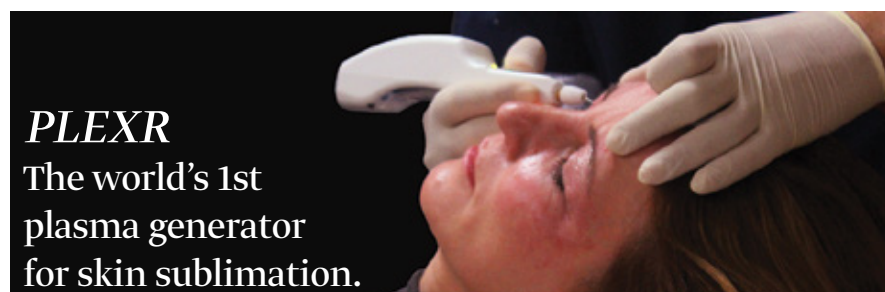
- Plasma is an ionised gas at a temperature of about 109 Kelvin degrees.
- Plasma is a partially ionised gas, that is a gas composed mainly (but not only) by ions and electrons. Partially ionised plasma can have a significantly lower temperature than the fully ionised plasma, i.e. 5000 Celsius degrees. Electrons in partially ionised plasma are much “hotter” and not in thermal balance with the rest of the gas particles. The ionisation degree depends on the temperature (and vice versa), according to the Saha equation.
- Plasma is the state of matter composed by free ions and electrons.

One definition considers plasma as a form of gas while another as the fourth state of matter (the other three states being solid, liquid and gas). Plasma is different from a non-ionised gas. It is formed when a gas becomes excessively hot and its electrons free themselves from its atom. Therefore, plasma is composed by free electrons and ions (atoms or particles which have lost or gained one or more electrons), and it is a super-ionised state of matter. Plasma can be the result of a gas which was given an amount of energy sufficient to separate the atoms from its electrons (ionisation), producing a cloud of ions and electrons.

Unlike gases, plasma is a good conductor of electricity. Due to the electrically charged particles in its composition, plasma behaves differently from a gas, for instance when electromagnetic fields are applied. Therefore, its volume and shape are heavily determined by the electrical and magnetic fields applied to it (from which plasma is usually created). Plasma temperature is excessively high, but at the same time, its pressure is extremely low, as it is very rarefied. For this reason, the plasma created in a laboratory, when in contact with another body, cools immediately, without significantly heating the other body. Logically, the same cannot be said about a flash of lightning falling onto the ground.

Plasma has thermodynamic properties that are different from those of gases. For instance, the temperature through which plasma particles acquire a specific velocity distribution depends on the ionisation degree (therefore, on the tension applied to the electrical field which causes the ionisation, or also on the tension of the radiation, if that is the cause of the ionisation). Plasma production through the application of an electrical field presents various technological opportunities and processes which, until today, were performed through the use of non-ionised gases at extremely high temperatures. Now those processes can be performed through the use of plasma at lower temperatures. The financial benefit is evident, as there is a smaller amount of energy needed. Moreover, processes which were infeasible through the use of gases are now technically feasible through the use of plasma.

PLEXR ionises the existing gases in the GAP atmosphere (that is the space between the tip of the instrument, called “sprayer”, and the tissue undergoing the treatment), producing plasma. The quantity of plasma produced depends on the GAP variation, which is the aerial space of ionisation or on the presence of particular gases (argon amongst others), in that same space.



## WHAT IS PLASMA?

Plasma is often called the “Fourth State of Matter,” the other three being solid, liquid and gas. A plasma is a distinct state of matter containing a significant number of electrically charged particles, a number sufficient to affect its electrical properties and behavior. In addition to being important in many aspects of our daily lives, plasmas are estimated to constitute more than 99 percent of the visible universe.

In an ordinary gas each atom contains an equal number of positive and negative charges; the positive charges in the nucleus are surrounded by an equal number of negatively charged electrons, and each atom is electrically “neutral.” A gas becomes a plasma when the addition of heat or other energy causes a significant number of atoms to release some or all of their electrons. The remaining parts of those atoms are left with a positive charge, and the detached negative electrons are free to move about. Those atoms and the resulting electrically charged gas are said to be “ionized.” When enough atoms are ionized to significantly affect the electrical characteristics of the gas, it is a plasma.

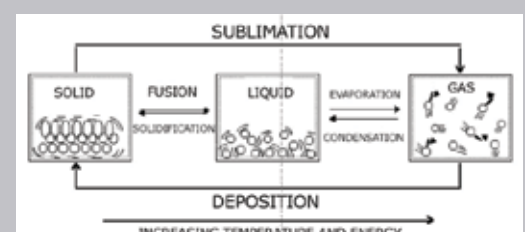
In many cases interactions between the charged particles and the neutral particles are important in determining the behavior and usefulness of the plasma. The type of atoms in a plasma, the ratio of ionized to neutral particles and the particle energies all result in a broad spectrum of plasma types, characteristics and behaviors. These unique behaviors cause plasmas to be useful in a large and growing number of applications important to our lives and to the world around us.

## WHAT IS SUBLIMATION?

Sublimation is the transition of a substance directly from the solid to the gas phase without passing through the intermediate liquid phase.

Sublimation is an endothermic phase transition that occurs at temperatures and pressures below a substance's triple point in its phase diagram.

The reverse process of sublimation is desublimation or deposition, in which a substance passes directly from a gas to a solid phase. Sublimation has also been used as a generic term to describe phase changes between solid and gas that avoid the liquid state without specifying the direction of the transition.





# What is Vibrance?

Vibrance is a device used for Needle Shaping, the autologous volumetric reconstruction. Vibrance produces the vibration. The device provides a programmed electrical current, mixed with a limited high-voltage galvanic current.

It is possible to mix those two currents with a third one, in order to provoke the opening of the membrane pores, with a frequency close to the one resulting from the regulation of programmed current, to create a pulse between the two frequencies.

These currents are mixed, enhanced by their synergistic action, with a tension that the patient does not perceive, with the exception of certain sensitive spots (i.e. labial mucosa and eyelids), where a twelve to fifteen centimetre acupuncture metal-handle needle is used in order to connect the skin's elastic fibres to the body of the needle. 0.18 x 0.20 small needles can also be used.

When hooked, the elastic fibres are slightly dehydrated by the electro-mediated saline subtraction and have to be delicately coiled, to obtain a sort of thread of autologous material, visible through the needle's movement.

The traction exerted by the needle has to increase the volume of fibres from other areas without tearing them. The insertion of needles is by bare hands, as it happens in acupuncture, while the Vibrance energy passes through the physician's bare hand (50-70 vibration).

Note: medical acupuncture is applied with bare hands, similarly to the Vibrance Needle Shaping technique, as illustrated above. This technique can also be applied while wearing gloves, and in this case the Vibrance energy passes through the physician's hands through a metallic ring, worn above the gloves, when touching the acupuncture needles. For this reason, the vibration is very low, around 15 or even lower. The donor areas, only slightly reduced, regain their initial volume during the course of the following twenty eight days, while the reconstructed area reaches its definitive volume in about seven days, and maintains it for long.

# What is O.F.F.?

O.F.F. is a new device which emits a flow of sinusoidal fractionated waves with a fixed frequency of 1230 kHz. These waves, depending on the setting and the handpiece used, permit the treatment of capillaries, telangiectasias, spider nevus and lipolysis in areas of the body and face with an excess of fat.

O.F.F. technique uses acupuncture needles inserted in the tissues, until they reach the adipose tissue, where the lipolysis with selective heat is induced.

## REFERENCES:

**"What is Plexr?" "What is Vibrance?" "What is O.F.F.?"**

Tsioumas G. Sotirios, 2015. Manual of Aesthetic Medicine and Non-Ablative Surgery. Entos.

**"What is Plasma?"**

Plasma Coalition, 1999-2000. What is Plasma?. Retrieved from <http://www.plasmacoalition.org/what.htm>.



# Non-Surgical Blepharoplasty

Many people are affected from excess skin on their eyelids, which gives them a tired and “aged” look. Patients often avoid blepharoplasty due to the fear of anaesthetic and possible complications encountered following traditional methods.

**Plexr solves this.**

Many people are affected from excess skin on their eyelids, which gives them a tired and “aged” look. Patients often avoid blepharoplasty due to the fear of anaesthetic and possible complications encountered following traditional methods. Plexr solves this.

From the most common “dog ears”, to asymmetry of the eyes, hypertrophic scars and cheloids, to lagophthalmos and irreversible sight damage, as recently reported in the national and international press. The radiofrequency of the radio scalpel finds a preferential pathway in the optical nerve to discharge the laser light (diffused, diffracted, reflected, conducted and absorbed) towards the electrode mass and is certainly less risky.

The non-ablative blepharoplasty does not use a scalpel or laser to remove the excess skin, thus avoids the risks inherent in the traditional procedure.

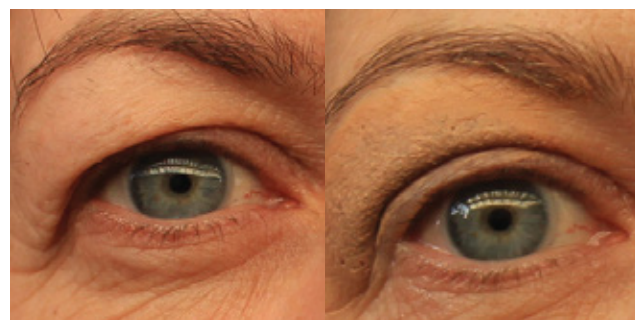
This procedure is defined as “dynamic” because it gives the unique opportunity to the doctor to ask the patient to open and close their eyes during the treatment, which can clearly show the skin’s folds that still need to be treated. This technique is also defined as “non-ablative” because it is performed without incision, without removing excess skin or fat, or without altering the orbicularis muscle in the eyelids.

The dynamic non-ablative blepharoplasty procedure is performed by removing the corneocytes through sublimation. It should be noted that sublimation means the direct passage from solid to gas or aeriform state.

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Pictures 1 & 2: Before and After 2 years.  
Pictures 3 & 4: Before and 10 minutes after the first session.

The procedure is performed through small dots made with the Plexr machine, each of which is 500 microns apart. This allows perfect plasticity of the eyelid movement as soon as the procedure is completed. The dots sublimate the superficial corneocytes without affecting the basal laminae or without causing bleeding and, most importantly, without causing any necrotic damage to the surrounding and underlying tissues. After many years of research, it is now possible to shorten the excess skin at the outer periocular level, using non-ablative blepharoplasty to reduce the expression wrinkles. We can finally confirm that the non-ablative dynamic blepharoplasty sublimation is definitely superior to the traditional surgery. This is not only because of the fantastic aesthetic and functional results, but also because of the elimination of discomfort, risks and costs.

Nowadays there is a high demand on the market from Asian patients who want to modify their eye line in order to gain a more “western” look through exposing the lacrimal caruncle. In order to obtain this result, patients are prepared to pay a lot of money for numeric surgeries, which can often cause complications. Optimal results can be obtained using the non-ablative Plexr procedure, avoiding all the risks and leaving no sign associated with cosmetic surgery.

#### **AFTER THE TREATMENT**

Immediately after the treatment the treated area(s) will be quite red and mildly swollen. Patients may experience some swelling and mild discomfort in the treated area following their treatment and this may last up to 3 days. At the site of each dot of treatment a carbon crust immediately forms. These crusts should not be touched for 5-7 days except to camouflage them with oxygenating post-procedure foundation. We recommend Oxygenetix for this purpose.



## **PLEXR: The Revolution in Blepharoplasty**

Plexr is a cordless micro-surgical hand operated device that transfers concentrated heat to the treated skin tissues. It uses the difference in voltage between the device and the patient's skin. The difference in voltage generates a small electrical arc, similar to a minute lightning. The small lightning causes the sublimation of the fluids contained in superficial part of the skin, without unwanted heat transmission to the adjacent tissues. Additionally it acts on the superficial layer of the skin preserving the lower layers; this will reduce drastically any potential permanent skin damage that could be caused by the misuse of conventional lasers. Place of 'birth' of the medical device is Rome Via del Buer. 'Capture' invention of new energy form was at the State University "Tor Vergata" Rome, where a Professor with thirty years of experience on the electrosurgical and President of the Italian Society of Aesthetic Medicine and Non Invasive Surgery Giorgio Fippi borrowed the natural phenomenon of lightning mode and with the internationally renowned Engineer Giancarlo Millevolte implemented the idea effectively creating a plasma generator inside the machine (plasma = the fourth state of matter) which safely allows the patient who does not wish to have surgery and the doctor who wants to provide high quality service at low cost and equally and in many cases better results, to see 100% of the desired image.

### **WHAT IS PLASMA?**

Plasma is one of the four fundamental states of matter, the others being solid, liquid, and gas. Plasma has properties unlike those of the other states. Plasma can be created by heating a gas or subjecting it to a strong electromagnetic field applied with a laser or microwave generator. This decreases or increases the number of electrons, creating positive or negative charged particles called ions, and is accompanied by the dissociation of molecular bonds, if present.

The presence of a non-negligible number of charge carriers makes plasma electrically conductive so that it responds strongly to electromagnetic fields. Like gas, plasma does not have a definite shape or a definite volume unless enclosed in a container. Unlike gas, under the influence of a magnetic field, it may form structures such as filaments, beams and double layers.

Plasma is the most abundant form of ordinary matter in the Universe, most of which is in the rarefied intergalactic regions, particularly the intracluster medium, and in stars, including the Sun. A common form of plasmas on Earth is seen in neon signs.

Much of the understanding of plasmas has come from the pursuit of controlled nuclear fusion and fusion power, for which plasma physics provides the scientific basis.

Basic vantage point for cases of eyelid surgery, Plexr is a dynamic non-invasive method that allows the operator to urge the patient at any time during the proceedings to open his eyes, highlighting aspects of skin that still need to be treated and avoiding going after gradual and controlled maneuvers that may have cost image lagophthalmos or excessive opening of the eyes. Regarding any corrective surgery the obvious advantage of Plexr is that is also the perfect choice to avoid further suffering of the patient with correction in his private clinic in infinitesimal time. Histological studies from the University of Chieti and the University of Athens (Department of Pathology-Anatomy) also proved that the spots of Plexr not pass the basement membrane of skin.

### **PURPOSE OF THE STUDY**

In surgical techniques of upper eyelid with a scalpel, a radio scalpel or laser, the patient must enter a sterilized operating room, to be anesthetized with xylocaine adrenaline injection and this is done by having incisions and sutures. The purpose of the study is to demonstrate that the method of non-invasive eyelid with Plexr



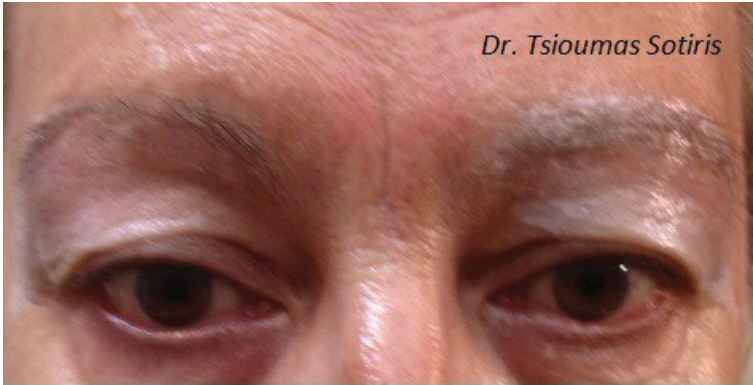
enables the medical treatment of patient without the use of anesthesia (using only anesthetic cream) and sterilization and most importantly, after treatment the patient leaves without incisions and sutures.

**METHODOLOGY**

The study was conducted over a period of 2 years and used personal medical records. The upper eyelid blepharoplasty was performed to 1000 persons (800 women and 200 men). Target group: 23-82 years old (whether they were smokers or not, had large or small excess skin). We used only a medical device (Plexr). All patients accepted antisepsis, and then photos were taken of their face before the treatment and profile in order to see the difference after the treatment (Picture 1). The next step was to apply the anesthetic cream (Picture 2), wait for 30 minute until the cream act so the patient won't perceive any pain while the treatment is going on. After the action of the cream, we remove it and apply the technique first on the right eyelid (Picture 3) and then on the left. The point where there is excess skin are sublimated. We did not enter wrinkles but areas of excess skin. For the machine to operate, it should not touch the skin as ionization gas are needed, so while the micro spots were pulled out, we leave little spaces of healthy tissue. In each session we sublimated 30% of the excess skin (Picture 4, 5, 6).



Picture 1: Before



Picture 2: Before with Anesthetic Cream



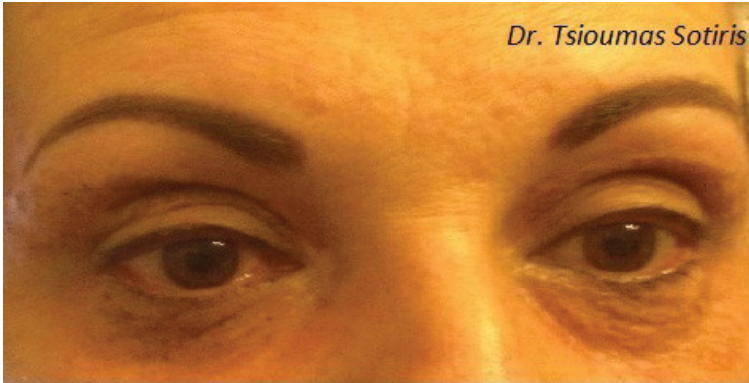
Picture 3: During the Application of the Right Eye



Picture 4: Immediately After



Picture 5: Appear Crusts



Picture 6: After Plexr (No Change in Look)

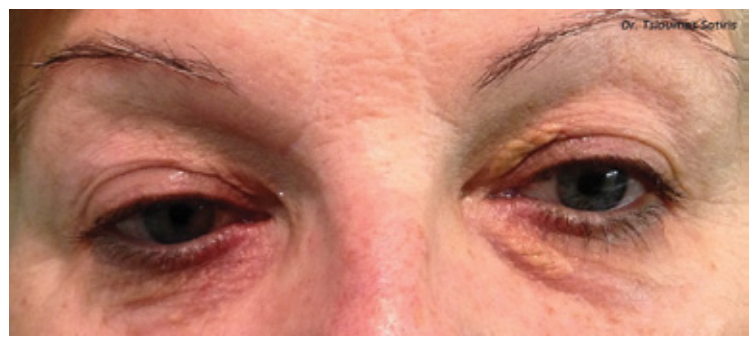
**RESULTS**

800 out of the 1000 persons have achieved 100% of the desired result in three sessions. 200 out of 1000 persons in one or two sessions. Compared with classical blepharoplasty surgical, outcomes were excellent without sutures and incisions, ectropion and entropion, slanted eyes, lagofthalmos and other complications. The recovery takes place in a shorter period of time (7-15 days) and allows the patients to return to their activities even after treatment. It is important to note that in any of the 1000 cases of patients, there was no complication as referred to above.





Picture 7: Before Plexr



Picture 11: After 2 Years



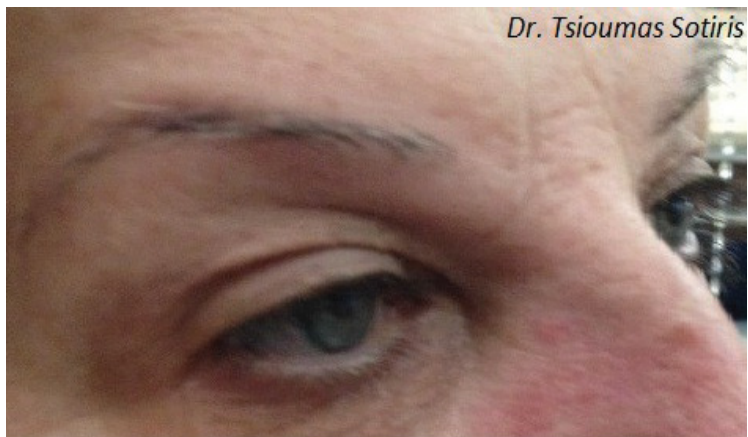
Picture 8: After 2 Plexr Sessions



Picture 12: After 2 Years.



Picture 13: After 2 Years.



Picture 9: After 2 Plexr Sessions



Picture 10: After 2 Plexr Sessions

## DISCUSSION

The need of the physician to provide improved innovative non invasive techniques to patients with less pain and cost, but also the need of the patient for cosmetic procedures that avoided them in the past for fear of surgery. The major advantage of Plexr is security that it provides to the patient on undesirable effects. This was proved by the results of the with Plexr. Patients being perfectly pleased with the result, recommend the method to other patients. The Plexr is the bloodless revolution in Blepharoplasty because the doctor can do as many incidents as he wishes per day in his private practice, even take it to a cooperating office or clinic, without side effects and with the best outcome for the patient.

## CONCLUSION

Given the fact that Plexr treatment is something totally new, it is obvious that doctor has to take some more time to explain although the method is well approved by the patients once tried. Last but not least a good percentage of our sample is bound to repeat the procedure in other parts of their face resulting in satisfaction for the patients getting a natural result (their look didn't change) and more profit for the doctor.

## REFERENCES:

### "Plexr: The Revolution in Blepharoplasty"

Tsioumas G. Sotiris, Georgiadis Nikolaos & Georgiadou Irini. "Plexr: The Revolution in Blepharoplasty" Pinnacle Medicine & Medical Sciences ISSN: 2360-9516, 2014.

**Images 1-13:** Source Tsioumas G. Sotiris, MD.





# Plexr in Acne Treatment

Acne vulgaris is a chronic, inflammatory disease of the pilosebaceous follicles, which occurs mainly in adolescence and adulthood and is characterized by comedones, papules, pustules, nodules and often scars. Available treatments are divided into local and systemic. Plexr is an innovative technique both in aesthetic medicine and in treating skin and other diseases. After 2 years of treatment by plexr to patients with acne, it was found that it can provide good results on all types of acne, with plexr treatment patients can avoid taking systemic medication.

## INTRODUCTION

Acne vulgaris is a chronic, inflammatory disease of the pilosebaceous follicles, which occurs mainly in adolescence and adulthood and is characterized by comedones, papules, pustules, nodules and often scars. It may have a great impact on psychology and patient's social life. The pathogenesis is due to the local effect of androgens, which leads to seborrhea and consequent obstruction of the hair follicle by a keratinous plug in the lower infundibulum, hyperproliferation of *Propionibacterium* acnes, and inflammation. Available treatments are divided into local and systemic. The treatment by plexr is individualized depending on the type of acne and the patient's medical history. Comedo is the primary lesion of acne. The clinical manifestations can vary from open and closed comedones, macro-comedones, papules, pustules, cysts, nodules to scars. For acne's treatment, topical formulations and systemic therapies are used, such as antibiotics, isotretinoin and hormonal therapies for several months. It is necessary to remove comedones (comedo extraction). It seems that the longer inflammation remains, the more the risk of scarring and pigmentation increases. For the treatment of acne scars, chemical peeling and lasers are used more often. However, now, the Plexr is an innovative way to treat any type of acne with great results. It is a handheld microsurgical device which uses a small electric arc in order to increase the temperature and induce selective sublimation of the keratinocytes without affecting the deeper skin layers. Histological studies carried out by Prof. Antonio Scarano of the University of Chieti

(experiments in rabbits of N. Zealand) and Prof. Vlachodimitropoulos Dimitris of the University of Athens (on human tissue), shows that it doesn't sublimate the basal membrane of the skin. Professor Fippi, who has thirty years of experience in electrosurgery and is the President of the Italian Society of Aesthetic Medicine and non-invasive surgery, used the operating mode of the natural phenomenon of lightening and together with the Engineer Giancarlo Millevolte, implemented the idea by creating a plasma generator inside the machine (plasma = the fourth state of matter). In that way the treatment is applied safely to the patient. Practically, it seems that Plexr sublimates the accumulated keratinocytes that contribute to the obstruction of the pilosebaceous follicle and that also reduces the number of *Propionibacterium* acnes. Therefore it can act very effectively against inflammation. In addition, it eliminates comedones, cysts and nodules, without the risk of scarring which existed with the applied method of electrocautery - electrode dessication until now. It is also an excellent method of new collagen formation and could be very useful in treating acne scars. The sublimation of the keratinocytes leads to the increase of the absorption of topical treatments, improving their efficacy. Therefore, it is possible to avoid systemic treatment, which lasts for many months and has many potential side effects, and use the PLEXR treatment whose results are faster and last longer.

## PURPOSE OF THE STUDY

It is known that some cases of acne are very difficult to treat. Many patients have relapses and sometimes patients cannot receive long-term systemic therapies because of the side effects. Therefore, we applied the technique of Plexr whose technology provides adequate security without causing damages to the deep tissues or other side effects that could worry the patients.

## METHODOLOGY

30 patients with acne (10 men and 20 women) aged 14-45 years consented to be treated with PLEXR as an innovative alternative technique. 23 people had tried to treat acne with medication (local and systemic treatment) but continued to relapse. Seven people would be treated for acne for the first time.

We used the white device (light therapy) on every type of acne. Mild types of acne were treated with 1-3 sessions every 15 days. Types of medium severity were treated with 3-5 sessions and severe types with 6-10 sessions. The first 3 sessions every 15 days interval and the next ones every 30 days.

## MANAGEMENT - PREPARATION

Before treatment (Picture 1), we remove patient make-up and clean thoroughly with antiseptic. We apply, using the white device, microspots (Picture 2) in the peripheria of the pustular, cystic or nodular lesion and one spot in the center of the lesion. Only one spot in the centre of the comedones. After the treatment, we observed a two to three days waiting period for the scabs, created by sublimation, to fall off and almost 30 days for the erythema's gradual reduction and the complete skin restoration. The sessions are repeated as long as there are active lesions, and after the absence of lesions, the effect is maintained by the combination of topical treatment.

## NUMBER OF SESSIONS

10 persons needed 1-3 sessions (Picture 3A & 3B) to reach absence of lesions, 15 needed 3-5 sessions and the remaining 5 persons 8-10 sessions.

## RESULTS

After the application of the technique in 30 patients, it was found that there was no relapse in any of the patients, and no side effects (dyschromias, scars, hyperpigmentation, hypopigmentation) as may occur by the application of lasers and peelings. With Plexr apparatus, we managed to eliminate acne without systemic medication and have 100% of the desired result.

## DISCUSSION

Acne is a chronic disease that occurs in significant number of people and in many cases, its treatment is particularly difficult. For this reason, any method that can promise good results is a challenge, especially if they are no side effects. Plexr gives excellent results in difficult acne cases, without any particular concern for the patients beyond the momentary burning sensation during treatment.

## CONCLUSION

In conclusion, Plexr is an alternative way of treating acne without the need of systemic medication. Acne as a chronic inflammatory skin disease, could benefit patients who become ill, after treatment PLEXR with good and lasting results. This results that treatment can be optimized and last longer with the combination of topical treatment (For example topical retinoids).



Pictures 2: During Microspots Plexr



Pictures 3A: After 3 sessions (treatment with Plexr)



Pictures 1 - Persistent Acne Before Treatment



Pictures 3B: After 3 sessions (treatment with Plexr)

## REFERENCES:

### "Plexr in Acne Treatment"

Geleki Stamatina, Tsioumas Sotiris & Vranou Aglaia "Plexr In Acne Treatment" Pinnacle Medicine & Medical Sciences ISSN: 2360-9516, Vol. 2 (1), 2015, Article ID pmms\_171, 482-486, 2015.

**Images 1-13:** Source Geleki Stamatina, MD.





# Clinical and histological presentation after Plexr applications, Needle Shaping (Vibrance) and O.F.F.

This study was written after three years of implementation of the innovative techniques Plexr, Needle Shaping (Vibrance) and O.F.F (lipolysis) where it was found these devices is the latest technology for Blepharoplasty and Non Invasive Eye Lid Surgery, body reshaping and lipolysis. These techniques have been applied to hundreds of patients who were completely happy with the results (treatments on the face or body). After the desired results in clinical presentation of the patient's, we wanted to test if histology presentation is consistent. Therefore we took biopsies (human tissue) for each of the techniques which were examined by the Laboratory of Forensic Medicine and Toxicology in Athens Medical School.

## INTRODUCTION

What is Plexr?

Plexr is a cordless micro-surgical hand operated device that transfers concentrated heat to the treated skin tissues. It uses the difference in voltage between the device and the patient's skin. The difference in voltage generates a small electrical arc, similar to a minute lighting. The small lighting causes the sublimation of the fluids contained in superficial part of the skin, without unwanted heat transmission to the adjacent tissues. Additionally it acts on the superficial layer of the skin preserving the lower layers; this will reduce drastically any potential permanent skin damage that could be caused by the misuse of conventional lasers.

What is Needle Shaping (Vibrance)?

Needle Shaping is the only microsurgery technique which is able to

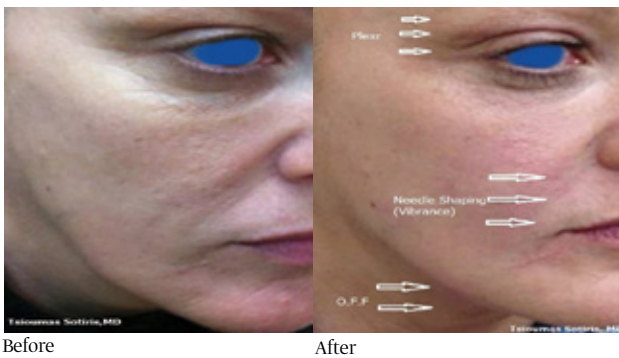
perform a subcutaneous micro trans-plant and at the same time a bio stimulation, by Prof. Giorgio Fippi (Lecturer of Non Ablative Surgery SIMENCA). With this microsurgery technique it is possible to increase the volume of the lips, the cheekbones and sunken scars without injecting any kind of material or chemical. This is an autotransplantation of tissue by traction, though it might be more appropriate to speak of it as an acupuncture, through which high tension and limited galvanic current are passed. The mixed currents, strengthened by their synergic action, regulated at such intensity so as to not be perceived by the patient, except in particularly sensitive parts, slightly dehydrate the elastic fibres of the derma and this way they hook onto the needle and principally bind to each other creating a lasting effect. At this point they are delicately wound up into a sort of spindle of autologous material which is visible when moving the needle. The traction exercised must be such as to obtain a certain volume of fibres without these tearing. Liquids are eliminated by osmosis due to the saline deprivation caused by the currents to prevent the fibres and the collagen from unwinding.

What is O.F.F?

O.F.F is an electromedical apparatus that uses sinusoidal wave with a fixed frequency of 1230 kHz fractional flow of emission. This frequency was chosen because it produces a series of biological effects that are perfectly suitable for treating a great variety of skin blemished otherwise not treatable by other apparatuses. This same frequency is used for both therapeutic ultrasound and for radio frequency, but in this case only one active electrode is used without the relative earth, departing thus from the effects of ultrasound and radio frequency. We only use the thermal effect of this programmed flow current to selectively increase the temperature of the tissues without the earth electrode, the programmed electric currents supplied by the O.F.F radiate along the external surface of the treated body. This apparatus is totally autonomous from electric mains and this makes servicing.

## METHODOLOGY

Mr. Choroizidis Ioannis (Dermatologist-Venereologist) took biopsy from the brachial region: a) we did xylocaine and adrenaline anesthesia around the area that is painted, without going into the dots of which will take biopsies (photo 1). b) At the bottom of the rectangle (photo 2) we took a sample for biopsy without applying any of the devices. In the middle spot, biopsy was taken immediately after application of Needle



Before After

Shaping (Vibrance) in which we observe intense hyperemia. At the top (first spot) biopsy was taken immediately after applying Plexr (micro-spots).

We observe the stitches after five days and the withdrawal of crusts (photo 3). After 15 days while the stitches while the stitches are not cut, the crusts have left (photo 4). At the point which was applied Plexr, we notice a pinkish color. In the middle of the same photo (photo 4) second biopsy was taken after application of Needle Shaping, because of intense hyperemia in the first biopsy. We stitched the second scar after taking the biopsy (photo 5).



Photo 1 Photo 2



Photo 3 Photo 4 Photo 5

Biopsies were also taken from the abdomen after applying the OFF (lipolysis). Technique of lipolysis was applied (photo 6) and immediately after, doctor took biopsy (photo 7).



Photo 6 Photo 7

Stitching of the scar after taking the biopsy (photo 8).



Photo 8

Resumption of lipolysis (OFF) after one week (photo 9).



Photo 9

## RESULTS/FINDINGS

Plexr:

Normal skin: Elastic fibers stain x200 (photo 10). It is the area in which the technique of Plexr was applied. In the left lower part (photo 11) is observed loss of the epidermis, but not the basal membrane and increased presence of fibrous tissue (acidophilia of the dermis due to heat, which produced protein denaturation), so injury is reversible. Respectively in the left upper part, skin is maintained (x200).

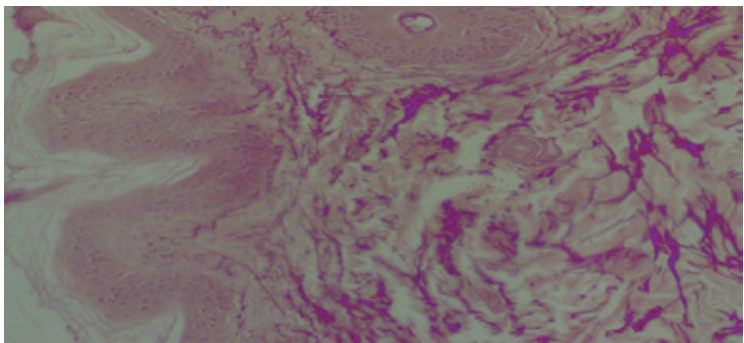


Photo 10

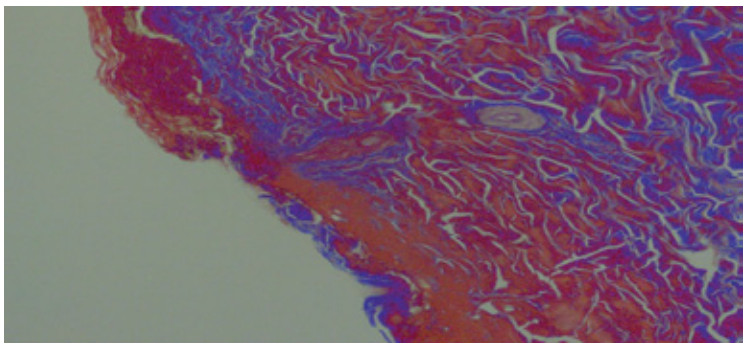


Photo 11

The same area showing fuzzyfication and shrinkage of the elastic fibers x 200 (photo 12).



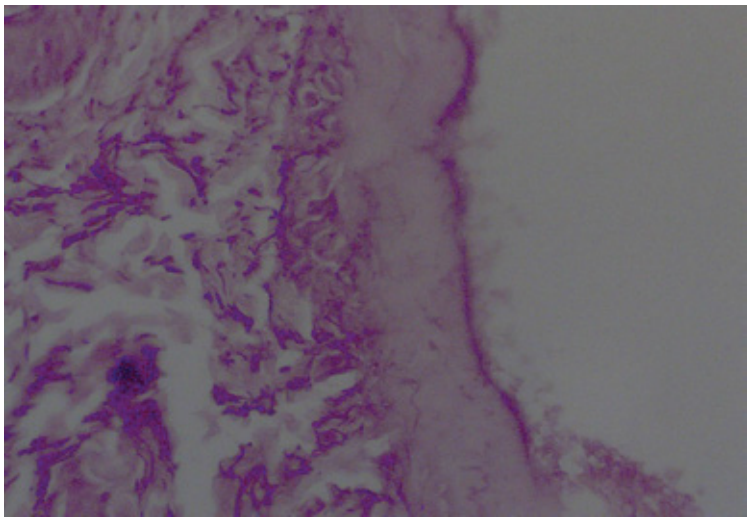


Photo 12

Needle Shaping (Vibrance):

First picture (photo 13) is by staining of elastic fibers x100, the second (photo 14) x200 (enlarged), shows the change of direction and the vertical integration in comparison with the epidermis. Biopsy that we received after 15 days, showed us that the elastic fibers are organized and fatten.

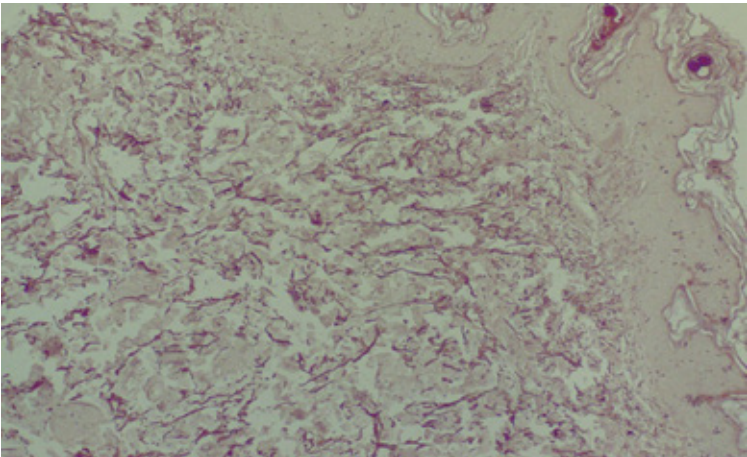


Photo 13

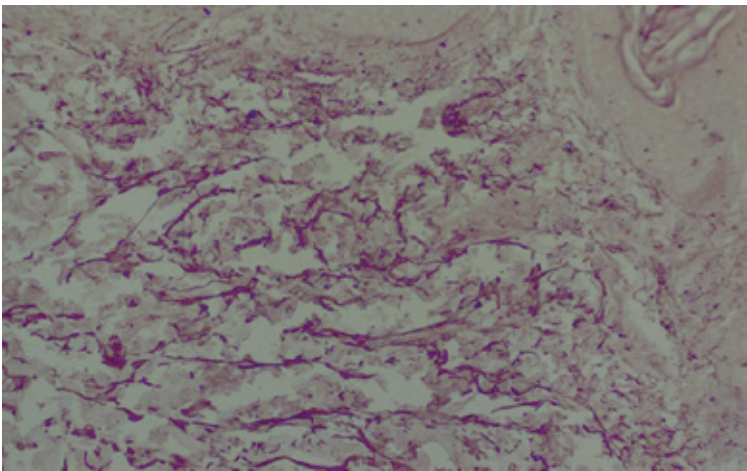


Photo 14

Lipolysis (O.F.F):

Photos 15, 16 & 17 are by staining of elastic fibers x200 (photo 15), x100 (photo 16) and x200 (photo 17), from the first and second application of lipolysis. It is distinguished fuzzyfication of the cellular membrane and cellular limits which means cell death by apoptosis because we do not see reactive fibrosis or inflammatory population. Therefore the death mechanism is located within the "physiological" death.

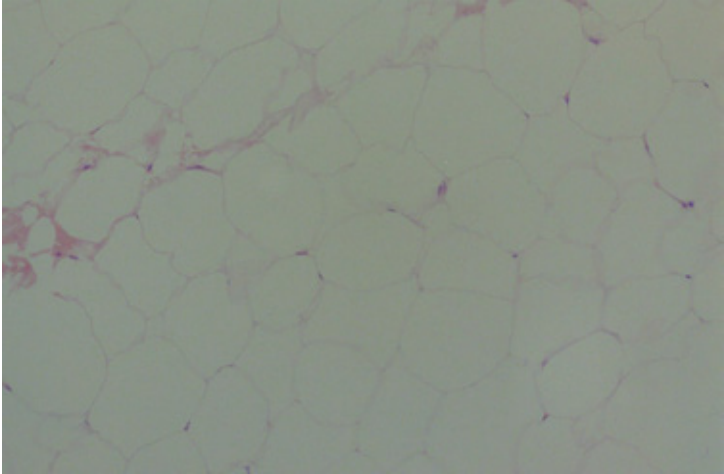


Photo 15

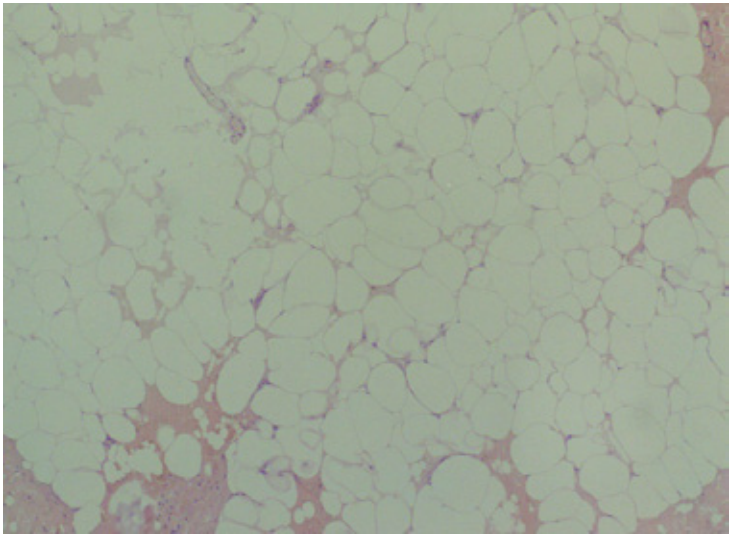


Photo 16

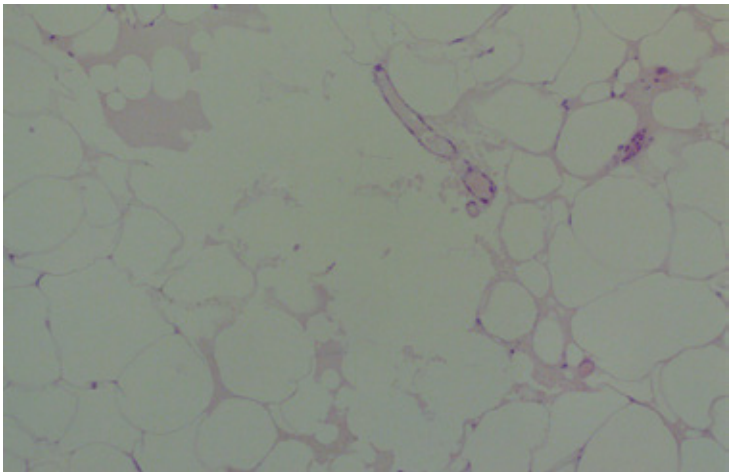


Photo 17

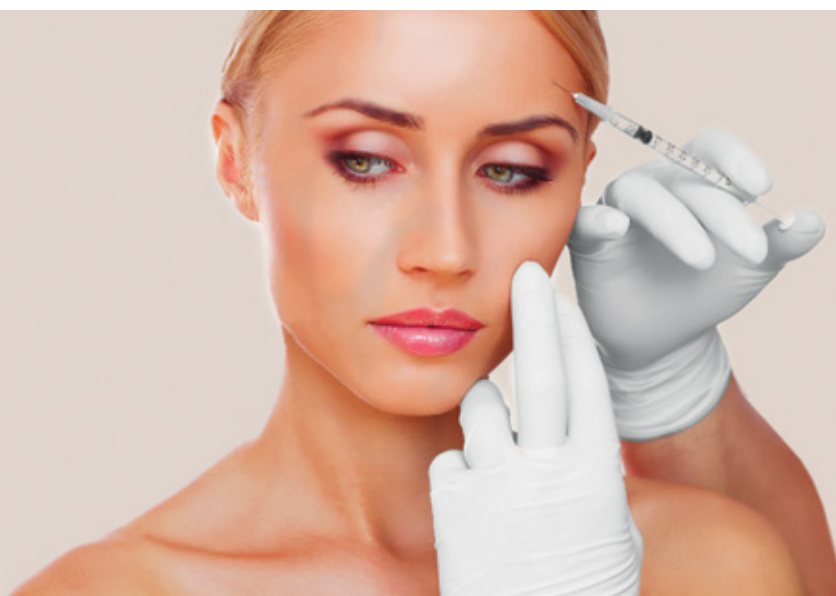
REFERENCES:

**"Clinical and Histological Presentation After Plexr Application, Needle Shaping (Vibrance) And O.F.F"**

Tsioumas G. Sotiris, Vlachodimitropoulos Dimitris & Goutas Nikolaos "Clinical And Histological Presentation After Plexr Application, Needle Shaping (Vibrance) And O.F.F" Pinnacle Medicine & Medical Sciences ISSN: 2360-9516, Vol. 2 (3), 2014, Article ID pmms\_178, 522-530, 2015.

**Images 1-9:** Source Tsioumas G. Sotiris, MD.

**Images 10-17:** Vlachodimitropoulos Dimitris, MD.



## **Skin Lesions Induced From The Radiosurgical Unit and Voltaic Arc Dermoabrasion: A Rabbit Model.**

The aim of this study was a histological evaluation of skin lesions induced from the radiosurgical unit and voltaic arc dermoabrasion: a rabbit model. Materials and methods: eight New Zealand male rabbits with a weight average 3.9 Kg, participated in this study. Dorsal part of each rabbit was shaven and divided in two equal parts of 5 cm. Voltaic arc dermoabrasion ( Plexer, GMV s.r.l. Grottaferrata, Italy) in one side and radiosurgical unit (Laser elettronica Milano 1,75 MH) on the other were used to remove the keratinized layer. In each area were performed 10 sites of abrasion for a total of 20 sites per rabbit. The animals were sacrificed in groups of two at days: 0, 7, 14 and 21 with a Tanax overdose. The treated skin was removed using a scalpel and a block section containing the subcutaneous layer was effectuated. There were obtained 20 biopsies from each block section, 10 performed with elbras and 10 with radiosurgical unit for a total of 40 biopsies per study time. Results: the present results demonstrated the possibility on containing the thermal damage of the lesions adjacent tissues using dermoabrasion. There were no observations of thermal damage on the underlying dermal tissue. Absent necrotic layer on the healing process was shown but an inflammatory infiltrate was present. The reduced thermal damage on the subcutaneous tissue is probably due to the current passage absence on the tissues. This is necessary to close the electric

circuit between the active electrode and the neutral one in which the patient is part when using the radiosurgical unit. The arc voltaic dermoabrasion technique in comparison with the electrosurgical demonstrated the capability to contain the damage within the parenchyma.

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Electrosurgery is the application of an alternative electric current with a high voltage on a biological tissue with a thermal effect to achieve an incision or coagulation. The effect is related to the electrode type, contact area, electrode movement speed and tissue characteristics. The cut is due to the current passage through active and neutral electrodes and the coagulation occurs as a result of tissue atrophy or desiccation when their heating is sufficiently slow. Parameters assessment to obtain the desired results may be done manually or automatic (1). The electrosurgery is not cauterisation as the thermal effect given is not external (e.g. caused by an elevated temperature tool) but internal, caused from the current passing within the tissue. William T. Bovie created the first electrosurgical unit working at the Harvard University from 1914 since 1927; while the first surgical intervention was realized by Harvey Cushing at the 1° October of 1926. Different techniques have been used on the dermatological surgery to remove vascular lesions, dark patches and neoformations. Laser, radiosurgical unit and dermoabrasion are widely used and each of these technologies has its limits.

The laser is expensive and not always available in an aesthetic medicine operative unit. In order to remove all the lesions types, it would not be sufficient a single tool but 3-4 with different wave length.

It also supplies packs of energy which are totally adsorbed, so it has to be considered the damage on the nearest tissues, due to the light and heat diffusion produced (2), and it may cause damage if used improperly (3).

Meanwhile the radiosurgery unit is economic and ubiquitous in all aesthetic medicine operative units. It has an advantage on presenting interchangeable inserts and being modular on supplying variable energy for voltage, amperage and power.

The electrosurgery is one of the most soft tissues surgery used



techniques, which may be ablate leaving a 100-400µm necrotic tissue layer. It is a surgical technique that uses a high frequency (HF) electric current to realize a simple and easy cut or /and clot. So it is possible to have a precise cut and clotting at the same moment having a free blood operative field (4).

A throb wave with a variable frequency is used to coagulate the tissues. The electric current passing the tissue heats it and causes the evaporation and ionisation of the water contained on the tissue in contact with the electrode provoking its chipping or notch as a final effect. The tissue is heated under the evaporation limit but it can go through a denaturing process in function of the temperature reached; the latter is dependent on heat penetration depth and tissue thermal conductivity.

It is possible to minimize the thermal damage on the ablation zone nearest tissue. On the other hand the throb electric discharge of 100µs duration gives deeper heat diffusion and a cut of 7µm. The optimal discharge series during an electrosurgery is on the rate of hundred of microseconds.

Other consideration to be done is the radiofrequency, which follows the shortest electric path, the dehydrated tissues (discheratotic skin, superficial corneous layer, sebaceous excess, wrinkles callous borders, tattoo mottled pigmentation etc) behaves like insulation blocking the diathermic current to reach the bottom of the lesion. Also the free nervous termination depolarisation determines during the radiofrequency intervention an unpleasant sense of electric discharge, which necessitates frequently the anaesthesia.

The electrosurgical equipments do not take in consideration the different tissues conductivity. It is good conductors as vascular tissue or hydrated skin is easy to treat with electrosurgery. To handle this problems it is studied a voltaic arc dermoabrasion.

The voltaic arc acts without getting in tip-tissue contact, creating a gentle coagulation. There is no electric passage zone, for this reason the dermoabrasion it is not influenced from the tissue electric resistance. During operation it is important to be protected with masks to avoid viral particles inhalation (5).

The aim of this study is a histological evaluation of skin lesions induced from the radiosurgical unit and voltaic arc dermoabrasion: a rabbit model.

## MATERIALS AND METHODS

This study was approved by the Ethical Committee for Human and Animal Studies at the School of Medicine, University of Chieti, Italy. Eight New Zeland male rabbits, each weighting about 3.9Kg were used in this study. The animals were anesthetized with a dose of Ketamine (Ketalar; Parke-Davis SpA, Milan Italy) and xylazine (Rompum; Bayer AG, Leverkusen, Germany). The ketamine was used at a dose of 44 mg/Kg and the xylazine to the dose of 6-8 mg/Kg for kilogram of weight. Dorsal part of each rabbit was shaven and divided in two equal parts of 5 cm. Voltaic arc dermoabrasion (fig.1).

(Plexer, GMV s.r.l. Grottaferrata, Italy) in one side and radiosurgical unit (Laser elettronica Milano 1,75 MH) on the other were used to remove the keratinized layer. A total of 20 sites per rabbit were performed. The postoperative course was uneventful. All rabbits were sacrificed in groups of two with a Tanax overdose at Days: 0, 7, 14 and 21. The area of interest of the treated skin was removed by means of a scalpel and a block section containing the subcutaneous layer was retrieved. There were obtained 20 biopsies from each block section, 10 performed with elbras and 10 with radiosurgical unit for a total of 40 biopsies. A total of 160 sites were analysed, 80 with radiosurgical unit and 80 with voltaic arc microabrasion. The specimens were immediately fixed in 10% formalin

and processed to obtain thin ground sections for histological analysis (Fig.2).

The slides obtained were stained with acid fuchsin and toluidine blue and then examined under a Leitz Laborlux microscope (Leitz, Wetzlar, Germania). Histomorphometry was performed using an AMD 1800 Mz PC, interfaced with a RGB( Matrix Vision GmbH) real colour digitalized video card, connected to a high resolution video camera (3CCD, JVC KYF55B) and a software Image-Pro Plus 4.5 (Media Cybernetics Inc. Immagini & Computer Snc Milano, Italy). The images obtained were analyzed with the above software to calculate the percentage of inflammatory cells and the quantity of active fibroblasts.

## HISTOLOGICAL EVALUATION

### *Radiosurgical unit*

- T0

An in-homogeneous de epithelialisation of all the layers was observed microscopically.

The histological exam shown a complete skin depithelisation with basal layer removal and partial subcutaneous involvement area. The subcutaneous layer shown an inhomogeneous organization with morphological alterations due to the thermal damage (fig.3). A partial involvement of the follicular bulbs was also observed. The necrotic layer demonstrated a greater coloration due to the cytoplasmatic content leaking, no cells with nucleus were present. It represent the 20,1% of the analyzed tissue.

- T7

There were shown necrotic cells and epithelial regenerations zones.

The follicular bulbs were surrounded by inflammatory cells with regeneration areas. The necrotic and inflammatory layer represented 30,6% of the analyzed tissue.

- T14

It was noted the appearance of the basal layer and a notable fibroblastic activity. It was also observed a neoangiogenesis with an inflammatory infiltrate which had an extension of 2 mm on the underneath subcutaneous layer. In some areas the epithelium was completely regenerated. The necrotic and inflammation layer represented 19,6% of all the analyzed tissue.

- T21

There was observed a totally "restitutio ad integrum" of the epithelial layer.

A great vascularisation and a huge number of fibroblasts were noted on the sub epithelial area. There was no necrotic or inflammation area on the analyzed tissue.

### *Voltaic arc dermoabrasion*

- T0

A homogeneous depithelisation of all the treated sites with bleeding areas were observed microscopically. There were no surgical sulcus induced by the equipment. Histologically a homogeneity on the de-epithelialisation was noted. The necrotic layer observed on the sites treated with radiosurgical unit was totally absent (fig.4).

There were no cells without nucleus and no altered coloration affinity observed. The necrotic layer represented 9% of the analyzed tissue.

- T7

A light sub epithelial inflammatory infiltrate was present. The basal area was vital and the fibroblasts secrets connective matrix. An exfoliated

matrix. An exfoliated keratin ascribable to the necrotic zone was shown. The necrotic and inflammation area represented 28% of all the analyzed tissue.

- T14

The dermal layer was organized even it had inhomogeneous thickness. This data could be probably due to the depth inhomogeneous treatment due to the operator sensitivity variable. The necrotic and inflammation area represented 9,8% of all the analyzed tissue.

- T21

A complete "restitutio ad integrum" and reformation of all the skin layers was observed. It was also noted a huge number of vessels and fibroblasts secondary to the healing process. The necrotic and inflammation area was totally (score = 0)

### Statistical Valutation

From the necrosis/inflammation percentage evaluation was demonstrated that the necrosis and inflammation due to the voltaic arc dermoabrasion use were significantly reduced respect the one induced by the radiosurgical unit at T 0, 7 and 14 days ( $P=0.001$ ), while there were no significant differences between the two at time 7 and 21 days ( $P=0.032$ ).

## DISCUSSION

The present results deduce the possibility on containing the tissue thermal damage contiguous the lesion using the voltaic arc dermoabrasion technique. There were no observations of thermal damage on the underneath treated site dermal layer. The necrotic layer is almost absent on the healing process, while it could be seen an inflammatory infiltrate.

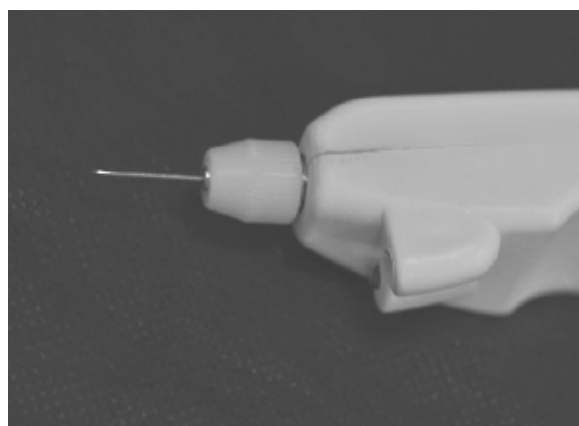


Fig. 1 - Voltaic arc dermoabrasion unit

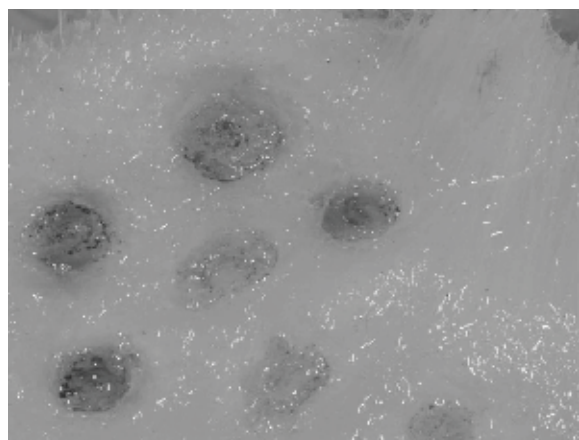


Fig. 2 - A block section containing the subcutaneous layer was retrieved

This to our opinion is due to the tissue current path absence and to the necessity on closing the circuit between the active and neutral electrode to which the patient is part when used a radiosurgery unit. On the other hand, it may be concerning on patients with electric devices as peace-maker, orthopedic prostheses or arrhythmic patients (6). On the tissue treated by the radiosurgery unit were noted thermal necrosis on the underneath connective tissues and cellular disorganization which overstayed for 14 days. There was a difficulty on removing the skin on the

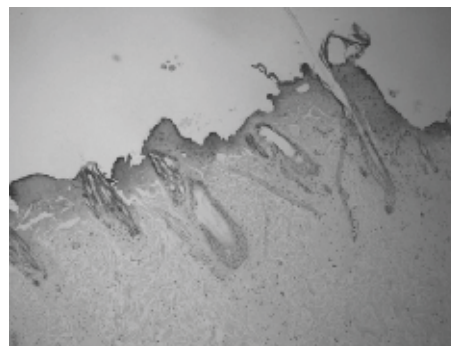


Fig. 3 - The subcutaneous layer shown a inhomogeneous organization with morphological alterations due to the thermal damage. The necrotic layer demonstrated a greater coloration due to the cytoplasmatic content leaking, no cells with nucleus were present. Acid fuchsin and toluidine blue 50 x

initial phases, but when the tip of the radiosurgery unit arrived on the underneath sub epithelial layer its efficiency increased becoming faster. In this phase it is important to keep the tip in contact with the tissue, but on the other hand it becomes difficult to control the cut depth cause of a better electric conductivity of the subcutaneous tissue. These results demonstrated how difficult is to effectuate a precise skin removal using radiosurgical unit, while it is possible to control the tissue removal depth using the voltaic arc dermoabrasion. This is due to the greater efficiency of the current induced on the connective tissue containing vessels and fluids rather than in the epithelial tissue (4, 7). Voltaic arc dermoabrasion has the ability to burn selectively the conductive hydrated tissues (8). The electrons are substantially electric current, which can freely move through the human body without damaging it (low power), providing a hydrating (water, lymph or blood) contact point (skin) and being so a good conductor.

This stream is irradiated from the dermoabrasion needle tip, which if finds a bed electricity conductor, tries to pass through and burns the fence. The spark created from the voltaic arc fence. The spark created from the voltaic arc strikes without needle touching skin, and when it arrives on the healthy and irrorated part, it become inactive and terminates its destroying action. If the stream reaches a hydrated healthy tissue, passes it and enters on the body and irradiates without being detected. The dermoabrasion technique is inactive on the healthy tissues or damaged but hydrated, and active on damage but no conductor ones. This means that it could never create undesired damages even when it is used improperly.

With this technique is possible to make interventions on damage, no hydrated and no innervated soft tissues, without causing bleeding, pain (without anaesthesia), discolorations and hollows.

Use of the electric surgery has simplified the skin lesion treatment, making it a fast and complication free. The surgery has now new techniques in grade to guaranty the prevention of delicate structures. Nowadays the most used one is the electric energy given as monopolar or bipolar electrosurgery (7-9). Great part of the studies conducted to improve and innovate new surgery techniques are effectuated on organs different form the cutaneous tissue. In addition the voltaic arc dermoabrasion is a new technique for this there is an absence of previous experimental or comparable studies. This study offers a basal research to obtain useful data regarding the clinical activity. It is quite notable that the scores obtained using the voltaic arc dermoabrasion are reduced compared to the one obtained with electrosurgery unit. This difference is statistically significant both in T0 and T15. This histological study permits to have available data regarding the healing process occurring immediately after the dermoabrasion.

### REFERENCES:

#### "Skin Lesions Induced From The Radiosurgical Unit And Voltaic Arc Dermoabrasion: A Rabbit Model"

A. SCARANO, F. CARINCI, B. SINJARI, L. ARTESE, G. FIPPI, G. BRUNELLI, R. MONGUZZI. "Skin Lesions Induced From The Radiosurgical Unit And Voltaic Arc Dermoabrasion: A Rabbit Model". European Journal Of Inflammation Vol. 9, no. 3 (S), 89-94 (2011).





## Treatment of Perioral Rhytides With Voltaic Arc Dermoabrasion

Perioral rhytids can be successfully treated with various methods, including dermabrasion, carbon dioxide laser, filler and chemical peels. Ablative resurfacing is typically used to treat rhytides, dyschromia, and scarring. A novel electrosurgical technology was used in this study for treatment of perioral rhytides. The authors treated 15 patients (11 female and 4 male) for perioral rhytides with Voltaic arc dermoabrasion technique. Patient ages ranged between 30 and 65 years and the majority (90%) of these perioral areas had class II and III wrinkle scores.

Voltaic arc dermoabrasion (PLEXR, GMV s.r.l. Grottaferrata, Italy) were used to remove the keratinized layer for point perioral area. Treatment is minimally painful and in the authors' experience require no anesthesia. No discomfort should be expected once the voltaic arc dermoabrasion treatment is concluded. The perioral dermis appears as a pale, erythematous, dull surface. Bleeding is not seen unless excessive abrading occurs with the saline-moistened gauze. No hyperpigmentation, hypopigmentation, erythema, ecchymosis, pain, itching, outbreaks of herpes, infectious processes and scarring was observed. In conclusion fine rhytides, particularly in the peri-

oral areas may be completely eradicated with voltaic arc resurfacing; deeper creases are also improved, probably secondary to a general tightening effect.

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Increased skin laxity, along with habitual repeated contraction of the underlying facial muscles, results in wrinkles or rhytids. In general, the aging process of the face is a progressing toward atrophy. Biochemically, the ratio of type I to type III collagen is reduced and the elastic fibers, spread in laminar shape between the collagen bundles, become tiny and fragmented, involving an overall reduction of the total amount of collagen. In addition to ageing, environmental damaging agents such as actinic radiations may accelerate this decline. Treatment of perioral rhytids is a procedure commonly requested by patients who are typically over 50 years and smoke, or are former smokers. Perioral rhytids can be successfully treated with various methods, including dermabrasion, carbon dioxide laser, filler and chemical peels. Ablative resurfacing is typically used to treat rhytides, dyschromia and scarring (1). Dermabrasion has long history of success in the treatment of wrinkles and scars. It has recently fallen out of favor because many surgeons have found carbon dioxide lasers to be more predictable as to the depth of tissue injury (2). Advantages of dermabrasion include the relatively low cost of equipment. Disadvantages include potential exposure of health care personnel to blood-borne pathogens aerosolized by the dermabrading fraise. Mechanical facial resurfacing traces its origins from the early 20th century with the advent of dermabrasion, first described by Kronmayer in 1905 (3). Contemporary techniques include the use of a wire brush or diamond fraise, with erythema variably persisting for 7-10 days. Dermabrasion produces aerosolized particles that remain airborne for hours after the procedure and may lead to transmission of live virus (4). High-energy, short-pulsed resurfacing lasers are costly necessitate protection from beam hazards, and, as with other resurfacing modalities, may be associated with persistent erythema, hypopigmentation and hyperpigmentation, hypertrophic scarring (5). Traditional electrosurgery uses highradiofrequency (RF) energy that generates heat (400°C-600°C) that abruptly vaporizes intracellular and extracellular fluids, causing tissue desiccation. Cutaneous resurfacing with the use of traditional RF devices has been reported, albeit rarely. The electrosurgical equipments do not take in consideration the different tissues conductivity. It is good conductors as vascular tissue or hydrated skin are easy to treat with

electro-surgery. To handle this problems it is studied a voltaic arc dermoabrasion. The voltaic arc acts without getting in tip-tissue contact, creating a gentle coagulation. There is no electric passage zone, for this reason the dermoabrasion it is not influenced from the tissue electric resistance (6). A novel electrosurgical technology was used in this study for treatment of perioral rhytides.

MATERIALS AND METHODS

The authors treated 15 patients (11 female and 4 male) for perioral rhytides with voltaic arc dermoabrasion technique. Patient ages ranged between 30 and 65 years and the majority (90%) of these perioral areas had class II and III wrinkle scores. Patients of any age and in good health are candidates for laser resurfacing. The optimal candidate is a patient with Fitzpatrick skin types I to III with photodamage and moderate postoperative expectations. Contraindications to the procedure include a history of keloids or connective tissue diseases. Dermatologic conditions which result in a reduction in adnexal structures, such as history of radiation therapy or scleroderma, should also serve as contraindications because of the absence of stem cells in the appendageal bulge, which reduces re-epithelialization postoperatively. After have read the brochure and discussed risks and benefits and alternatives of face rejuvenation, and after having all of their questions satisfactorily answered, each patient signed the informed consent form, describing the possible complications and untoward effects such as: bruising, swelling. Voltaic arc dermoabrasion (PLEXR, GMV s.r.l. Grottaferrata, Italy) (Fig.1) was used to remove the keratinized layer for point perioral area. Treatment is minimally painful and in the author's experience require no anesthesia. No discomfort should be expected once the Voltaic arc dermoabrasion treatment is concluded (Fig. 2). Voltaic arc dermoabrasion technique for rhytides, a first "pass" of non overlapping and vaporizing voltaic arc, is performed, followed by gentle yet thorough wiping of the desiccated debris with saline-soaked sponges. The perioral skin surface then reveals a pink hue, representing partially denatured papillary dermis. No further special instructions are needed, and the patients go back to work immediately. The results were evaluated one month after the treatment. To evaluate the results, by means of a joined investigator was based on clinical observation and comparison of pretreatment and post treatment photographs of the areas of interest at each follow-up visit.

RESULTS

The perioral dermis appears as a pale, erythematous, dull surface. Bleeding is not seen unless excessive abrading occurs with the saline-moistened gauze. Subsequent passes produce a transient blanch lasting only about 10 to 15 seconds (Fig. 3). Careful attention must be given to the path of the wand to ensure even treatment. No dermal contraction is seen during treatment. During the first postoperative week, 9 patient's areas exhibited edema, while edema was present in 7 patients of treated areas at the day 30 follow-up examination. The results were evaluated one month after the treatment. Marked improvement was seen in nine of the 15 patients, in whom 50-75% of rhytides class I-II were improved (fine lines and generalized deep lines with moderate textural changes). Moderate improvement was seen in five of 15 patients, in whom 25-50% of class I-II rhytides were improved. No hyperpigmentation, hypopigmentation, erythema, ecchymosis, pain, itching, outbreaks of herpes, infectious processes and scarring was observed (Fig.4).

DISCUSSION

Electrosurgery is the application of an alternative electric current with a high voltage on a biological tissue with a thermal effect to achieve an

incision or coagulation. The electrosurgery is one of the most soft surgery technique used for tissues, which may be ablated leaving a 100-400µm necrotic tissue layer. It is a surgical technique that uses high frequency (HF) electric current to realize a simple and easy cut or /and clot. So it is possible to have a precise cut and clotting at the same moment having a free blood operative field (7).

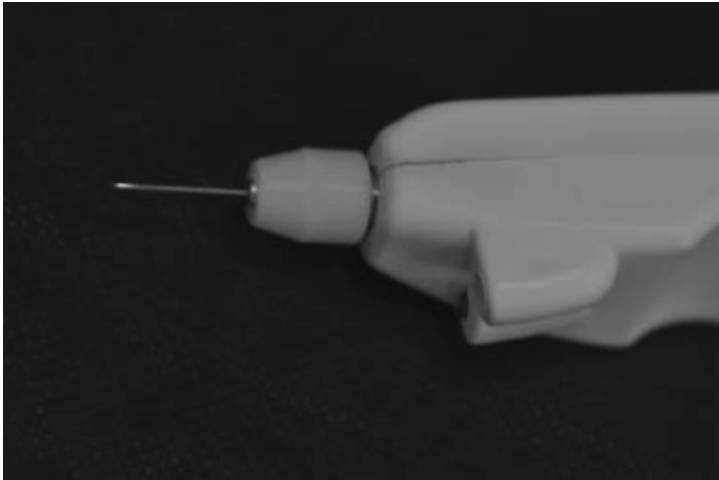


Fig. 1: Voltaic arc dermoabrasion unit.



Fig. 2: Before treatment of perioral rhytides.

The electrosurgical equipments do not take in consideration the different tissues conductivity. There are good conductors such as vascular tissue or hydrated skin, so, easy to treat with electrosurgery. To handle this problems it is studied a voltaic arc dermoabrasion. The voltaic arc acts without getting in tip-tissue contact, creating a gentle coagulation. There is no electric passage zone, for this reason the dermoabrasion it is not influenced from the tissue electric resistance. During operation it is important to be protected with masks to avoid viral particles inhalation (8). Skin resurfacing by the cosmetic surgeon is a process that causes a controlled injury to skin and then stimulates a wound healing response. In response to injury, fibroblasts in the papillary dermis increase production of type I and type III procollagen in addition to transforming growth factor beta-1. The collagen increase in turns thickens the dermis, which enhances the tensile strength of the skin and yields the clinical



appearance of rejuvenation. Ablative resurfacing achieves the outcome of rejuvenation by the destruction of the outermost and thus most photodamaged layers of the skin. The subsequent laying down of newly formed collagen and a tightened skin appearance follows this removal. Voltaic arc dermoabrasion technique is a new technique for skin resurfacing (9). It can yield excellent results when a well-trained surgeon performs the procedure for the appropriate patient. The keys to performing electro-dermabrasion are experience and understanding of its principles to provide sufficient resurfacing to the appropriate depth and minimize scar formation. Careful patient screening is crucial to ensure realistic expectations.

With meticulous postoperative care, the results can be highly satisfying for patients. Voltaic arc dermoabrasion technique resurfacing was found to be effective and safe in the treatment of perioral wrinkles in patients with skin types I, II, and III. For the most part, healing was rapid, pain was minimal, erythema resolved within 20-30 days, and untoward effects were relatively few and short-lived. The advantage of voltaic arc dermoabrasion technique is that postoperative care is unnecessary (10). Immediately postoperatively, minimal edema resolves within several hours. The majority of patients can apply makeup and return to normal daily life immediately following treatment. A novel device for performing ablative resurfacing has been developed which works by passing of voltaic arc. The "voltaic arc" causes rapid heating of the skin with limited tissue ablation and minimal collateral thermal damage. A few reports indicate improvement in facial rhytides and scars following treatment. Epidermal regeneration occurs by 7 days postoperatively with neocollagenesis visible on histologic analysis at 30 days (11). In conclusion fine rhytides, particularly in the perioral areas may be completely eradicated with voltaic arc resurfacing; deeper creases are also improved, probably secondary to a general tightening effect.



Fig. 3: Appearance of a typical patient immediately after undergoing to dermabrasion with voltaic arc technique.



Fig. 4. Postoperative photograph of a patient after 1 month treatment resulted in a better cosmetic outcome.

#### REFERENCES:

##### **"Treatment Of Perioral Rhytides With Voltaic Arc Dermoabrasion"**

A. SCARANO, D. D'ANDRIA, G. FIPPI, F. DI CARLO, F. CARINCI, D. LAURITANO. "Treatment Of Perioral Rhytides With Voltaic Arc Dermoabrasion". European Journal Of Inflammation Vol. 10, no. 1 (S2), 25-29 (2012).

# Plexr (Fusion GT)

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## Plexr

The world's 1st plasma  
generator for skin sublimation

This HIGHLY COMMENDED device is dedicated to specialists in the industry, can be used alongside the laser, radio scalpel, pulsed light and radio frequency, using the fourth state of matter: PLASMA.

The tissue is sublimated, which is the transition from the solid directly to gas, thus avoiding unnecessarily heating surrounding or underlying tissue.



### APPLICATIONS

- Blepharoplasty •
- Face lifting •
- Body and belly button lifting •
- Acne treatment •
- Fibromas, naevi, verrucas, cheloids, xanthelasma •
- and dyskeratosis removal •
- Tattoo removal (all colours) •
- Post-acne and scar correction •
- Swollen periumbilical striation treatment •

### STRENGTHS

- Operating principle: Plasma
- Three practical and ergonomic wireless hand pieces of various powers
- Constant emission of energy supply
- The current does not pass through the patient
- Innovative wireless charging system with an automated battery level control
- Latest generation of long life battery with LED charging control system
- Portable battery recharging unit
- Exclusive non-invasive patented technology in constant development



# O.F.F.

## The latest Micro Liposuction and Telangiectasia device

O.F.F. is a new device emitting a flow of sinusoidal fractioned waves with a fixed frequency that, depending on the programme and handpiece used, allow treatments like telangiectasias, spider nevus and lipolysis in areas of the body and face with excess fat.



# Vibrance

## Volumetric facial and body reconstruction.

Vibrance is a device used for Needle Shaping, the autologous volumetric reconstruction, by using vibrations. This device is able to provide programmed current mixed with high-voltage galvanic current.



## O.F.F. APPLICATIONS

- Angiomas and telangiectasias •
- Local destruction of adipose tissue by fractional hyperthermia •
- Micro Liposuction •

## VIBRANCE APPLICATIONS

- Lip volume and reconstruction
- Expression lines / wrinkle treatment
- Face and neck hydration
- Cheekbones reconstruction
- Water retention reduction
- Skin toning
- Electro lymphatic drainage
- Scar treatment
- Fat mobilization in adipose tissue
- Breast and buttock lifting

# PLEXR: An Oculoplastic Surgeons Magic Wand!

From around age 25, early signs of ageing, are apparent on the skin. Fine lines appear first, and over time wrinkles become more noticeable, and as skin loses its elasticity and thins, it leaves us with sagging and redundant skin. The eyelid, peri-oral and neck skin being naturally thinner, visibly age earlier.

Hooded eyelids, caused by an extra fold of skin that covers the crease in the upper eyelid, are one of the commonest reasons why patients seek cosmetic surgery.

An “Eyelid Lift” or Blepharoplasty, where the excess eyelid skin is cut away, delivers good long-term benefits but can often leave the patient with a visible scar, inability to shut the eyes and other stigma of surgery. Excess wrinkly or “crepey” skin left after upper and lower blepharoplasty is a very frustrating problem.

Skin resurfacing with

ablative Lasers, have been mainly reserved for lower eyelid skin excess, but have proved less popular with patients due to their downtime with risk of pigmentary disturbances, erythema, scarring and infection.

Although a scalpel or LASER can perform a blepharoplasty, until now, surgery has been the mainstream treatment for loose eyelid skin.

With patients now seeking less invasive treatments, without the visible stigma and downtime of surgery and at more affordable costs, Plexr offers a unique and safe way of achieving non-ablative peri-orbital resurfacing of the eyelid skin without removing skin and muscle.

Designed to resemble a giant rechargeable pen, using a Plasma beam to sublimate excess eyelid skin without damage to the basement membrane, muscle or other underlying structures. PLEXR causes sublimation, which is the process of turning a solid state into a gas, so results are instantaneous, with no heat transferred to surrounding tissues to cause damage to normal skin. PLEXR uses plasma so there is no electric current, which can cause problems for some patients, and the treatments result in tissue retraction and tightening which for me, gives outstanding results, which I would normally only expect after combining surgery and skin resurfacing treatments.

However, there are no scalpels, no suturing involved, and in addition, there is none of the associated downtime of LASER skin resurfacing. Following PLEXR treatment, tiny dark brown/black spots called carbon crust appear, most of which fall off in a week. Swelling is common and often lasts several days and can be quite significant around the eyes. PLEXR plasma technology has been used worldwide for several years, with no reported significant adverse events, although in theory there is a low risk of scarring and pigmentary disturbances in darker skin types.

As an oculoplastic surgeon, I not only use it to tighten loose skin on the eyelids and brow, but also zap away xanthelasma and skin lesions.

I also use it to erase smoker's lines and tighten turkey necks, which are challenging areas to rejuvenate surgically.

Quite simply, it has become my magic wand, leaving a sparkle of carbon crust every time I want to perform some non-surgical magic!



**Mrs. Sabrina Shah-Desai, MS, FRCS.**  
Consultant Oculoplastic Surgeon  
Director, Perfect Eyes Ltd,  
London, UK.







# Training Courses

Book one of our training sessions and see how our equipment is changing the Aesthetic Medicine industry!

It doesn't matter if you already own the machine or not, if you intend to buy it or you are just curious to see how it works, if you are based in London or in any other city in the UK: we have a great Training Course suitable for your needs.

With three different options of training courses, Fusion GT sponsored these unmissable events to get you involved in our Soft Surgery System and the functioning of all of our machines. All of our trainings include a theoretical session that will provide you with more information about how our machines work and a practical session with models, so that you can see yourself the incredible results of our treatments, and be confident in their efficiency.

## One to One

This 4-hour practical course will allow you to learn the functioning of the machine. Assisted by a soft surgery expert, you will train on our models at one of our centres. By the end of the course, you'll be able to efficiently use our techniques and machines.

## Academy Training

If you want a broad knowledge of soft surgery, our machines and the procedures you can perform to meet your patients' needs, the Academy of Soft Surgery is the perfect solution for you!

## Workshop Presentation

Do you want to discover more about our devices before buying them? In this presentation you will have all the information you need and see with your own eyes some patients being treated!

Choose the option that suits you better and register at

► [WWW.FUSIONGT.CO.UK/TRANING](http://WWW.FUSIONGT.CO.UK/TRANING) ◀

# Next Conferences

During 2015 Fusion GT took part in national and international conferences. Please find below the dates of the next conferences so you can come and meet us at our stand and get more information about our Soft Surgery System:

**Aesthetics**  
Conference & Exhibition

15, 16 April

**FACE**  
FACIAL AESTHETIC CONFERENCE AND EXHIBITION

16, 17, 18, 19 June

**CCR** EXPO  
CLINICAL + COSMETIC + RECONSTRUCTIVE

6, 7 October



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