

Ablation of Facial Telangiectasia using Radiofrequency Device

Hussam Ali Salman*, Omar Abdulsattar Abdullah**

ABSTRACT:

BACKGROUND:

Telangiectasias are superficial cutaneous vessels of arteriolar, venule, or capillary origin. These lesions especially when on the face often cause cosmetic concern and patients often seek treatment due to these aesthetic imperfection.

OBJECTIVE:

To evaluate the effectiveness and side effects of monopolar Radiofrequency current in the treatment of facial telangiectasia.

METHODS:

This is an Interventional non-randomized clinical study ,It was conducted at private clinic ,Baghdad ,Iraq from June 2020 till December 2020 ,eighteen patients were included in the study, From each patient the nasal area and/ or the cheek area were included (total of 16 nasal areas and 7 cheek areas),the response to treatment were assessed according to visual scaling and patient satisfaction.

RESULTS:

One radiofrequency session was significantly associated with complete response in the nose telangiectasia (92.9%, P = 0.03), better response when compared to the cheek. No recurrence was significantly associated with Nose telangiectasia (86.7%, P= 0.014) better response when compared to the cheek. There was no significant association between patient satisfaction and number of sessions (P = 0.792) .

CONCLUSION:

RF technology to treat facial telangiectasia is easy to use cheap method with minimal postoperative side effect.

KEYWORDS: Facial telangiectasia, radiofrequency ablation, nose, cheek.

INTRODUCTION:

Telangiectasias means expanded blood vessels. With the dimensions ranging from 0.1mm to 1 mm and may originate from arteriole, venule or capillary.⁽¹⁾ Arteriolar Telangiectasias are usually characterized by being more red smaller in size and does not elevate above the surface. Venous Telangiectasias usually characterize by being larger, elevate above the skin level and more bluish in color.⁽²⁾ **Treatment of telangiectasia: Pulse Dye Laser:** Pulsed dye laser treatment can be used with radiofrequency to increase effects; the settings of the PDL device can be lowered with this combination which can decrease adverse effects.⁽³⁾⁽⁴⁾ **Intense Pulse Light (IPL)** the light fluency levels normally emitted from IPLs range from 20 to 50 J/cm² in order to achieve clinical effects on facial telangiectasias;. Caution must be made to ensure that no mechanical compression was applied to the skin surface by the IPL system's optical light guide: pressure or removal of

the target blood from the area being treated will reduce the light absorption and hence the clinical effect.⁽⁵⁾⁽⁶⁾⁽⁷⁾ **Long pulse Neodymium:Yttrium Aluminium Garnet (Nd:YAG)** This type of LASER is great indication in treating larger vessels with visible blueish hues. Treatment of smaller vessels often requires high energy and short pulse durations which increase the risk of purpura as well as blistering and scarring One benefit of Nd:YAG lasers has the advantage to treat patients with darker skin type because of low melanin absorption.⁽⁸⁾

Radiofrequency (RF):the use of this new technology in medicine either as electrical currents or EM waves (radio waves)is started more than 100 years ago ,now a days it include wide variety of applications including hyperthermy ,diathermy or as a method of cancer treatment using electrosurgery scalpels for cutting and cauterizing during operations, and radiofrequency ablation.⁽⁹⁾

*Department of Dermatology/College of Medicine – Baghdad University .

**Baghdad center of dermatology/medical city.

ABLATION OF FACIAL TELANGIECTASIA

Ablative RF or radiofrequency ablation
Radiofrequency ablation (RFA), a procedure by which a tip is placed on the skin surface allowing radiofrequency energy to coagulate the lesion.

The high accuracy of the RF small monopolar needle permits meticulous treatment of small vessels by decreasing longitudinal damage of the epithelial and reticular dermis. The chance of scarring is mild if the treatment is done with caution with the appropriate setting.⁽¹⁰⁾⁽¹¹⁾ as the electrode tip temperature is not increased. Therefore, RF ablation is also called as cold ablation or "coblation."⁽¹⁰⁾

Dermatological Indications of RFA:

a. Benign skin lesions: Freckle acne vulgaris, skin tag, vascular nevi. b. Skin lesions of the elderly: solar keratosis, and lentigenes. c. Malignant skin lesions: Squamous cell carcinoma, basal cell carcinoma and carcinoma in situ. e. procedures of the Nail: removal of the nail matrix, ingrown toenail and onychogryphosis. f. aesthetic procedures: Mole destruction, telangiectasia, scar repair.⁽¹²⁾

The contraindications to RF treatment: include the patients who had medical devices, such as a heart pacemaker and Patients with autoimmune diseases are also contraindicated.⁽¹³⁾

PATIENTS AND METHODS:

Study design: This is an Interventional non randomized clinical study conducted at private clinic Baghdad, IRAQ from June 2020 till December 2020. Formal Informed consent was taken from all patients participating in the study.

Inclusion criteria:

- a. Both gender above the age of 18.
- b. The presence of arborizing, spider type or simple (linear) facial telangiectasia or more than one type.

Exclusion criteria:

- a. Recurrent or active herpes simplex.
- b. Previous radiation therapy or photosensitivity.
- c. Patients with pacemaker or autoimmune disease or collagen vascular disease.
- d. The use of other modality of treatment in the last 3 months.
- e. Current use of topical corticosteroids or topical retinoids.
- f. Use of systemic retinoids in the last 3 months. tendency to form keloids.

Patients: Eighteen patients (total off 16 nasal areas and 7 cheek areas) were included in the study aged between 22 and 42 from both gender with clinically visible facial telangiectasia. Each patient was treated with one, two or three radiofrequency session 2 weeks apart.

The areas involved taken to be treated are the cheek, nose or both. (BOVIE DERM 942 ®)(Figure 3) radiofrequency generator (Symmetry Surgical®, USA) was used, it was adjusted 400 kHz with the power used between 4 to 7 watt in spray coagulation mode (**Monopolar**)

Procedure: The session started with peripheral vessels, continuing in a from the center toward the outside. Once the vessel disappeared, sufficient energy has been applied, if blanching is not immediately seen, the energy can be reapplied again for a second time but the contact time of the tip of the electrode with the tissue should be very short, longer contacts may lead to unnecessary cutting and scar formation.

Skin-moisturizing for one week was applied after each session to promote wound healing and to minimize skin dryness. Second session was done to treat the remaining vessels if no skin alteration was seen (dyspigmentation, scarring), third session was done 2 weeks after the second session to treat the remaining vessels each area was treated separately. Follow up was done to each area 3 weeks after the last session.

1. Partial recurrence was defined as return of the vessel but in color lighter than its original color (pink, light red) seen by the naked eye.
2. Complete recurrence was defined as the return of the vessel to its original status (dark red, bluish)
3. No recurrence is defined as there is no return of the vessels assessed by the naked eye.
The response to treatment was assessed according to visual scaling determined by the examiner and according to patient satisfaction.

1. Partial response where the color of the vessel changed from original dark red or bluish red to lighter in color (pink, light red) immediately post session observed by the naked eye.
2. Complete response where the vessel disappeared completely immediately post session observed by the naked eye.
3. No response is where no changes could be seen by the naked eye immediately post session. Photos were recorded using I phone 10 camera.

Each patients was asked after the last session about his satisfaction with result of the procedure, Given three choices about the response (unsatisfied, satisfied or very satisfied).

ABLATION OF FACIAL TELANGIECTASIA

RESULTS:

Age: The mean age (\pm SD) was 32 (\pm 6) years range between 22 and 42 years. **Gender:** Twenty one (91.3%) of the study sample patients were females and tow (8.7%) were males. **Number of radiofrequency sessions:** Fourteen(60.9%) of the study sample cases required one adiofrequency session while two radiofrequency sessions was enough for seven cases (30.4%) of the study sample cases and three radio frequency sessions was enough for the remaining two cases(9.52%). One radiofrequency session was significantly associated with complete response of nose telangiectasia (92.9%, $P = 0.03$). **Satisfaction:** Seventeen (73.9%) of the study sample cases were very satisfied while six cases (26.1%) were satisfied and no case reported to be unsatisfied from the procedure. There was no significant association between area involved and patient satisfaction ($P= 0.618$).

Recurrence: Fifteen (68.2%) of the study sample cases didn't suffer from recurrence, while six cases (27.2%) suffer from partial recurrence with only one case (4.5%) suffers from complete recurrence and one case was missed in the follow up. No recurrence was significantly associated with Nose telangiectasia (86.7%, $P= 0.014$). **Reported Side Effects:** 1. Erythema both reported by the patients and observed by us seen in the majority of the patients in some patients associated with mild itching ,the duration of the erythema ranged from few hours to few days after each session no treatments was needed. 2. Mild pain or discomfort during the session reported in minority of the patients the majority of those the pain subsided immediately after the session with only one patient reported the pain continue for hours no treatment was necessary.



Figure 1: 40 years old female to the left before the session to the right immediately after the session taken in private clinic In Baghdad, Iraq 2020



Figure 2: Female 42 years the upper before the session below is immediately after the session taken in private clinic In Baghdad

DISCUSSION:

In this study there was a quicker response and lower recurrence in the nose compared to the cheek, similar observation was made by *Jean-Marc Chardonneau*, in his study of using RF in treating telangiectasia of the legs, He found that effectiveness is Depending on the areas treated. Edematous areas (knee-thighs) are more resistant to treatment and often require several sessions and the result isn't always very satisfying, conversely, the "dry" areas (feet - ankles - legs) are very receptive and frequently

only one session is sufficient, ⁽¹⁴⁾ we could draw our conclusion regarding the difference that was noticed between the cheek and nose ,with the nose being equivalent to the "dry "area and the cheek equivalent to the edematous area. Kim et al found that the vascular lesions situated on the face showed good response to the treatment. ⁽¹⁵⁾ In regard to the relation of the patient characteristics such as age, gender, or the cause of the telangiectasia no conclusion could be drawn about any of these factors because of

ABLATION OF FACIAL TELANGIECTASIA

the limited case sample distribution across these factors. *Kim et al.* in his study used the same follow up protocol used in our study, they found that the results after 3 weeks was (33.3%) excellent; (44.4%) showed good results; (11.1%) showed moderate results; and (11.1%) showed poor results, but in the contrary to the finding in this study they founded that the area most likely to show poor results were nasal ala and upper eyelid, they proposed the cause for this finding as these areas being more painful and more difficult to reach, especially the, nasal ala.⁽¹⁵⁾ No dyspigmentation was noticed in this study, and it was not reported by any patient, However *Sharad Mutalik* listed hyperpigmentation as a possible result of RF especially if used on darker skin type which can be avoided by priming the skin with hydroquinone and regular use of sunscreens,⁽¹⁰⁾ counter argument could be made that he listed a study named the hazards of electrosurgery as reference for this complication⁽¹⁶⁾ In regard to recurrence, A study done by *Guida S et al.* tried to examine the risk factors associated with reappearance of the lesions after clearance by the use of flash lamp PDL, only 24% of women and 14% of men showed persistence disappearance of the vessels after 5 years follow up, they mention many reasons as a risk for reappearance that include age, tanning, smoking alcohol, filler implant and aesthetic procedure, while the use of HRT was protective.⁽¹⁷⁾ In this study there was no great increase in erythema in the effective power used although some patients reported mild erythema in the site of vessel ablation, however it was mostly mild, transient and no treatment required. Generally there was good satisfaction; however there was no significant association with the response or the recurrence and the level of satisfaction. *Qinyu Chen et al.* conducted a study in the subject of the Association between Patient satisfaction and patient-reported health outcomes; they concluded that poor satisfaction was associated with number of unmodifiable patient-level characteristics, as well as mental health scores. These data suggest that patient satisfaction is a complex metric that can be affected by more than provider performance or the subjective results of the treatment modality.⁽¹⁸⁾

CONCLUSION:

RF technology to treat facial telangiectasia is easy to use with minimal postoperative side effect. The noses when treated by RF have a better response and lower recurrence than the cheek. The radiofrequency technology could be combined with other methods of LASER

or light therapy to increase efficacy and decrease side effect. Patient satisfaction depends more on the patient characteristics and mentality than the procedure performance.

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ABLATION OF FACIAL TELANGIECTASIA

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