

## Facial Telangiectasia Treated with Narrow Band Intense Pulsed Light (IPL): A Case Report

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### ABSTRACT

**Introduction:** Facial telangiectasia (FT) are superficial cutaneous vessels that can result in noticeable aesthetical imperfections. They can vary in size, location, color, and pattern. Recently, a laser with broadband light was effective for vascular disease, in 2020 a retrospective study reported patients FT treated with IPL using 530-650nm and 900-1200nm show a better result after 4 weeks of interval treatment. **Case Illustration:** Male, 50 years old, complains of discoloration around the nose. The complaint began for the past 2 years and is more visible around the nose. Vital signs and physical examination within normal limits. Dermatological status in the nasal is found a dilated vessels around 0.5-1.0 mm, discoloration erythematous to violaceous vessels, and spider web shaped. The patient was diagnosed with facial telangiectasia C1 and treated using intense pulsed light 600nm after the first session showed significant results. **Discussion:** The recommendation for FT is using narrow-band laser, such as Intense Pulsed Light (IPL) that uses a flashlamp to emit polychromatic light across a broad wavelength spectrum of approximately 400–1400 nm that can penetrate the skin from superficial to deeper vessels, uses the mechanism of photo thermolysis by targeting chromophores within the vessels with minimum side effects. **Conclusion:** Adequate therapy using IPL gives a good result with one session of treatment in the right patient according to the grading of Facial Telangiectasia.

**Keywords:** facial telangiectasia; intense pulsed light

### INTRODUCTION

Facial telangiectasia (FT) refers to superficial cutaneous vessels visible on the face they can vary in size around 0.1 – 1.0 mm in diameter and represent a dilated venule, capillary, or arteriole [1]. Facial telangiectasia is caused by a variety of reasons, such as photodamaging from sun exposure, cold, autoimmune disorders, persistent actinic damage, allergies to cosmetics, prolonged steroid use, etc. [2]. Typically, the nose, cheeks, and chin are the areas with facial telangiectasia. In general, lesions are susceptible to exposure to cold, heat, and sunlight. The diagnoses of telangiectasias are clinical and made according to the Clinical, Ethiological, Anatomical, and Pathophysiological (CEAP) classification system for chronic venous disorders. This CEAP classification system consists of seven main categories and telangiectasias are classified as C1 [3].

Recently, innovative laser treatments for skin blemishes have provided patients with facial telangiectasia with new opportunities. Laser with broadband light sources that emit a spectrum of wavelengths has been increasingly used for the treatment of vascular disease. This polychromatic high-intensity pulsed light is called IPL therapy, or Intense Pulsed Light therapy.

IPL equipment emits polychromatic, noncoherent light that may be tuned to deliver a variety of wavelengths, pulse duration, and fluences. Similar to lasers, selective photothermolysis is produced when these photons interact with the skin's chromophores, aiding in the treatment of a variety of dermatological disorders [4] IPL delivers an intense, broad-spectrum pulse of light, generally in the spectral range of 400–1200 nm, however, various filters may be employed to narrow the wavelength spectrum and make the light focus on a particular target. Various conditions like photoaging, rosacea, and telangiectasia have been suggested as candidates for its use in management. Some studies have shown that IPL treatment for telangiectasias and superficial veins compared to larger, deeper veins, which appeared to benefit more from traditional laser treatment, and led to higher patient satisfaction[5] In a retrospective study published in 2020, Gao et al. compared the effects of two PDL (595 nm) sessions with two IPL sessions on 160 patients with facial telangiectasia. The patients were divided into four study groups: PDL (595 nm), IPL with M22 vascular filter (530-650 nm and 900-1200 nm), M22 560 (560-1200 nm), and M22 590 (590-1200 nm). Significant progress was seen in every research group.

In comparison to the other two groups, PDL (595 nm) and IPL vascular filter (530-650 nm and 900-1200 nm) produced better outcomes [6].

In this paper, we will analyze the results following an IPL in managing facial telangiectasias

### CASE ILLUSTRATION

A man, 50 years old, Australian, came to the Skin and Venereology Polyclinic with the main complaint of discoloration around the nose. Mostly red to blue colors of vessels, and most intense for the past 2 years. This complaint is not accompanied by itching, burn sensation, or pain. The patient felt discomfort because of cosmetic problems.

Present status and general status were found within normal limits. Dermatological status found discoloration in the nasal region on the left and right side mostly erythematous to violaceous colors, with branch-like shape, diameter around 0.5 - 1 mm,

spread more likely within two years. The patient has a long exposure to the sun without using any sun protection such as a hat, sunglasses, or sunblock. The patient never put any topical cream on his face, never used medication, and never did a treatment before. There was no associated change in the skin of the other region or other organs. Past medical history and family history were negative. The patient used to smoke cigarettes and drink alcohol.

Patients with Fitzpatrick skin phototypes II, diagnosed with Facial telangiectasia C1 (according to CEAP classification) and treated using IPL with a wavelength spectrum of 600nm, with fluence 15J/cm<sup>2</sup>, and a pulse duration of 15ms were used. No topical, local, or general anesthesia was used during the treatments. Clinical examination and close-up photography were performed before and right after the treatment. Significant discoloration of the facial telangiectasia was reported directly after the first treatment.



**FIGURE 1:** (a) Facial Telangiectasia before IPL, (b) Diminished FT after IPL.

### DISCUSSION

Telangiectasias are visible dilated blood vessels with sizes typically ranging from 0.1 to 1.0 mm, they can develop spontaneously or as a result of other medical conditions (such as rosacea) or other risk factors (light exposure, steroid intake or topical application, alcohol intake, etc.). Everyone can be impacted, however, persons between the ages of 30 and 50 and those with lighter skin phototypes are more frequently affected.

There are two categories of telangiectasia based on their morphology: (a) macular, which can be further subdivided into linear (most commonly visible over nose, mid cheeks, and chin), arborized, or Besenreiser

type (on thigh), spider or star-like, punctiform type, and (b) papular (for example cherry angioma, angiokeratoma, etc). Braverman and Ken-Yen performed ultrastructural analyses of telangiectasias in various disorders by light and electron microscopy and found that macular telangiectasias are produced by dilatation of postcapillary venules of the upper horizontal plexus, whereas papular telangiectasias are produced by spherical and tubular dilatations of capillary loops in dermal papillae[7].

The presence of these lesions, which are frequently found on the face and are accompanied by erythrosis, can be a considerable source of stress, and laser systems showing affinity to hemoglobin have become

the mainstay in the treatment of telangiectasia lesions. Vascular vascular-specific laser system targets intravascular oxyhemoglobin in order to effect the destruction of various congenital and acquired vascular lesions the energy from the laser is selectively absorbed by intravascular oxyhemoglobin, which then releases the energy as heat, causing destruction of the surrounding vessels. Because hemoglobin has a broad absorption spectrum, ranging from 400 nm to 1.100 nm. numerous wavelengths and light sources can eliminate or reduce the appearance of facial vessels, such as the 810-nm diode, 585-595 nm pulsed dye laser (PDL), 532-nm potassium titanyl phosphate (KTP), and intense pulsed light (IPL) [8].

IPL is fundamentally different from a laser (light amplification by stimulated emission of radiation), whose light must be monochromatic (of a single wavelength), collimated (with waves running in parallel), and coherent. IPL uses a flashlamp to emit polychromatic light over a wide wavelength spectrum of about 400-1400 nm (with waves in phase). IPL integrates with a range of wavelength bands that can penetrate the skin from superficial to deeper vessels, especially for those vessels with small diameters. The target chromophore in vascular lesions is the oxyhemoglobin present in the red blood corpuscles (RBCs) which circulates in the blood vessels. Oxyhemoglobin has three major absorption peaks at 418, 542, and 577 nm. Optimal absorption is within the 577–600 nm range. Light energy is transformed into thermal energy following laser absorption by oxyhemoglobin. Thermal energy diffuses radially within the blood vessel causing photocoagulation and mechanical injury that results in selective microvascular damage. The result is thrombosis of the blood vessels. If the pulse duration exceeds the thermal relaxation time (TRT), perivascular connective tissues sustain non-selective thermal injury, which causes tissue destruction and scarring [9]. IPL at a wavelength of 500–600 nm that covers two absorption peaks of oxyhemoglobin and deoxyhemoglobin (542 nm and 577 nm), has better clinical response without such adverse effects as purpura and severe edema [10]. But on the other hand, for IPL there is a risk of developing skin blisters and post-inflammatory hyperpigmentation; therefore, sun exposure needs to be avoided after treatment. However, it is safe, effective, and with short downtime.

In this case, reported Facial Telangiectasia may be caused by long exposure to sun and a history of alcohol, with an arborizing shape, treated with IPL 600nm without local anesthesia, and after the first session, we found that the treatment significantly reduced the tiny superficial erythematous to violaceous vessels, without any adverse effects. According to the theory, IPL shows considerable efficacy for facial telangiectasia. Although further cases should be compared.

## CONCLUSION

One case of Facial telangiectasia C1 was reported in an Australian male patient 50 years old. The diagnosis of facial telangiectasia is based on history and physical examination. The main management of this dermatologic problem is Intense Pulse Light with 600nm wavelength, and the response to the first treatment course in the patient was effective in reducing the visible telangiectasia directly, and there was no side effect in this patient. This may be possible because of treatment parameters adjusted on a patient basis, patient skin types, and severity of facial telangiectasia. Prognosis in a dubious ad Bonam.

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