

# Post Filler Ecchymosis Resolution With Intense Pulsed Light

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## ABSTRACT

Bruising after dermal filler and neuromodulator injections is a common side effect and can have durations of 1 to 2 weeks. While it ultimately resolves, faster resolution can produce better outcomes for patients and also make patients more likely to return for future treatments. We report the successful reduction in bruising following injections of fillers with an intense pulsed light source. We also documented the onset of action of bruising resolution with serial photographs. Resolution started within the first hour of treatment and continued rapidly over 48 hours. This is the first-time reported study of resolution of bruising from injectables with intense pulsed light. Patient satisfaction is improved when such adverse events are minimized.

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## INTRODUCTION

Dermal filler injections can often produce bruising, which can have extended duration and therefore produce unacceptable down time for minimally invasive aesthetic procedures. The introduction of cannulas has reduced this incidence, but it can still be prevalent regardless of needle versus cannula, especially in patients who may have taken anticoagulants, or have thinner skin, and in certain areas such as the periorbital and perioral areas, which show higher incidence of bruising.

Contusions (bruises) are ecchymoses that result when extravasated blood accumulates in the tissue,<sup>1</sup> typically when trauma causes vessels to rupture and the blood hemorrhages into the interstitial tissue. When introducing a filler to the tissue, often times the needle causes such trauma, resulting in a contusion close to the skin that manifests as a bluish/purplish mark in the tissue surrounding the injection site. While there is no real scarring or danger from this resulting hematoma, this does present a very visible indication of having “work done,” which creates a type of “social downtime.” The ability to limit this type of downtime, which can span from 3-14 days depending on the severity, could benefit the patients in their day-to-day lives by resolving the issue in a short period of time (3 days). While various types of light-based technology have been utilized to treat this type of ecchymosis with marginal results, we report the use of a broad-band light source with a selective filter that can promote rapid resolution of the ecchymosis within 3 days post treatment

## MATERIALS AND METHODS

Fifteen patients with bruising apparent within 24 to 48 hours after dermal filler injection with a variety of hyaluronic acid-based fillers were treated with the Max G Intense Pulse Light (IPL) handpiece at 28 joules/cm<sup>2</sup> and 30 msec. No anesthesia

was applied prior to treatment and anesthesia post-treatment consisted of ice. The Max G Intense Pulsed Light (IPL) hand piece was developed as an accessory to the Icon® Laser and Pulsed Light System (Cynosure Inc., Westford, MA). This IPL hand piece has a 10mm x 15mm rectangular optic and is filtered from 500nm-670nm and then again from 870nm-1200nm, utilizing dichroic and absorption filters to cut out 0-499nm, 670nm-870nm, and 1200nm+. The resulting wavelengths (500-670nm, 870-1200nm) are primarily absorbed by the Q bands and NIR bands of oxyhemoglobin, deoxyhemoglobin, and methemoglobin, which is ideal as these are the target chromophores in the blood.

The Canfield Visia camera system was utilized to obtain standardized before and after photography. Photography was performed after ecchymosis was noted and at 3 hours after treatment using the Max G at 30 msec and 28 joules/cm<sup>2</sup> and then at 72 hours after treatment.

## Summary of Results

After treating a group of 15 patients, there has been a consistent reduction in the duration of the injection created ecchymosis post treatment. This was first noted at 3 hours post treatment with the color of the bruise turning from purple to a strawberry red (Figure 1). Reduction of bruising ranged from 70% to 100% in all patients, with a mean reduction of 85% (Figure 1). There were no adverse events or complications and all patients tolerated the treatment well with only the use of post-treatment cooling.

## DISCUSSION

The use of light-based technology is not a novel treatment for ecchymosis, however, the success to this point has been limited.

**FIGURE 1.** (Top Left) Pre-treatment. (Top Right) 3 hours post-treatment. (Bottom Left) Pre-treatment. (Bottom Right) 3 days post-treatment.



Areas outside treatment aperture remain as an indication of treated vs untreated tissue.

Pulsed dye lasers (PDL), typically set in the high 500 nm range, have been the typical technology used and this has been documented.<sup>2</sup> Although there is some reduction in the ecchymosis from the PDL, the limited depth achieved due to the nature of the wavelength and the short pulse duration does not deliver a consistent level of clearance. The contusion must fully form before treatment with the PDL, with the most effective treatments being observed when the ecchymosis is treated 5 days post operation.<sup>2</sup> Because of the high absorption coefficient of oxyhemoglobin with the PDL, there is very little spread of the energy; therefore, a partial clearance of the contusion is oftentimes the result. Confinement of thermal damage to micro vessels is, in theory, related to the laser exposure time (pulse duration) on selective vascular injury.<sup>3</sup> Although there are longer pulse durations available with the PDL, there is still a substantial amount of thermal confinement at the longest pulse durations. While this is an ideal condition for certain vascular treatments, in the indication of ecchymosis this thermal confinement (high level of absorption combined with relatively short pulse durations) presents the need for a multiple treatment protocol, which is not ideal given the short duration of the visible aspect of the condition. Full clearance in a single treatment should be the end goal, which has been observed in this study using the Max G.

As the first IPL systems were introduced in 1996, and since then have developed into a formidable technology, poly chromatic, non-coherent pulses of light have been utilized for a variety of cosmetic treatments. The Max G utilizes a patented dual band filtration, which produces a "smooth" pulse profile with a spectral output of 500nm-670nm and 870nm-1200nm, while filtering out the middle wavelengths where absorption coefficients of

most blood components drop well below those of melanin. This creates an optimal system for the treatment of vascular-based conditions as this spectrum covers a variety of levels of absorption, all more readily absorbed by oxyhemoglobin than melanin or water. Since this type of pulse encompasses multiple wavelengths with varying potential absorption coefficients corresponding to various components of the blood, this type of light is ideal for targeting the blood in the interstitial space as its ability to spread along a targeted chromophore is beneficial in this situation. This type of absorption also better addresses the multiple levels of affected tissue, as the methemoglobin absorption spike in the longer wavelengths corresponds to deeper penetration. By targeting this hemorrhaged blood, the ecchymosis is usually dramatically reduced in one treatment session when compared to a non-treated contusion (Figure 1) or PDL treated contusions. This type of technology is developed for the treatment of skin type I-IV, so it has similar treatment ranges to PDL in terms of patients. The darker the skin type, the greater the risk of pigmentary changes and the lower the intended clinical response of vascular lesions.<sup>4</sup>

## CONCLUSION

We report the first series of patients prospectively treated with the Max G IPL for post procedure bruising from dermal filler injections and following time to resolution of the bruising. Treatment of bruising can lead to dramatic reduction in the downtime a patient experiences due to the obvious contusion caused after undergoing an implantation of an injectable filler. The majority of treated contusions are reduced to a barely visible state in 3 days post treatment with the IPL. This makes this a valuable tool in the treatment of post-filler injection ecchymoses.

## DISCLOSURES

The author has no conflicts of interest to disclose.

## REFERENCES

1. Karen, JK, Hale, EK, Geronemus, RG. A simple solution to the common problem of ecchymosis. *Arch Dermatol*. 2010 146(1): 94-95 doi:10.1001/archdermatol.2009.343
2. DeFatt RJ, Krishna S, Williams EF III. Pulsed-dye laser for treating ecchymoses after facial cosmetic procedure. *Arch Facial Plast Surg* 2009 11(2):99-103
3. Garden JM, Tan OT, Kerschmann R, Boll J, Furumoto H, Anderson RR, Parrish JA. Effect of dye laser pulse duration on selective cutaneous vascular injury. *J Invest Dermatol*. 1986 Nov; 87(5):653-657
4. Goldberg DJ. Laser treatment of vascular lesions. *Clin Plast Surg* 2000 27(2): 173- 180

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