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Vbeam® Treatment for Ecchymoses

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Introduction

The pulsed dye laser (PDL) has long been known as the gold standard in treating cutaneous vascular lesions. Developed in the 1980s, this technology first came about to treat port wine stains (PWS) in infants.

Selective photothermolysis is the mechanism by which pulsed dye laser work is known. This principle dictates preferential absorption by the targeted chromophore, which at a 595 nm wavelength is hemoglobin, in combination with sufficient fluence (energy per unit area) at a pulsewidth (or duration) that is less than or equal to the thermal relaxation time of the surrounding healthy tissue.

While PDLs are used for medical applications like PWS, angioma, hemangioma, venous lake and other medical conditions, there has been a surge in the amount of aesthetic treatments linked to Vbeam. Indications such as periorbital wrinkles, rejuvenation, rosacea and, most recently pigmented lesions have become commonplace with Vbeam. This is attributed to the safety profile of PDL as well as the ability to treat purpura-free—which we know is an absolute “must” for our cosmetic patients.

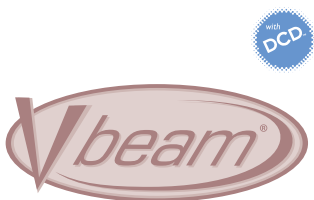
Today, we are using Vbeam PDL technology in a novel way, as a supplemental treatment to facial cosmetic procedures to promote the rapid resolution of ecchymoses (or bruising), a common side-effect of many procedures.

Method

Ecchymoses are a usual occurrence after many types of facial procedures, and are caused by extravasion of red blood cells in the soft tissues as a result of soft tissue injury. The most common associations are: cervicofacial rhytidectomy, contour thread lift, facial lipotransfer and the minimally invasive subperiosteal midface lift.

We recently decided to study the efficacy of Vbeam for treating bruises in our private facial plastic surgery practice. We treated 20 consecutive patients of Fitzpatrick skin types I–IV who had undergone facial cosmetic procedures.

Vbeam treatment was performed at designated intervals postoperatively on one half of the noted ecchymoses, while the remaining half served as the control. During the course of our study, we observed that the best response to laser treatment was at postoperative day five or six, as this allows for any postsurgical inflammation to dissipate, further allowing more of the laser energy to reach the targeted chromophore. We found the second treatment to be most beneficial at days 7 to 10. Our goal in choosing parameters was to optimize patient comfort, remain subpurpuric and alleviate the potential for any possible side-effects, such as edema or dyspigmentation. Thusly, we chose to utilize the parameters recommended in Candela's *Clinical Treatment Guidelines* for the treatment



of facial erythema due to rosacea (10 mm, 6 J/cm², 6 ms), Dynamic Cooling Device™ (DCD™) was set at 30/20. We determined that a shorter pulsewidth was likely to induce purpura, and an increased fluence led to greater patient discomfort. Clinical photos were taken before and after each treatment and were submitted to a blinded group of assessors for evaluation.

Results

One-half of the facial bruising was left untreated as the control, while the other half underwent Vbeam treatment at scheduled intervals. By treating with the Vbeam postoperatively, a significant improvement of up to 63%, and in some cases a complete resolution of postoperative ecchymoses, can be achieved within 48 to 72 hours.

Patients were highly satisfied with the outcome and frequently observed that the improvement of the ecchymotic area occurred within 24 hours after treatment. The Vbeam treatments were very well tolerated, with the only side-effects being reported by patients as mild discomfort and edema. No dyspigmentation was observed in any of the patients in the study (Fitzpatrick skin types I–IV). We also noted that untreated areas remained ecchymotic for four to six days longer than treated areas.

Anecdotally, we observed that Vbeam treatment in those patients who experienced superficial ecchymoses after receiving filler injections in the perioral area appeared to have an impressive response immediately following laser treatment. It was not uncommon to note a lightening of the bruise within minutes of treatment; we believe this is because superficial ecchymose present more target and therefore are more readily responsive to PDL.

Discussion

Our study is the first of its kind to use Vbeam for treatment of ecchymoses. Although at present this is an off-label use of the device, we did observe a statistically significant improvement of 63% in the mean ecchymotic score after laser treatment by our blinded observer group. We will continue to treat patients postoperatively using this novel Vbeam treatment to expedite the healing process and provide greater satisfaction with outcomes. While we realize that more research is needed, future applications include widespread use in ecchymoses of any etiology.

The use of Vbeam for bruising is not approved or cleared by the FDA.

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Figure 1. Pretreatment.

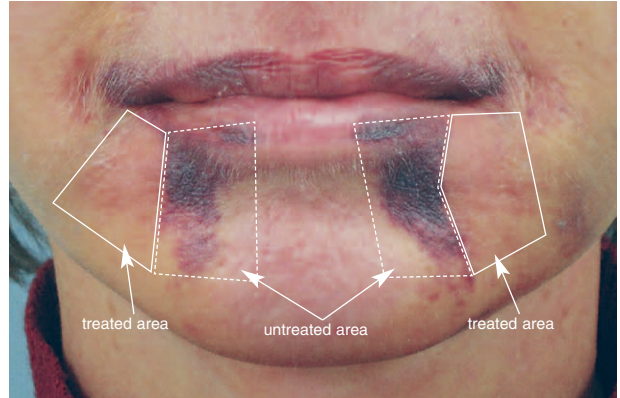


Figure 2. Post one treatment laterally.

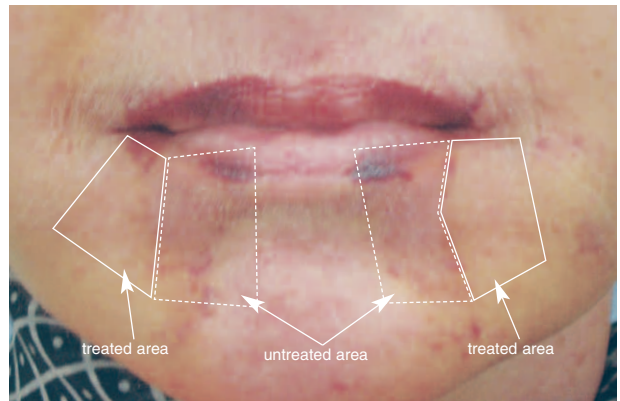


Figure 3. Post two treatments full area.

We chose to treat the ecchymotic area in two halves (medially and laterally) in order to demonstrate the response to treatment in comparison to the untreated area.

In the pictures above, the lateral (outer) half of each ecchymotic area was treated and the medial (inner) half not treated until two days later.

The main reason for the second treatment was to address the untreated area. We postulate that if we had treated the entire area initially, we may not have needed a second treatment to achieve clearance results as shown.

Each treatment involved three passes with the 10 mm spot size, 6 J/cm² at 6 ms, DCD was used each time.

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