

# Split-Face Case Study: A Comparison of Treatment Time, Number of Pulses, and Postoperative Edema with the excel V and excel V+ Laser Systems for Skin Revitalization

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Clinical Bulletin

March 2020

## Introduction

Many patients seeking skin revitalization have generalized photoaging dyschromia, discrete pigmented and vascular lesions, and facial erythema often associated with rosacea. Of the light-based modalities that have been investigated for these skin concerns, the excel V was considered the gold standard by many physicians in the aesthetic community. The excel V, originally introduced in 2011, offered the highest power (~900 Watts @ 532 nm) of any dermatological green laser on the market for dermatologic use. The recent introduction of the excel V+ device (~1,500 Watts @ 532 nm) enables the use of larger treatment spot sizes, combined with clinically therapeutic fluences and pulse duration allowing faster and more uniform treatments to be delivered. Additionally, the cooling capacity of the excel V+ CoolView handpiece was tripled to accommodate treatments at the larger spot sizes and to improve patient comfort during treatment.

## Objective

The objective of this study was to directly compare treatments with the excel V and excel V+ laser systems for total time, number of pulses, and side effect profiles (e.g., duration and severity of postoperative edema).

## Materials and Methods

In a split-face case study, a 45-year-old, Mediterranean female subject (FST III) with moderate photoaging and underlying mild rosacea consented to receive one treatment with the excel V to a random facial side and one treatment with the excel V+ to the opposite facial side. The treatment areas were of equivalent size and included the forehead, temples, cheeks (zygomatic, maxillary, buccal, mandibular) including the nasolabial groove, and chin (mental and lower labial), excluding the glabella, nose and medial labial area.

The treatment settings for each device were chosen based on the assessment of the subject's baseline condition, the desired clinical endpoint, and his experience with both devices for optimal skin revitalization outcomes.

Table 1: Treatment Settings

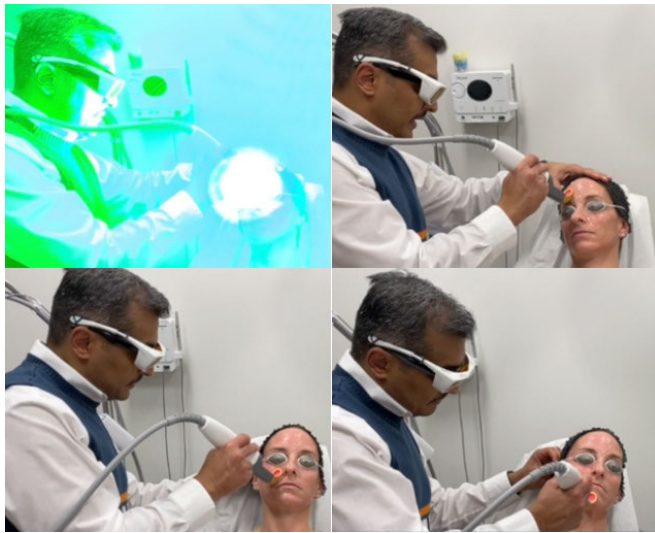
	excel V+	excel V
<b>Spot Size</b>	16 mm	12 mm
<b>Fluence</b>	6 J/cm <sup>2</sup>	7 J/cm <sup>2</sup>
<b>Pulse Width</b>	10 ms	10 ms
<b>Repetition Rate</b>	1 Hz	1 Hz
<b>Epidermal Cooling</b>	5°C	5°C
<b>Power</b> (calculated)		

Treatments were performed, as efficiently as possible, starting with the forehead, then continuing to the temples and cheeks, before finishing with the chin. Treatments were briefly paused only when needing to change treatment areas or reposition the laser safety goggle strap when treating the temple areas. Both treatments were video recorded. The videos were used to determine the total time to fully treat each facial side. The pulse counter on each device was reset prior to beginning treatment and the ending pulse counts were recorded after both treatments were completed.

During treatment of each facial side, the subject was asked to rate the treatment discomfort for that side (none, mild, moderate, significant, very significant); and after both sides had been treated, the subject was asked to rate the discomfort for each treatment side relative to the opposite side (equal, more/less, significantly more/less). All treatment-related side effects were recorded. The severity of postoperative edema (an expected treatment side effect) was assessed photographically at 1 hour, 14 hours, and 22 hours after treatment.

## Results

The excel V+ was randomly selected to be used first for the right facial side (Figure 1) and the excel V was used second for the left facial side (Figure 2).



**Figure 1. excel V+ Treatment**



**Figure 2. excel V Treatment**

Table 2 shows the number of pulses used, treatment time per side, and percentage differences in pulses and treatment times.

**Table 2**

	Pulses (n)	Time (sec)
<b>excel V+</b>	57 (45% fewer)	75 (28% less)
<b>excel V</b>	103 (81% more)	104 (39% more)

The subject tolerated the treatment with both devices well, reporting only mild to moderate discomfort on each side. When asked to compare the discomfort on each side, the subject reported the excel V treatment was more uncomfortable than the excel V+ treatment.

The subject experienced moderate postoperative erythema on both sides, mild to moderate edema on the excel V+ side, and moderate

edema on the excel V treatment side. In the 1-hour postoperative photographs (Figure 3), erythema is somewhat resolved on the excel V treatment side, but is still present on the excel V+ treatment side; however, on the excel V side, there is far more pronounced edema in a “waffle” pattern than on the excel V+ treatment side.



**Figure 3. 1-hour Postoperative**

In the 14-hour postoperative photographs (Figure 4), erythema mostly self-resolved on both sides; however, edema which has mostly resolved on the excel V+ side yet remained visible on the excel V side.



**Figure 4. 14-hours Postoperative**

Similarly, in the 22-hour postoperative photographs (Figure 5), all erythema and edema on the excel V+ side have resolved; however, mild medial erythema and moderate periocular edema remain visible on the excel V treatment side.



**Figure 5. 22-hours Postoperative**

*\*Periocular edema is indicated by blue arrow.*

## Discussion

When treating large-area conditions with lasers, many benefits come from using the largest treatment spot size available from the device for which clinically meaningful fluence levels and pulse durations can be achieved. Beyond the obvious benefits of delivering fewer treatment pulses to the treatment area and the corresponding reduction in treatment time, there are many secondary benefits including: equivalent or improved efficacy using slightly lower fluence settings due to lower scattering losses; more uniform coverage with reduced spot overlap; deeper target results; and potentially fewer treatment side effects.

In this case report, we quantified the effect of 45% fewer treatment pulses to fully treat equivalent areas as led to a 28% reduction in the total treatment time. More importantly, we found that by using the largest spot size for which a clinically meaningful fluence could be delivered within 10 ms and a handpiece with improved cooling capacity, we were able to lower the severity and duration of postoperative edema, which is a frequently reported expected side effect following 532 nm laser treatment.

## Conclusion

Skin revitalization with the excel V+ laser, using a 16 mm diameter treatment spot with improved contact cooling, can safely and effectively be performed using fewer pulses, in less time, and with less-severe and shorter-duration postoperative edema than with the excel V laser.