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# cellulite breakthrough

ELOS Technology for  
Cellulite and Fat treatment:  
Combination of Conducted  
RF, Infrared and Vacuum  
Case Report by  
**James Shoual MD.**

**C**ellulite is a skin condition that appears as an irregularity of skin contour, often characterised by a dimpled appearance of the skin (popularly know as 'orange peel' or 'cottage cheese' skin). This unsightly condition tends to gather around the thighs, hips and buttocks of women. Cellulite affects 80 per cent of women worldwide and is usually considered more of an aesthetic problem, particularly for those who have a low percentage of body fat.

Cellulite develops in the body when fat is deposited immediately below the dermis and contained in fat chambers that can become

swollen. As the fat cells grow in size, surrounding tissue becomes compressed and hardened, making blood circulation more difficult and trapping fluids. This causes reduced elasticity of the adipose tissue, producing an undesirable tension between the layers. The resulting depression of connective tissue anchor points creates the appearance of cellulite. Such irregularities respond with varying results to invasive procedures such as liposuction. The non-invasive technologies such as massagers and external ultrasound show marginal results after series of 15-20 sessions.

This paper presents preliminary results from the Vela Smooth by Syneron Medical, which utilises a unique combination of infrared light, conducted RF energy and vacuum. I believe that the Vela may provide an alternative form of therapy for problems of skin contour.

### Vela technology

The applicator of the Vela Smooth contains a controlled wavelength light energy source in the infrared range providing external heating of the tissue. Conducted RF energy, coupled with a unique orientation of electrodes, is designed to deliver energy to a depth of approximately 15mm. The Vela Smooth simultaneously affects skin irregularities via a mechanical disruption and delivers energy deep into the tissue. The combined energy penetrates approximately 3-15mm beneath the skin surface causing heating of the subcutaneous fat. This combined mechanical and infrared/RF energy treatment has been designed to increase metabolism of adipose tissue homogenising subdermal fat and increasing skin elasticity. It was theorised that this treatment would result in a marked improvement of the skin contour.

### Study protocol and results

Fifteen (15) female patients enrolled in this clinical study with a variety of body fat and cellulite conditions. Patients in the group ranged from 25 to 64 years old, with skin types II-IV. Documentation of treatment results included before and after pictures with blinded evaluation, as well as circumference measurements of the hips and thighs before the first treatment and after the eighth. All patients received eight treatments at twice-weekly intervals. Each treatment session lasted 40 minutes.

Initial tissue reaction when treating with the Vela Smooth is an increase in local blood supply to the adipose tissue. This is caused by a combination of negative pressure and the heating effect with the infrared and the radio frequency energy sources.

All patients demonstrated improvement in cellulite appearance as well as reduction in the hip circumference. Average improvement for all patients on the appearance of

cellulite was 65 per cent. Hip perimeters were reduced 3.2cm on average, and all patients reported feeling skin contraction as a result of the treatment. No complications were noted and there was no discomfort during and after the treatment. Indeed most of the patients enjoyed the treatments. In Figure 1 we can see a 35-year-old female with dramatic improvement in the appearance of cellulite over the hips.

### Discussion

The clinical reaction created by the Vela Smooth is a temperature increase in the tissue deep down to the fat layer. The speed at which fat can be metabolised depends on temperature according to the Arrhenius law:  $Y=Ae^{-B/T}$  where  $Y$  is the yield of metabolic reaction,  $A$  and  $B$  are constants, and  $T$  is the temperature (in degrees Kelvin).

Figure 1

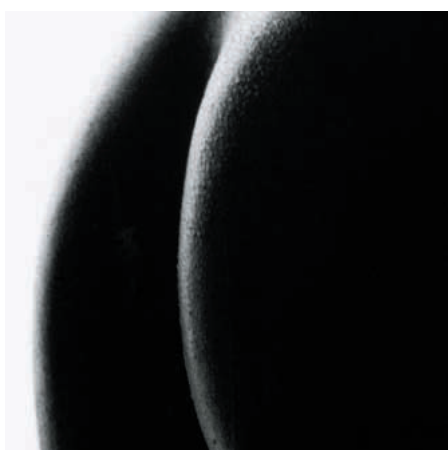


From the Arrhenius equation we can see exponential dependent of the reaction rate on tissue temperature.

The heating also increases molecular diffusion inside the tissue, thus increasing local substance exchange that enhances fat metabolism. The Vela Smooth combined infrared light and conducted radio frequency energy (RF) sources deliver a sufficient quantity of deep heat without any superficial damage. Additionally the Vela Smooth's mechanical action physically breaks fat cells clusters and stretches the fibrous bonds. Mechanical action also enhances lymphatic drainage, stimulating the evacuation of fat decay products. The Vela Smooth is designed to shape the skin surface for optimal delivery of conducted RF energy to the adipose tissue.

### Conclusion

This preliminary study demonstrates promising results. An unequivocal smoothing of the skin surface was observed. There was no compromise in the normal activity of the patients during the study period allowing the collection of objective treatment data. Long term follow up of patients is pending. **acsm**



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