

# **Skin Laxity of the Face and Neck: Treatment Approach with the Titan Device**

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Patients today are becoming accustomed to an ever-increasing array of non-surgical, non-ablative skin rejuvenation procedures. With the Titan device I am able to improve skin laxity and allow patients to return to their normal schedule immediately after treatment. Using infrared light, which is absorbed by water, the Titan causes an even, volumetric heating of the dermis, leading to a two-stage improvement in skin laxity. The first is immediate collagen contraction due to recoiling of the damaged collagen fibers. The second is stimulation of new collagen production and remodeling, which leads to continued tightening of the skin over time. With this procedure, an improvement in facial and neck contour can be achieved. This paper will discuss the procedure used to evaluate and treat patients for skin laxity of the face and neck.

## Pre-Treatment Evaluation

Patients with facial and neck skin laxity and jowling are excellent candidates for this procedure. Best results are seen in patients with thinner skin that is mobile in response to a gentle touch (i.e., the skin is not so densely adherent to the underlying structure that gentle pulling on the skin will not soften wrinkling or improve contour).

It is important to set realistic patient expectations of what this procedure can accomplish. Changes in contour with aging can be the result of dermal laxity and/or the descent of fat or other underlying structures. While Titan contracts the dermis back into place and creates a spandex-like support effect, it does not alter the underlying structure below the dermis. Therefore, while it can delay the need for surgery, it does not replace a face lift or liposuction. When patients firmly place their hands on their face and pull back towards their ears, they are evaluating themselves for a face lift, not for skin tightening. In order to see what skin tightening may achieve on an individual patient, I lightly stroke only the skin with one finger and observe the changes of contour that occur as a result. The treatment goal is to place the pulses in a pattern that is most likely to achieve these changes.

## Treatment Approach

My approach to Titan treatments is based on my experience with CO<sub>2</sub> laser skin resurfacing. Use of the CO<sub>2</sub> laser produces a visible, palpable shrinkage of the dermis with the second pass, after the epidermis has been treated and wiped away. I like to think of Titan as a way to achieve a similar effect in the dermis without disrupting the epidermis, and feel the best results can be achieved by using the same approach. First, the pulses must be placed precisely, adjacent to each other. Second, because contraction is concentric, the best tightening is achieved by placing extra pulses in areas where the pulling effect will be the greatest. I treat based on what I refer to as “vector forces;” that is, a line, or vector, along which an imaginary thread will give the most lift with the least pull. The treatment is performed by applying the pulses in a series of increasingly focused passes.

The first pass covers the entire area of laxity and extends a few centimeters outside that area, with pulses placed adjacent to one other. This technique produces uniform contraction that allows the entire area to be subsequently pulled as a unit, creating a spandex-like effect.

Gaps between pulses are to be avoided. I like to think of skipped areas as remaining unraveled, much like burlap material, which would reduce the concerted pulling effect of spandex.

The second pass covers the same or a smaller area than the first pass, because now we are aiming for the pulling effect. On the face, this usually means not treating right in front of the ear for one pulse width (unless there is a lot of laxity and you plan four passes). On the neck, it may mean not going behind or in a line directly below the ear, or not treating over the central neck.

The third (and sometimes fourth) pass aims for the most pulling effect, using contracture along lines of “vector forces.” These passes are more carefully tailored to the patient in the following way: If you place your fingers gently on the skin directly in front of the ear and pull, you will see little if any change in jowl contour, marionette lines, or nasolabial folds. But if you place your fingers three to four centimeters in front of the ear, the same amount of gentle pulling causes greater change. In some patients you see greater change yet if you pull gently on the skin of the cheek closer to the corner of the mouth. Each patient must be evaluated this way, and the area of greatest change with least pull noted. This is the area where you will concentrate pulses for your third or fourth pass. These latter passes will not usually be directly over the central area (e.g. jaw, central neck, etc.) because we are aiming for pulling by added contracture of adjacent tissue along lines of “vector force.” This is more easily appreciated by looking at the treatment maps and results of three patients.

## Treatment Maps

In order to document the treatment of individual patients, treatment maps were developed that divide the face into segments, and each pass is marked in a different color. Because the same template is used for all patients and each person’s face is unique, the treatment maps are meant to be only an approximation of the treatment. (Note: Each letter or number represents a segment of the face, not a single pulse. The area under the chin is represented separately.) On a large face, one might need three or four pulses to cover a specific segment, whereas one might need only two pulses on a small face. On a specific patient, it is convenient to mark the outline of planned areas of treatment on the skin with white eyeliner pencil and then to treat right up to the markings.

## Treatment Protocol

For each of the following patients, treatments were performed with a Titan handpiece that has a 1 cm by 1.5 cm treatment window and applies treatment light while simultaneously cooling the epidermis. After evaluation and marking, gel was applied to the patient and the treatment plan was executed in four areas: left cheek, left neck including the submental area, right cheek, and right neck. All passes were completed in each area before proceeding. The initial fluence was set to a value of approximately 36 J/cm<sup>2</sup> and adjusted as needed based on patient comfort. No oral medications or topical anesthesia were used. The treatments were well tolerated with only transient erythema noted.



Figure 1. Before 1<sup>st</sup> Treatment

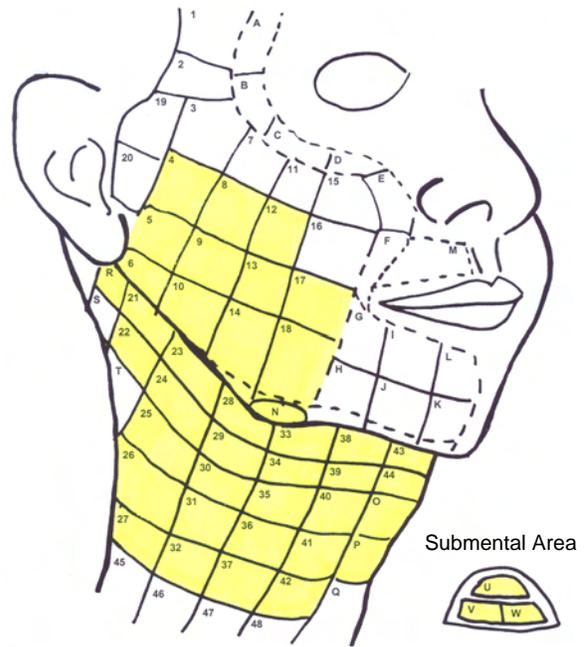


Figure 2. 1<sup>st</sup> Treatment – 1<sup>st</sup> Pass

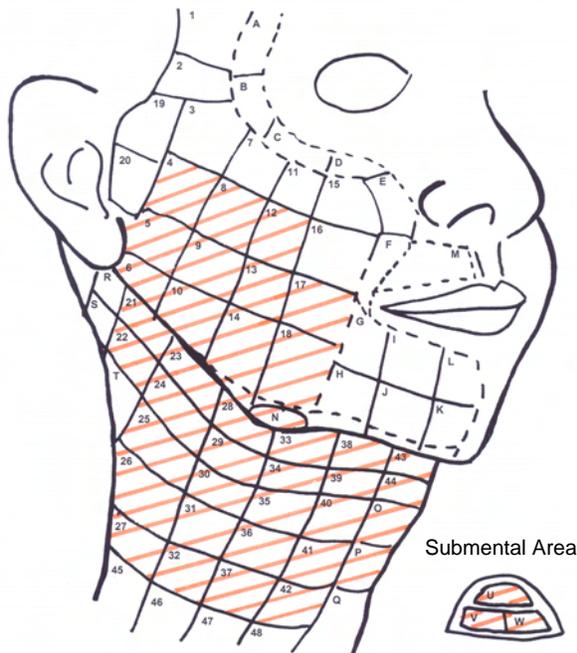


Figure 3. 1<sup>st</sup> Treatment – 2<sup>nd</sup> Pass

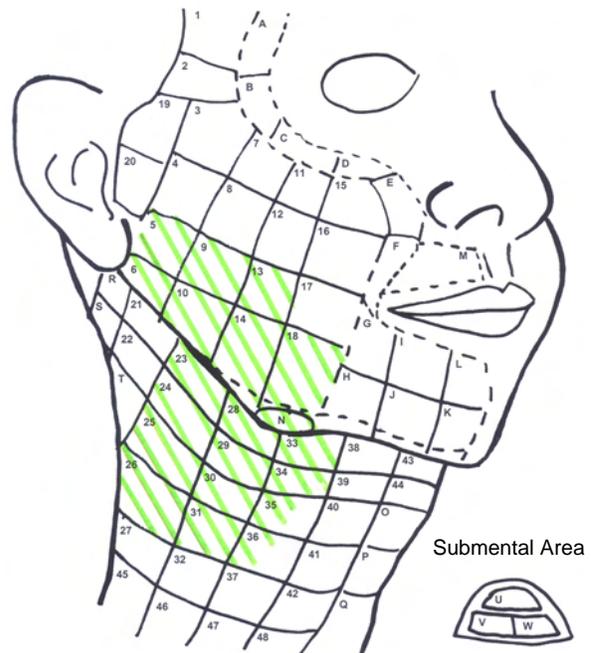


Figure 4. 1<sup>st</sup> Treatment – 3<sup>rd</sup> Pass

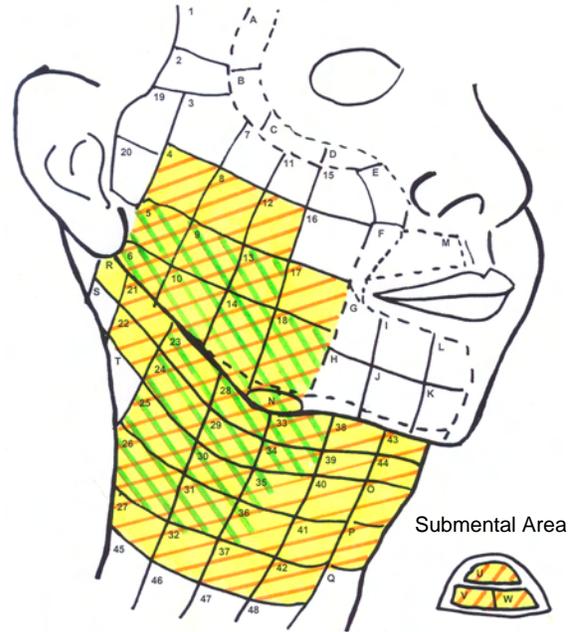
**Patient 1**

This 60-year-old woman (Figure 1) appeared to be a good candidate for submental liposuction. However, gentle pulling on the skin reduced the double chin enough that I felt it was worth trying the Titan procedure. Because even gentle pulling just to the side of the central pouch caused changes, two full passes included the central double chin area, and the third pass was placed laterally for more pull. The first pass for both the face area and the neck area are outlined in solid yellow (Figure 2). The second pass is shown with orange

diagonal lines slanting down to the left (Figure 3). The third pass is outlined with green diagonal lines slanting down to the right (Figure 4). This patient received one treatment with a total of 160 pulses at a fluence of 36 J/cm<sup>2</sup>. She obtained more tightening than expected, and her results continued to improve over time. Results are shown in Figures 7 & 8. A treatment map that combines all passes is shown in Figure 6. These maps are intended to represent the treatment areas for both sides of the face as they were treated in a similar fashion.



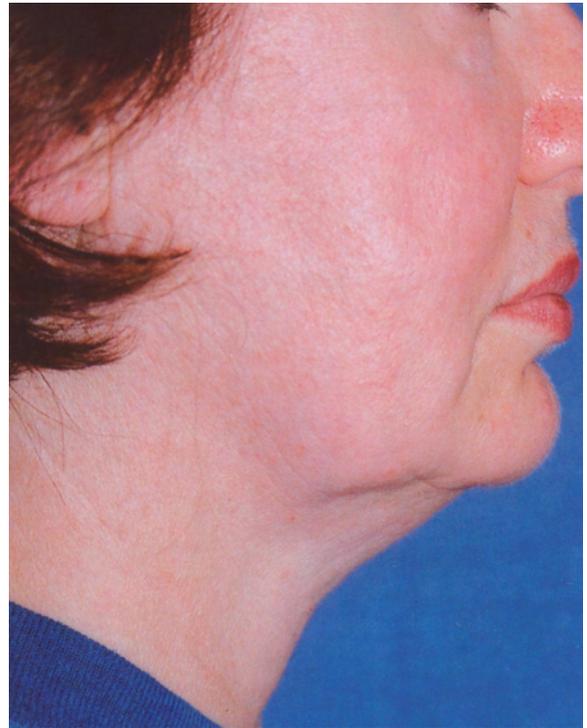
**Figure 5.** Before Treatment



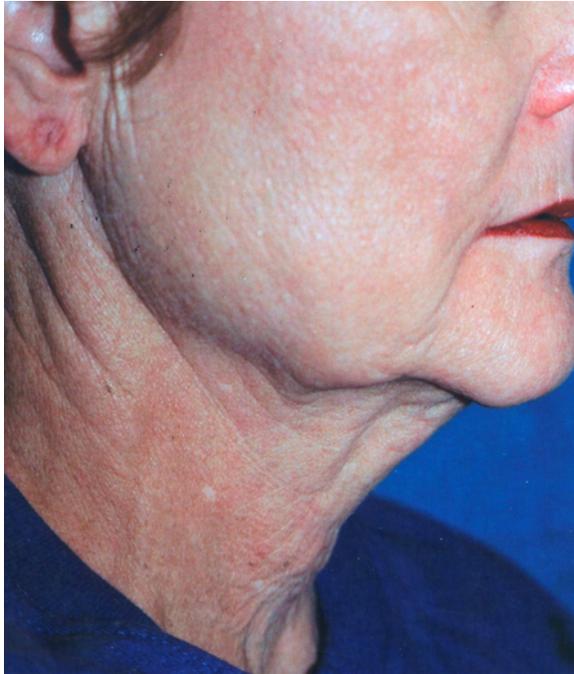
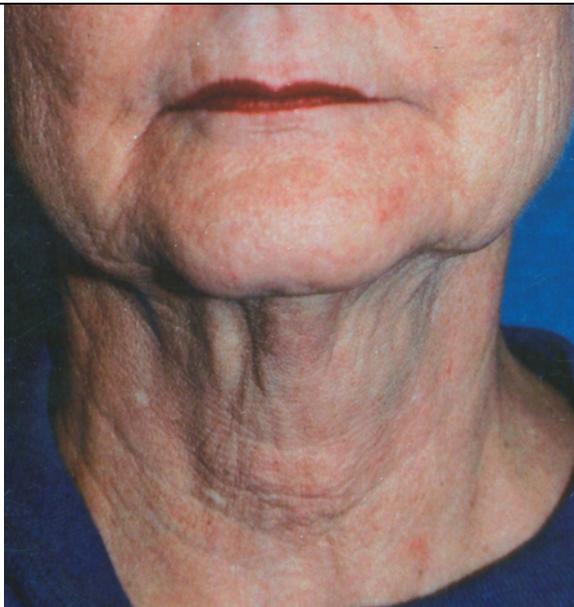
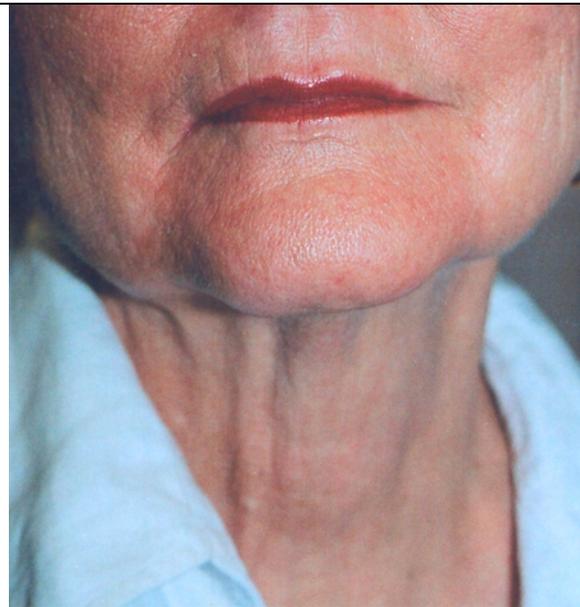
**Figure 6.** Treatment – All 3 Passes



**Figure 7.** 3 Weeks After 1 Treatment



**Figure 8.** 12 Weeks After 1 Treatment

Figure 9. Before 1<sup>st</sup> TreatmentFigure 10. 1 Month After 1<sup>st</sup> TreatmentFigure 12. Before 1<sup>st</sup> TreatmentFigure 13. 1 Month After 1<sup>st</sup> Treatment

### Patient 2

This 69-year-old woman (Figures 9 & 12) has very lax skin as well as gravity changes of the underlying tissue. Pulling gently on her skin caused softening of the jowls and the neck contour, so she was a good candidate for the Titan procedure. A total of 196 pulses were used for the treatment of the lower face and neck and were divided into three unequal passes. A treatment map that combines all passes is shown in Figure 15. The first pass for both the face area and the neck area are outlined in solid yellow. The second pass covered almost the same

area, but omitted the uppermost row of pulses on the face and the lowest row on the neck. It also omitted the area of the central neck over the trachea, which can be sensitive. The third pass covered the area that produced the most change with gentle pulling.

A fluence of 35 J/cm<sup>2</sup> was used in all areas except over the trachea, which was treated at 32 J/cm<sup>2</sup>. Figures 10 & 13 show the results one month after one treatment.

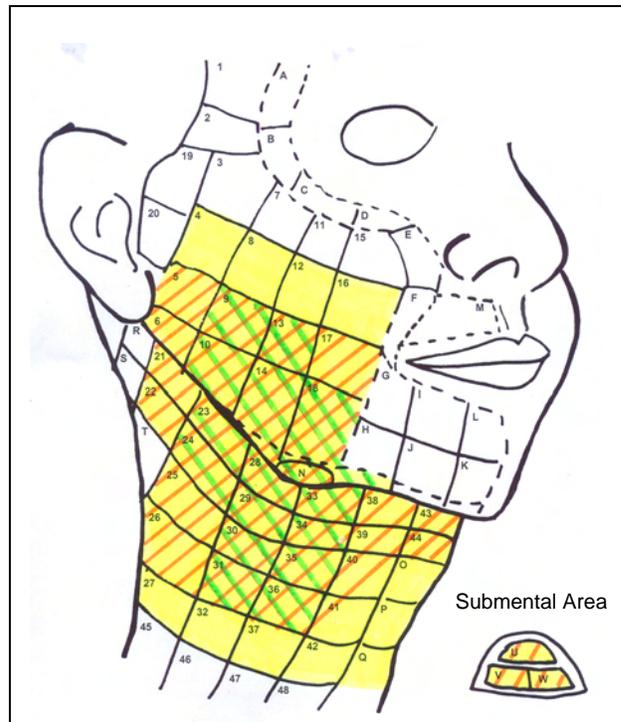


**Figure 11.** 2 Months After 2<sup>nd</sup> Treatment

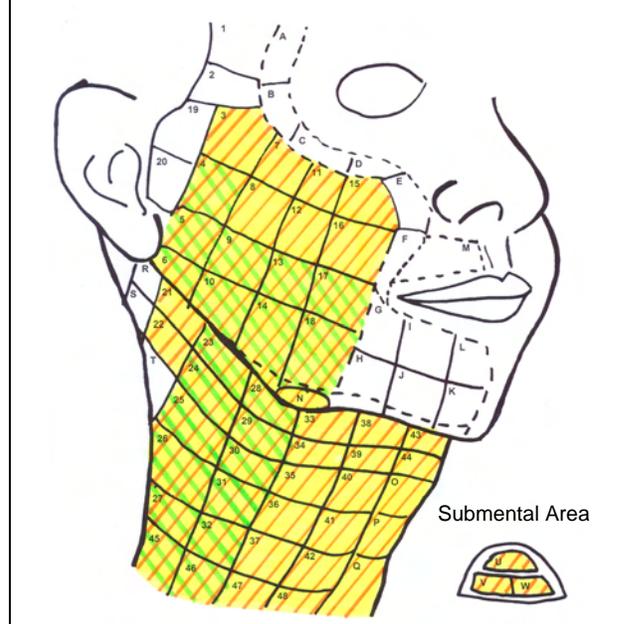


**Figure 14.** 2 Months After 2<sup>nd</sup> Treatment

When this patient returned for follow up one month later (Figures 10 & 13), we noted the “necklace lines” on her middle neck had softened, so we decided to also treat the lower lines on the neck during the second treatment. More pulses were allocated to the lateral neck because gentle pulling in this area caused a more noticeable change in the contour of the central neck and “necklace lines” (Figure 16).



**Figure 15.** 1<sup>st</sup> Treatment – All 3 Passes



**Figure 16.** 2<sup>nd</sup> Treatment – All 3 Passes

The entire face and neck areas were treated with 211 pulses at 34-36 J/cm<sup>2</sup>.

Results two months after the second treatment are shown in Figures 11 & 14. Her skin has tightened further, and her “necklace lines,” marionette lines, and jowling have softened.



Figure 17. Before Treatment

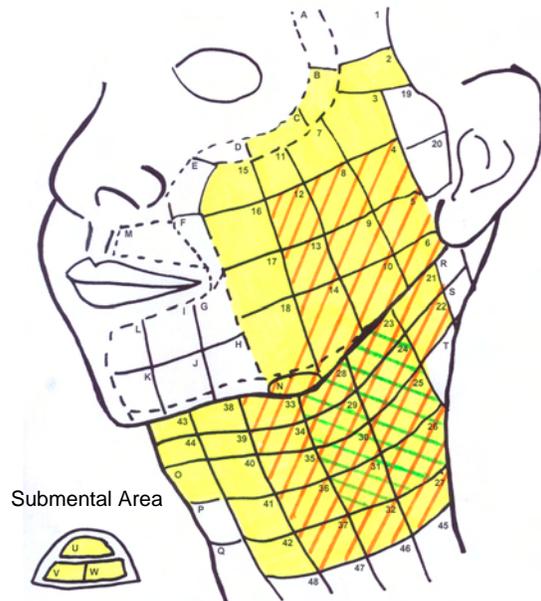


Figure 18. Treatment – All 3 Passes



Figure 19. 2.5 Weeks After 1 Treatment



Figure 20. 2 Months After 1 Treatment

**Patient 3**

This 52 year old woman (Figure 17) had developed laxity over a relatively short period of time. When evaluated, the changes appeared to be solely of the skin and not the underlying structures. That is, there was not a lot of underlying tissue for the skin to support. As a result, tightening of her skin was able to produce a dramatic result. The treatment map is shown in Figure 18, and the treatment results are shown in Figures 19 & 20. She received one treatment with a total of 141 pulses at a fluence of 36 J/cm<sup>2</sup>.

**Conclusion**

A viable Titan treatment protocol includes proper patient selection, tailored passes, and precise pulse placement. Patients who want to delay or avoid having a face lift are gratified by having a procedure to improve facial and neck contour and skin wrinkling without “needles, numbing, or down time.” If gravitational laxity of deep tissue is also present, improvement, although less noticeable, can still be seen. With this procedure, significant improvement in skin laxity and contour of the face and neck can be achieved.