

FRAXEL Laser Treatment: From Scientific Discovery to Clinical Application: An Interview with R. Rox Anderson, M.D.

Can you tell us how FRAXEL™ Laser Treatment differs from other laser treatments?

FRAXEL Laser Treatment (FLT) differs primarily by providing literally a million or more very small laser treatment zones distributed across the face. What's unique about it is that each tiny treatment spot is so small it cannot be seen with the unaided eye. FLT is very similar to news print – if you look at a newspaper, the pictures in a newspaper consist of very small dots that, when viewed from a reasonable distance, are not discernable. On the face, what we are doing with FRAXEL Laser Treatment is this kind of digital approach where each treatment spot really does produce a response but is so small that it is invisible to the naked eye.

Is the FRAXEL Laser ablative or non-ablative?

FRAXEL Laser Treatment really is a new kind of treatment. In a way, it is non-ablative from the point of view that it doesn't vaporize skin at the time of treatment itself, but ultimately does shed the small zones of treated epidermis. These microscopic necrotic epidermal debris, (MENDs), will shed from the skin in a few days to two weeks after the treatment, depending on the intensity and frequency of treatment. It is a new treatment combining some of the features of ablative and non-ablative treatments.

What type of laser technology is incorporated in the Reliant FRAXEL SR system?

The Reliant FRAXEL Laser uses an erbium fiber laser, which was originally developed for telecommunication purposes. This laser is a reliable, high-powered and efficient device made quite simply because it doesn't require the large size and mirrors, etc. that are



Treatment using prototype device

associated with conventional laser technology. The FRAXEL laser operates at 1550 nm, which is weakly absorbed in water and penetrates into the skin approximately a millimeter at maximum dosage or about 1/2 mm at typical dosage.

Does the FRAXEL Laser create holes in the skin?

The FRAXEL laser does not create holes in the skin; it photocoagulates a small column of dermis and epidermis, with the epidermal portion later shedding. There is never a hole because the stratum corneum remains intact. This is a major advantage over ablative technology because it reduces the risk of infection substantially.

How much control and flexibility does a physician actually have with this procedure?

The physician has a great deal of control over this treatment in several ways. First, the energy per small treatment spot can be adjusted. This affects the depth and, to a lesser degree, width of the treatment into



Before Tx



After four FRAXEL treatments

the dermis. That allows us to treat people with severe photo-aging more aggressively than people with minor degrees of photo-aging. Secondly, the number of small laser spots per unit area can be adjusted by the placement and number of passes that are produced in a treatment. This allows the physician to feather the edges of the treatment zone, which is unique to this device in my experience. We do not end up with sharp lines at the edge of the treatment area because we can feather the density of the spots from a high to a lower density as we taper down onto the neck. The laser also has full and half density settings for additional control.

■ *How painful is the procedure?*

FRAXEL Laser Treatment is moderately painful in most people. Fortunately, there is an easy way to handle this using a topical anesthetic. Sometimes, we'll use analgesics as well. In patients who are sensitive to pain, it is rather easy to slow the treatment down with a concurrent reduction in pain level. I have had this treatment myself and it was easily tolerated.



Before Tx



After four FRAXEL treatments

■ *What are your thoughts about treating darker skin types?*

The FRAXEL laser can be used on any skin type and I think it has advantages over ablative approaches in that the stimulus for hyperpigmentation after the treatment is significantly less than, for example, after CO₂ or erbium laser treatment. There probably will be some incidence of post-inflammatory hyperpigmentation, which I expect will be seen in Asian and Hispanic patients, for example. But this is a transient response and it is very useful that the FRAXEL laser can feather the edges of the treatment area.

■ *What indications do you foresee for the Reliant FRAXEL Laser in the future?*

This new approach will be useful for many things other than photo-aging. I have already seen some preliminary evidence of scar revision working very well in surgical scars. I think it will also be useful for acne scars and even denser scars such as burn scars. In fact, one of the studies I'd like to try in the future is one of scar revision in these severe patients. Another area that I am excited about is the possibility of treating dermal melasma. I have no data about this, it's just a thought that the dermal part of FRAXEL Laser Treatment is reprocessing the same layer of the dermis in which the dermal melanophages associated with post hyper-inflammatory pigmentation and melasma are present.

■ *You have seen a lot of different treatments including the non-ablative modalities which are known to have a certain percentage of non-responders. How would you compare FRAXEL to these other modalities?*

So far, in the clinical results after FRAXEL Laser Treatment, all patients have responded. So I think that is very good news compared to non-ablative treatments. In my practice, I find it difficult to tell patients there is a chance that they might not see any improvement. With FRAXEL Laser Treatment, I think the chance of having some improvement is apparently close to 100%. There are people who respond better than others, of course. The treatment can be adjusted in terms of the aggressiveness, so there is a lot of control over the response an individual patient will have as they go through a series of treatments. ■