Can Cold Laser Therapy Regenerate Thyroid Tissue?

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There is controversy over whether the cells of the thyroid gland can regenerate. Some claim that any damage to the thyroid gland is permanent, although others like myself do think it is possible for the thyroid gland to heal if the trigger has been removed. But it does seem to depend on the patient, as while some people who are taking thyroid hormone medication are eventually able to wean off of it once the autoimmune component has been suppressed, others will need to remain on thyroid hormone even after restoring their immune system health.

There is no question that different areas of the body will heal at a different rate. For example, the liver has a remarkable regenerative capacity after a partial hepatectomy (1). On the other hand, as I mentioned earlier, many don’t consider the thyroid gland as being a regenerative organ. For example, whereas the liver usually returns to close its original weight after a partial hepatectomy, after a partial thyroidectomy the thyroid gland exhibits hypertrophy and hyperplasia (2), but it doesn’t return to its original weight as the liver does. However, hyperplasia is an increase in cell production, and so this suggests that regeneration of this gland is possible, although admittedly it’s not a quick process when compared to other parts of the body. And it also seems to depend on how much damage takes place to the thyroid gland, as I’m not suggesting that someone who has received a partial thyroidectomy can expect complete regeneration to occur.

Even if the thyroid gland can heal on its own, if there are methods that can speed up the healing process, or cause tissue regeneration to occur when it normally wouldn’t happen on its own, then it makes sense to consider such a treatment. Many people are familiar with the benefits of cold laser therapy with regards to helping people with musculoskeletal conditions, pain, and wound healing. However, most people aren’t aware that cold laser therapy can potentially benefit thyroid health by helping with the regeneration of thyroid tissue. Before specifically talking about this, it probably would be a good idea to briefly talk about how cold laser therapy works.

How Does Cold Laser Therapy Work?
Lasers were actually discovered in the 1960s, and not too long after this it was found that laser therapy can help with wound healing, pain reduction, decreased inflammation, etc. Studies were first conducted on mice, where it was demonstrated that lasers can help to speed up wound healing. Eventually studies were conducted on humans and it was also found that laser stimulation helped with wound healing (3) (4). Low level light therapy involves exposing cells or tissues to low levels of red and near infrared (NIR) light (5). It is also known as “cold laser” therapy because the power densities used are lower than those needed to produce heating of tissue (5).

Although low level laser therapy (LLLT) has been proven to help with numerous conditions, there are controversies surrounding it. First of all, the exact biological mechanism still isn’t completely known. In addition, a large number of parameters such as the wavelength, fluence, power density, pulse structure, and timing of the applied light must be chosen for each treatment (5). A less than optimal choice of parameters can result in reduced effectiveness of the treatment, or even a negative therapeutic outcome (5). This is important to understand, as some studies have demonstrated that LLLT wasn’t effective for certain conditions, but the reason might have been due to an inappropriate light source and dosage.

How Can Cold Laser Therapy Help People With Thyroid Conditions?

There are a few small studies which show that using cold laser therapy can help to improve vascularization and perhaps help to regenerate the thyroid cells in some people with hypothyroidism. One of these studies involved 43 patients with autoimmune thyroiditis who were on levothyroxine, and the results suggested that LLLT can improve thyroid parenchyma vascularization (6). The same study showed a significant difference in the average levothyroxine dose required between those who received the treatment, and those who received a placebo treatment (6). They not only had an improvement in thyroid function, but the group treated by LLLT also had lower TPO antibodies, although there wasn’t a change in the thyroglobulin antibodies. Another study involving fifteen patients who had hypothyroidism caused by autoimmune thyroiditis showed that LLLT promotes the improvement of thyroid function, as patients experienced a decreased need for levothyroxine, a reduction in the TPO antibodies, and an increase in parenchymal echogenicity (7).

Of course more studies need to be conducted to show further proof of the benefits of LLLT on thyroid health, but these results seem very promising. One important thing to keep in mind is that even if LLLT can help to regenerate the tissue of the thyroid gland, it still won’t do anything to remove the underlying cause. For example, if someone has Hashimoto’s Thyroiditis due to an infection, which in turn caused a leaky gut, these factors need to be addressed. And while the studies demonstrated a
decrease in TPO antibodies, they didn’t help at all with elevated thyroglobulin antibodies, which also demonstrates that the cause of the condition needs to be detected and removed.

If you have Graves’ Disease then you might wonder if LLLT can be beneficial. Although it’s common for people with Graves’ Disease to have elevated TPO antibodies, the primary autoantibody associated with this condition is the TSH receptor antibody...specifically thyroid stimulating immunoglobulins. There is no evidence I’m aware of which shows that LLLT can lower these antibodies. And the TSH receptor antibodies aren’t causing damage to the thyroid gland, as they are stimulating or binding to the TSH receptors, which in turn causes the excess production of thyroid hormone. However, if someone with Graves’ Disease also has thyroid peroxidase (TPO) antibodies then they might benefit from receiving LLLT.