**BACKGROUND**

• Dermatofibromas are benign lesions, but patients may seek treatment if they become symptomatic or cosmetically undesirable.
• Common treatments: cryotherapy, surgical excision, intralesional steroid injections, non-ablative pulsed dye laser (PDL)
• Unlike PDL, Fractionated CO₂ laser is an ablative modality.
• Potential adverse effects of laser include pain, bleeding, scarring, pigmented alteration.
• Fractionated CO₂ laser has been used for various epidermal and dermal lesions, but only one other report has described its efficacy in treating dermatofibromas.

**REPORT OF A CASE**

47-year-old African American woman presented with a 1 cm raised dermatofibroma on her left thigh. It had been present for 4 years but was enlarging and becoming increasingly pruritic. We treated the dermatofibroma with the DEKA SmartXide DOT HP fractional carbon dioxide (CO₂) laser (DEKA Medical, San Francisco, CA) three times approximately 5 weeks apart (Table 1). We reduced the laser spot size as the lesion size decreased. After the first treatment, she also applied fluocinonide 0.05% ointment to the treated site twice daily for 9 weeks followed by triamcinolone 0.1% ointment twice daily for 4 weeks. One month after the final laser treatment, she noted complete flattening of the lesion and resolution of her pruritus. Mild peri-lesional post-inflammatory hyperpigmentation was seen at 5-month follow-up (Fig 2). The patient experienced no other adverse events related to her treatment.

**MATERIALS and METHODS**

Table 1. Fractionated carbon dioxide laser settings for treatments 1-3

<table>
<thead>
<tr>
<th></th>
<th>Treatment #1</th>
<th>Treatment #2</th>
<th>Treatment #3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power (Watts)</td>
<td>10</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>Dot Mode</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spacing (μm)</td>
<td>500</td>
<td>450</td>
<td>450</td>
</tr>
<tr>
<td>Shape</td>
<td>hexagonal, ratio</td>
<td>hexagonal, ratio</td>
<td>hexagonal, ratio</td>
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<tr>
<td></td>
<td>8/10, size 80%</td>
<td>8/10, size 80%</td>
<td>6/10, size 60%</td>
</tr>
<tr>
<td>Stack</td>
<td>3</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Duration (μsec)</td>
<td>500</td>
<td>600</td>
<td>600</td>
</tr>
<tr>
<td>Number of Passes</td>
<td>1</td>
<td>1</td>
<td>4</td>
</tr>
</tbody>
</table>

**RESULTS**

Figure 1. Dermatofibroma on the left lateral thigh, pre-treatment

Figure 2. Dermatofibroma on the left lateral thigh, post-treatment. Approximately 1 month after the last laser treatment, the raised portion of the nodule had completely flattened, and her pruritus had resolved. There was mild peri-lesional post-inflammatory hyperpigmentation noted at 5-month follow-up

**CONCLUSIONS**

• The mechanism by which dermatofibromas respond to fractionated CO₂ laser and corticosteroid therapy is not fully understood.
• The laser damages the collagenous stroma of the dermatofibroma and reduces lesion size and volume.
• Corticosteroids bind to the glucocorticoid receptors in the nucleus, modulating the expression of genes that control cell growth, differentiation, and death.
• In the skin, corticosteroids decrease collagen synthesis by suppressing the inflammatory process and inhibiting fibroblast proliferation through reducing pro-fibrotic growth mediators, specifically transforming growth factor-β (TGF-β) and insulin like growth factor-1 (IGF-1).
• In our patient, we utilized the microscopic channels created by the laser to enhance the delivery of the topical corticosteroids to the dermis to achieve a synergistic effect.
• Overall, fractionated CO₂ laser therapy combined with topical steroids may produce better cosmetic and symptomatic outcomes for dermatofibromas than other treatment modalities, including surgical excision or intralesional kenalog injection.
• Whether CO₂ laser is more efficacious than other laser modalities, such as PDL, requires further investigation.

**REFERENCES**


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