Multiple Apocrine Hidrocystoma of the Face Treated With a 1450-nm Diode Laser

Agustina Vila Echague, MD; Susanne Astner, MD; Ahchean A. Chen, MD; R. Rox Anderson, MD; Massachusetts General Hospital, Boston

REPORT OF A CASE

A 45-year-old Hispanic man presented with a 10-year history of unusual facial lesions that had spread gradually, becoming almost confluent in some areas. There was no family history of similar lesions. Physical examination revealed multiple asymptomatic, skin-colored to bluish papules and cystic nodules measuring 2 to 5 mm in diameter on the patient’s forehead and cheeks (Figure 1). Lancing produced a serous fluid. A biopsy specimen demonstrated a cyst lined by a double-layered apocrine epithelium, with an inner layer of flattened columnar cells containing abundant eosinophilic cytoplasm that showed focal “decapitation” secretion at the luminal border. The outer layer was composed of elongated myoepithelial cells. These features are characteristic of hidrocystoma with apocrine differentiation (Figure 2).

THERAPEUTIC CHALLENGE

Surgical excision, cryotherapy, and electrodessication were considered but rejected because of the high risk for scarring. A noninvasive light source was used to establish adequate clinical response.

SOLUTION

Treatment areas were divided into 4 quadrants on the face and treated with 4 different investigational modalities. The treatments, which were performed with the patient under nerve block anesthesia, were as follows:

1. The left forehead area (approximately 4 × 5 cm) was resurfaced with a 10.6-µm wavelength carbon dioxide laser (Sharplan model 1040, SilkTouch mode; Lumenis Inc, Haifa, Israel) set in ablative mode at an approximate fluence of 5 J/cm² per pass (40 W; 2–3 passes). Complete removal of epidermis, superficial dermal ablation, and coagulation of the superficial dermis with obvious immediate shrinkage were achieved.

2. The right forehead area (approximately 4 × 5 cm) was treated with a midinfrared, 1450-nm wavelength, nonablative diode laser (Smoothbeam; Candela Laser Corp, Santa Barbara, Calif) set in the fractional mode of treatment (acoustic irradiation frequency of 10 kHz). The treatment was delivered in 4 passes with a fluence of 15 W/cm². The microchannel treated area was enhanced, with rejuvenation of the facial skin evident at 1 month.

3. The left cheek area (approximately 4 × 5 cm) was treated with a handpiece of a 1550-nm wavelength, nonablative diode laser (VivaLase; Candela Laser Corp, Santa Barbara, Calif) set in the fractional mode of treatment (acoustic irradiation frequency of 10 kHz) with a fluence of 15 W/cm². The number of treatment sessions was based on subjective response of the patient and responses of clinical assessment. The patient was treated with 8 passes in a 2-week interval.

4. The right cheek area (approximately 4 × 5 cm) was treated with a 1550-nm wavelength, nonablative diode laser (VivaLase; Candela Laser Corp) set in the fractional mode of treatment (acoustic irradiation frequency of 10 kHz) and the 8-pass protocol was used. The patient was treated with 8 passes in a 2-week interval.

Figure 1. Patient before treatment.

Figure 2. Pathologic appearance before the treatment. The cyst is lined by a double-layered apocrine epithelium. The inner layer of cells is flattened to columnar, with abundant eosinophilic cytoplasm showing focal “decapitation” secretion (pinching off) at the luminal border. The outer layer is composed of elongated myoepithelial cells (hematoxylin-eosin, original magnification ×40; inset, original magnification ×400).
Wayland, Mass) equipped with cryogen spray cooling (4-mm spot size; fluence, 17-18 J/cm²; 30-millisecond cryogen spray duration).

3. The left cheek area was treated with photodynamic therapy using topical aminolevulinic acid and a broadband light source (Estelux system, Lux R/65/1200 handpiece; Palomar Medical Products, Burlington, Mass); 20% aminolevulinic acid in a hydroalcoholic solution was applied under occlusion for 3 hours before treatment with a filtered xenon arc lamp source (wavelength, 650-1200 nm; fluence, 18 J/cm²).

4. The right cheek area was treated with aminolevulinic acid photodynamic therapy using similar application conditions, followed by exposure to a broadband, 560- to 700-nm, filtered, incandescent light source that delivered a fluence of approximately 60 J/cm² in the 625- to 645-nm waveband over a 30-minute exposure time.

All treatments were tolerated well, and the areas healed within days to 3 weeks (for carbon dioxide laser resurfacing) without complications and with no epidermal change or scarring. The areas on both cheeks that were treated with photodynamic therapy showed only little or no improvement. After carbon dioxide laser resurfacing of the left side of the forehead, there was minor improvement in the test area. In contrast, there was noticeable improvement on the right side of the forehead in the area that was treated with the 1450-nm diode laser. Based on these findings, it was decided to treat all affected facial areas with the 1450-nm diode laser, cautiously increasing the intensity in 4 subsequent treatment sessions, scheduled approximately 1 month apart (Table).

Substantial improvement was noted after each treatment. It was further observed that the larger and deeper cystic lesions seemed somewhat resistant to laser treatment, and we hypothesized that expression of the hidrocystoma content to collapse the nodules would improve response. Therefore, on the third treatment, an 18-gauge hypodermic needle was inserted into remaining large cystic nodules, and serous fluid was expressed just before the laser treatment (incision and drainage). One month later, the patient showed dramatic improvement, with only a few residual skin-colored papules, a residual bluish hue in deeper lesions, and no epidermal damage or scarring. Mild postinflammatory hyperpigmentation in the areas with prior manipulation for drainage resolved with 4 weeks of treatment with topical 4% hydroquinone cream and sunscreen. At the 2-month follow-up visit, another treatment using incision and drainage along with the 1450-nm diode laser led to the resolution of the remaining cystic lesions (Figure 3).

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Fluence, J/cm²</th>
<th>Milliseconds</th>
<th>DCD</th>
<th>Pulses</th>
<th>I&amp;D</th>
</tr>
</thead>
<tbody>
<tr>
<td>1*</td>
<td>17</td>
<td>30</td>
<td>Yes</td>
<td>Single</td>
<td>No</td>
</tr>
<tr>
<td>2</td>
<td>19</td>
<td>30</td>
<td>Yes</td>
<td>Double</td>
<td>No</td>
</tr>
<tr>
<td>3</td>
<td>19</td>
<td>30</td>
<td>Yes</td>
<td>Double</td>
<td>Yes</td>
</tr>
<tr>
<td>4</td>
<td>19</td>
<td>30</td>
<td>Yes</td>
<td>Double</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Abbreviations: DCD, dynamic cooling device; I&D, incision and drainage.

*Test site.

Figure 3. Patient after 4 treatments with a 1450-nm diode laser.

Epithelial tumors of the cutaneous adnexae are believed to originate from 3 different structures, ie, hair follicles, eccrine/apocrine sweat glands, and sebaceous glands. Apocrine hidrocystoma, which is an adenomatous cystic proliferation of apocrine glands that is usually located on the head and neck, tends to occur as solitary lesions.1-3 Although this derivation provides a practical basis for classification, some tumors may exhibit a mixed differentiation and thus should be categorized according to the prevailing phenotype. Despite a broad histologic spectrum, chronic benign tumors of sweat glands are readily recognized on the grounds of a well-characterized morphological appearance.3 Although a solitary lesion can be treated easily with surgical excision, the elimination of multiple lesions is problematic because of their number and location.3

Herein, we describe a patient with an unusual case of multiple apocrine hidrocystomas scattered on his forehead and cheeks, with some areas of confluence. Although solitary apocrine hidrocystomas are easily treated, surgical removal of multiple lesions often results in scarring4-6 and would have been disfiguring in this patient. This is the first report describing the use of a midinfrared, nonablative laser for destruction of hidrocystomas. This approach was taken because the1450-nm diode laser is capable of inducing thermal damage in the middle to upper dermis without causing scarring and/or epidermal damage. Histopathologic...
evaluation of our patient’s lesions suggested that no residual apocrine hidrocystoma was present, leaving slight epidermal hyperplasia and dermal fibrosis with a scattered lymphocytic infiltrate consistent with a scar (Figure 4).

Based on the good results in this case, we suggest that the 1450-nm diode laser and potentially other midinfrared, nonablative laser devices should be considered for the local destruction of benign dermal cysts and/or tumors of the appendages.

Accepted for Publication: December 4, 2004.
Correspondence: R. Rox Anderson, MD, Department of Dermatology, Wellman Center for Photomedicine, Massachusetts General Hospital, Boston, MA 02114 (rranderson@partners.org).
Financial Disclosure: None.

REFERENCES