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THERAPEUTIC HOTLINE: LETTERS

WILEY DERMATOLOGIC THERAPY

Noninvasive size reduction of lipoma with an insulated monopolar radiofrequency microneedle device

Dear Editor,

Lipomas are common benign adipose tumors which usually appear as painless, round, mobile masses (Shemer, Brawer, Amichi, & Azhari, 2013). Surgical excision is considered the treatment of choice for lipoma (Anders, 2003). However, some patients are reluctant to undergo an operation due to the risk of scarring, especially in cases of large or multiple lipomas on exposed areas. Several treatment modalities have been reported to minimize the scars, including subcutaneous deoxycholate injections, liposuction, and high-intensity focused ultrasound (HIFU) (Rotunda, Ablon, & Kolodney, 2005; Shemer et al., 2013).

A radiofrequency (RF) microneedle device disperses high energy into the depth of its insulated tip (Hong et al., 2017). Due to converting electrical energy into heat by tissue electrical resistance, a thermal coagulation zone is created at a controlled depth around the needle tip without unwanted epidermal damage. To the best of our knowledge, there have been no reports of lipoma treated with a monopolar RF microneedle device. Herein, we report size reduction and cosmetic improvements in a large facial lipoma treated with a novel RF microneedle device.

A 54-year-old healthy male presented with a painless slow-growing mass on his right cheek (Figure 1a). The lesion had started as a small mass several years ago and then began to enlarge in recent months. Ultrasonography revealed an oval compressible hyperechoic mass with a fat density (Figure 2). Under the clinical and radiologic diagnosis of lipoma, surgical removal was primarily recommended, but the patient was concerned about possible facial scarring. Therefore, RF ablation was chosen to minimize the scar and downtime.

Anesthesia was administered by injecting 2% lidocaine hydrochloride (Jeil Pharmaceutical, Daegu, Korea). The patient was treated with AGNES® (Gowoonsesang Cosmetics Co., Seoul, Korea), an insulated monopolar RF microneedle device using an F1-type needle. The needle had initially been developed for infraorbital fat herniation targeting the subcutaneous fat layer. Based how the RF device works for subcutaneous fat, we chose the F1-type needle and used a pulse duration of 400 ms and power level 9 intensity with a 1-MHz RF apparatus. Each shot was spaced at intervals of 0.5 cm, which received one radiofrequency pass. We repeated the procedure with the same parameters 3 times at 1-month intervals. After the third treatment session, the volume of the affected cheek was dramatically diminished and the patient was very satisfied with the outcome (Figure 1b). No adverse effects were detected except for instant erythema and procedural pain, which resolved within 24 hr. Furthermore, scar formation and clinical recurrence were not reported at 6-month follow up.

Current treatments for lipomas are invasive and possess the risk of scarring. Recently, minimally invasive modalities targeting excessive adiposity have been developed to resolve aesthetic concerns with weight gain and skin aging. These noninvasive treatments include radiofrequency-assisted lipolysis, deoxycholic acid, high-frequency focused ultrasound, and cryolipolysis, which seem reasonable for treating benign tumors of mature fat cells (Dong, Amir, & Goldenberg, 2017).

When applied to fat tissue, the RF device can generate heat energy due to the high tissue resistance of adipose cells. Fat cells have relatively low heat transfer coefficients and therefore transmit little heat to surrounding structures (Park, Kim, Park, & Kim, 2016). This mechanism of action results in simultaneous coagulation and aspiration of localized adipose tissue. The RF device can overcome the disadvantages of pre-existing treatment options by offering minimally invasive

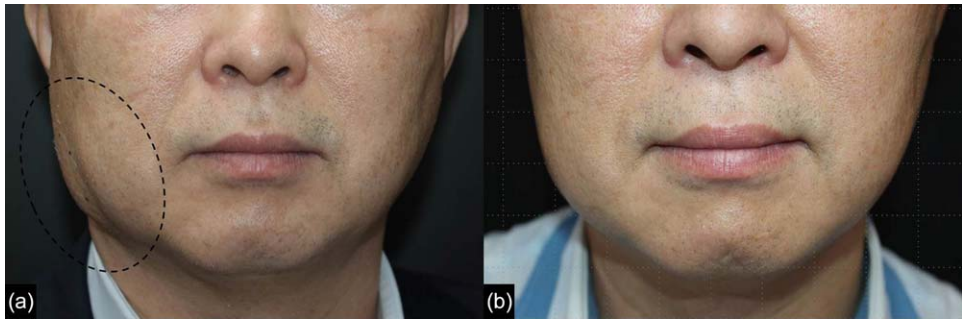

FIGURE 1 (a) Before treatment: enlarged volume of right cheek due to subcutaneous lipoma (indicated by dotted line); (b) significant improvement of the contour after 3 months

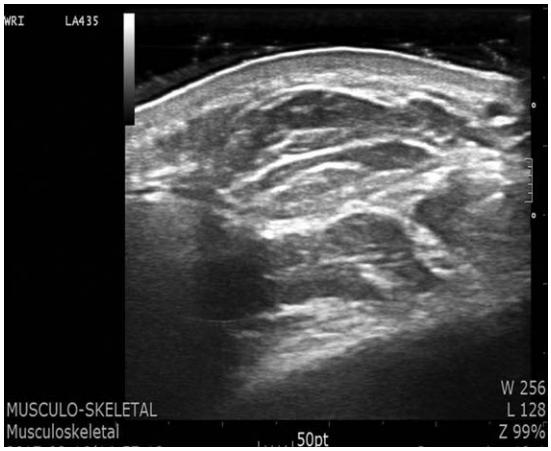

FIGURE 2 An oval-shaped compressible hyperechoic mass with a fat density on initial ultrasonography

tissue penetration while minimizing epidermal disruption. It can be very useful for treating darker skin types without inducing post-treatment hyperpigmentation (Elsaie, 2009).

To the best of our knowledge, this is the first reported case of a lipoma successfully treated using a monopolar radiofrequency device. We suggest an insulated monopolar RF microneedle device as an effective and safe treatment method for lipoma. To confirm optimal parameters, controlled studies with a larger population are needed.

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CONFLICT OF INTEREST

The authors have declared there are no conflicts of interest.

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