

## Noninvasive skin tightening: focus on new ultrasound techniques.

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### Abstract

Microfocused ultrasound (MFU) has been recently developed to meet the ever-growing public demand for achieving significant, noninvasive skin lifting and tightening. MFU can be focused on subcutaneous tissue where the temperature briefly reaches greater than 60°C, producing small (<1 mm(3)) thermal coagulation points to a depth of up to 5 mm within the mid-to-deep reticular layer of the dermis and subdermis. The intervening papillary dermal and epidermal layers of skin remain unaffected. The application of heat at these discrete thermal coagulation points causes collagen fibers in the facial planes such as the superficial musculoaponeurotic system and platysma, as well as the deep reticular dermis, to become denatured, contracting and stimulating de novo collagen. A commercially available device combines MFU with high-resolution ultrasound imaging (MFU-V), which enables visualization of tissue planes to a depth of 8 mm and allows the user to see where the MFU energy will be applied (**Ultherapy**®; Ulthera Inc., Mesa, AZ, USA). Using different transducers, MFU-V treatment can be customized to meet the unique physical characteristics of each patient by adjusting energy and focal depth of the emitted ultrasound. By targeting the facial superficial musculoaponeurotic system, noninvasive tightening and lifting of sagging facial and neck skin and improvements in the appearance of wrinkles can be achieved. MFU-V can also improve lines and wrinkles of the décolleté. Treatment protocols for the use of MFU-V continue to be refined, and its use in combination with other rejuvenation techniques has been demonstrated. Brief discomfort that often occurs during treatment can be minimized with oral nonsteroidal anti-inflammatory drugs. Other treatment-related adverse events include transient erythema, edema, and occasional bruising. MFU-V is best suited for patients with mild-to-moderate skin and soft tissue laxity. For older patients with severe skin laxity and marked platysmal banding, surgical treatment should be considered.

**KEYWORDS:** facial rejuvenation; microfocused ultrasound; skin lifting; skin tightening; **ultherapy**

PMID: 25709486 PMCID: [PMC4327394](#) DOI: [10.2147/CCID.S69118](#)

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