

( $P < .05$ ). These findings are summarized in Table II. The participating athletes obtained an overall score of high knowledge (mean score 7.27 on a 0-10 scale).

In total, 48 respondents (29%) reported having at least 1 sunburn in the past year (Fig 1), which is a lower percentage overall than the reported frequency of sunburn found in other sports, such as roller skating (56.8%) and surfing (88%).<sup>5</sup> Contingency tables and  $\chi^2$  test analyses have been performed to determine the effect of different variables (age, sex, type of sport, education level, and transplant type) on the number of sunburns in the past year. Higher numbers of sunburns have been found in athletes <50 years of age, and an enhanced risk for sunburn was found among athletes with only a primary education ( $P < .05$ ). Thus, younger age and lower educational level were associated with higher solar exposure risk, coinciding with studies of healthy people. Younger age, lower education level, and male sex (nonsignificant in our study) are associated with sunbathing.<sup>3,5</sup>

Our analysis reveals that although athletes with transplants recognize and perceive the importance of photoprotection in the prevention of skin cancer, many are still incorrectly using sun protection, which results in sunburn. Therefore, new education campaigns are needed to correct, teach, and encourage this target population to adopt optimal sun protection habits, especially in the sports field.

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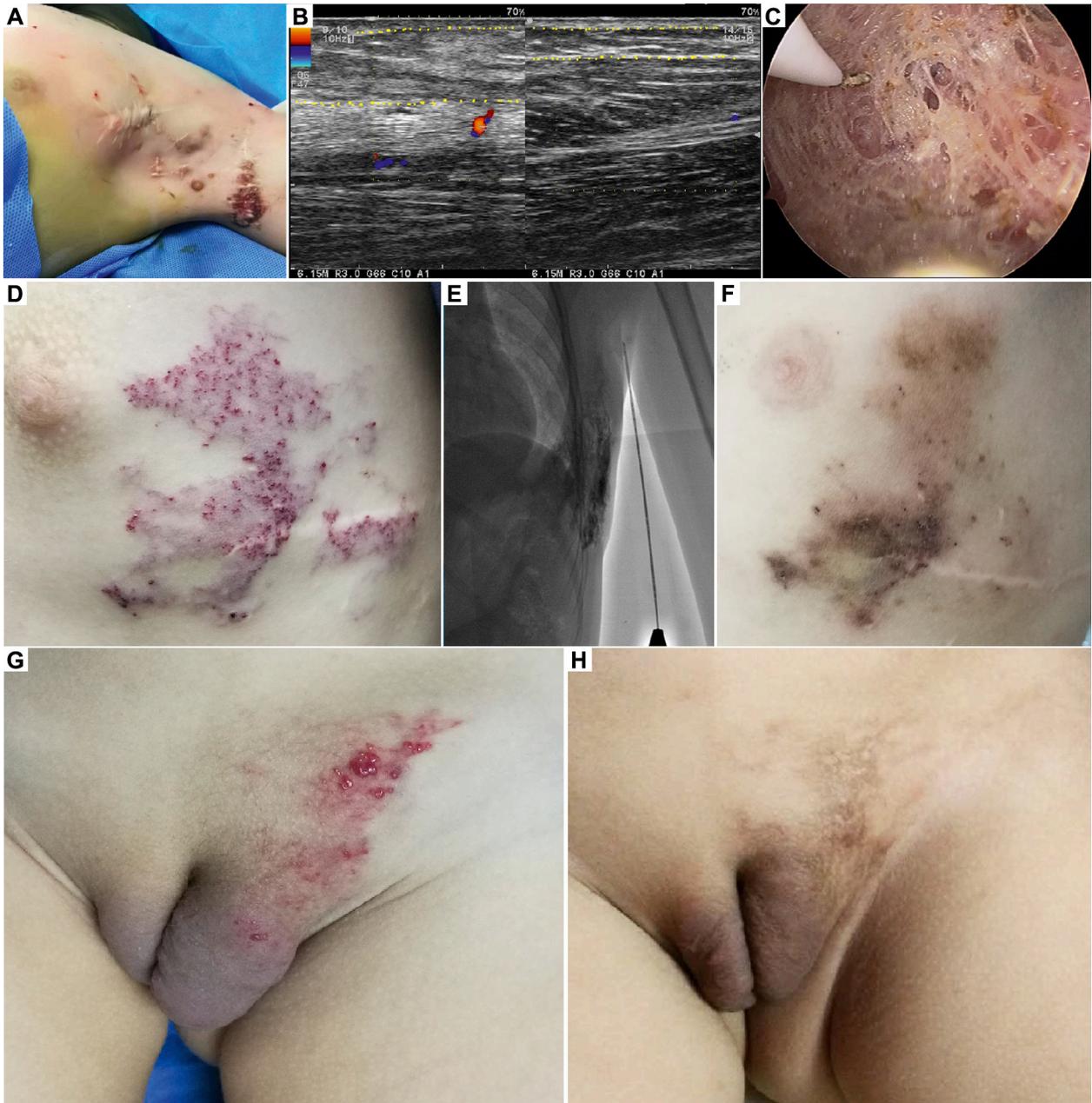
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## Liposuction-like sclerotherapy technique: A deep approach to superficial lymphatic malformations



*To the Editor:* Lymphatic malformations (LMs) result from abnormal development of lymphatics, often with an underlying somatic *PIK3CA* mutation.<sup>1</sup> The term superficial LM refers to a LM variant or component characterized by many dilated lymphatic channels in the dermis (Fig 1).<sup>2,3</sup> Treatment of superficial LMs with standard sclerotherapy is difficult because of the numerous small lumens. Lesions frequently have subclinical lateral and deep extensions, and surgical resection of a large superficial LM has a high risk for recurrence and problematic scarring.<sup>4</sup> Herein, we describe the liposuction-like sclerotherapy technique, a new minimally invasive surgical strategy for superficial LMs.

During June 2016-February 2018, five consecutive patients (3 male, 2 female; mean age 9.8 [range 3-18] years) with superficial LM were treated with the liposuction-like sclerotherapy technique. Diagnosis was made on the basis of clinical findings and imaging by our multidisciplinary team. The sites of superficial LMs included the suprapubic area, left abdominal wall, left thoracic wall, left upper arm and chest wall, and right forearm. Three patients had recurrent lesions after resection, and 2 had unresectable lesions. The procedures were performed under general anesthesia in the interventional radiologic suite. We used the vacuum-assisted liposuction technique to remove part of the subcutaneous fat and lymph fluid and



**Fig 1.** Superficial lymphatic malformations before, during, and after treatment. **A**, A superficial lymphatic malformation on the left upper arm and chest wall with a deeper component. **B**, Sonographic examination of the malformation on the left upper arm (left image) and a contralateral unaffected area (right image). Sonography shows that the affected area demonstrated extensive edema-like echogenic changes entirely replacing the skin and subcutaneous tissue. Note the thickened dermis, subcutaneous layer, and part of the muscle with unclear borders (*yellow dotted lines*). **C**, Endoscopic view of the subcutaneous tissue beneath the affected area. Many dilated lymphatics invaded superficially into the dermis. It was noteworthy that the malformed lymphatics were not cystic in appearance. **D**, A superficial lymphatic malformation on the chest wall before the procedure. **E**, Intraoperative diffusion of the mixture of contrast medium and bleomycin into the treatment area. **F**, Persistent hyperpigmentation visible 6 months after treatment. **G**, Lymphatic malformation with dermal and subcutaneous involvement. **H**, Appearance (persistent hyperpigmentation) 18 months after treatment. The result of treatment in this patient was graded as a complete response by photograph evaluation.

to destroy the underlying lymphatic lesion. After the completion of liposuction, bleomycin diluted with 5-10 mL of contrast was directly injected into the treatment area subcutaneously. The maximum dose for bleomycin was 1 mg/kg per session in children (maximum 15 mg). A fluoroscopic image was obtained to check spontaneous diffusion of the mixture in the treatment area. Thereafter, the liposuction process was redone without the vacuum for more even distribution of the mixture. Last, the diffusion of the mixture was rechecked by fluoroscopic imaging (Fig 1). The liposuction and tumescent technique used in liposuction-like sclerotherapy was the same as that used in liposuction for body contouring. The mean operation time was 40 (range 30-50) minutes. The mean follow-up was 12 (range 6-18) months.

We observed no major postoperative complications. Hyperpigmentation developed in all patients over the treatment area during follow-up. Although 2 patients had fever postoperatively, no infections, skin ulcers, or tissue necrosis occurred. The main goals for treatment of superficial LMs are usually cosmetic outcomes and the reduction of exudate. All of our patients achieved disappearance of >90% of the superficial lesions (the red-purple color and vesicles) on photographic evaluation (Fig 1). Our patients also previously experienced episodic inflammation and (in only 1 individual) exudate, both of which resolved after treatment. In addition, a decrease of >90% in the volume of the deeper component was observed in the 2 patients with clinically apparent subcutaneous involvement.

In 1976, Whimster<sup>5</sup> proposed that the dermal component of a LM communicates with aberrant lymphatic cisterns in the subcutaneous tissue. Our use of a deep approach for superficial LM treatment supports Whimster's hypothesis. This small case series shows the utility of the liposuction-like sclerotherapy technique in improving the appearance of superficial LMs with or without an obvious deeper component. Controlled studies are needed to further assess its safety and efficacy.

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#### Mobile teledermatology for melanoma detection: Assessment of the validity in the framework of a population-based skin cancer awareness campaign in northern Italy



*To the Editor:* Increasing awareness and promotion of self-examination are possible ways to anticipate melanoma diagnosis and improve survival.<sup>1</sup> We designed a study to assess the advantage of using a phone application (ie, an app) in the context of a campaign to promote early melanoma diagnosis.<sup>2</sup> Apps for melanoma detection lack validation.<sup>3,4</sup> As a preliminary step, we did a prospective validity study comparing distant assessment of lesions sent by the app with direct clinical evaluation.

The study was conducted in the province of Bergamo in Italy during March-July 2017. Persons ≥18 years of age who used the free app advertised in the campaign to send pictures of their suspicious lesions for specialist assessment were invited to undergo a free whole-body examination by dermatologists, different from those providing the online assessment. The study was approved by the Ethics Committee of Papa Giovanni XXIII Hospital (Bergamo, Italy). The teledermatology cycle is shown in Fig 1.

A total of 232 patients were included in the study. Those who used the app were significantly younger and more educated than the general population in