microfractionated carbon dioxide laser (UltraPulse Encore Deep Fx, Lumenis Ltd, Yokneam, Israel) with a treatment depth of approximately 1 to 2 mm (proportional to estimated scar thickness based largely on palpation) at the lowest density setting. The average time interval for comparison of ROM measurements was 7.85 months.

Compared with pretreatment measurements, we observed an average increase in composite wrist (flexion/extension) and composite forearm (pronation/supination) ROM of 27.7 degrees and 16.8 degrees, respectively. This corresponded to a mean percentage improvement compared with baseline for the wrist and forearm of 39.9% and 22.5%. Median improvements compared with baseline were 26.3% (95% confidence interval 16.9%-61.8%, $P = .004$) and 11.1% (95% confidence interval 0%-53.4%, $P = .019$). Seven patients noted pain at the affected site before treatment and all of these noticed decreased pain or complete resolution after treatment. All patients noted subjective ROM improvements and functional gains consistent with objective measurements beginning with their first treatment. No complications including infection or worsening scarring were observed in the 74 treatments performed.

This is, to our knowledge, the first systematic evaluation demonstrating statistically significant functional improvements after AFP in the setting of debilitating scar contractures. Limitations of the study include its retrospective nature and relatively small number of patients available for comparison. Although spontaneous improvement could have accounted for a portion of the observed improvements, most patients were referred after reaching a plateau with standard ROM protocols. Although future prospective controlled studies including larger numbers of patients and additional treatment locations are certainly required, AFP is a promising adjunct to existing contracture treatments including physical therapy and surgical revision.

We would to thank Robert Riffenburgh, PhD, for his assistance with the statistical analysis.

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Funding sources: None.

Disclosure: Dr Uebelhoer has received honoraria and equipment from Lumenis. Drs Perry, Elston, Reynolds, Hawley, Kroonen, and Shumaker have no conflicts of interest to declare.

The views expressed in this article are those of the authors and do not reflect the official policy or position of the Department of the Navy, Department of Defense, or the US Government.

Drs Elston, Perry, Reynolds, Hawley, Kroonen, and Shumaker are military service members. This work was prepared as part of their official duties. Title 17, USC, §105 provides that "Copyright protection under this title is not available for any work of the United States Government." Title 17, USC, § 101 defines a US Government work as a work prepared by a military service member or employee of the US Government as part of that person's official duties.

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http://dx.doi.org/10.1016/j.jaad.2014.06.002

Analysis of the lymphatic vessel architecture of atypical fibroxanthoma and pleomorphic dermal sarcoma

To the Editor: Atypical fibroxanthoma (AFX) is a rare cutaneous neoplasm typically affecting sun-damaged skin of older patients.[1,2] Clinically, AFX presents as nodular or polypoid tumor accompanied by ulceration, bleeding, and rapid

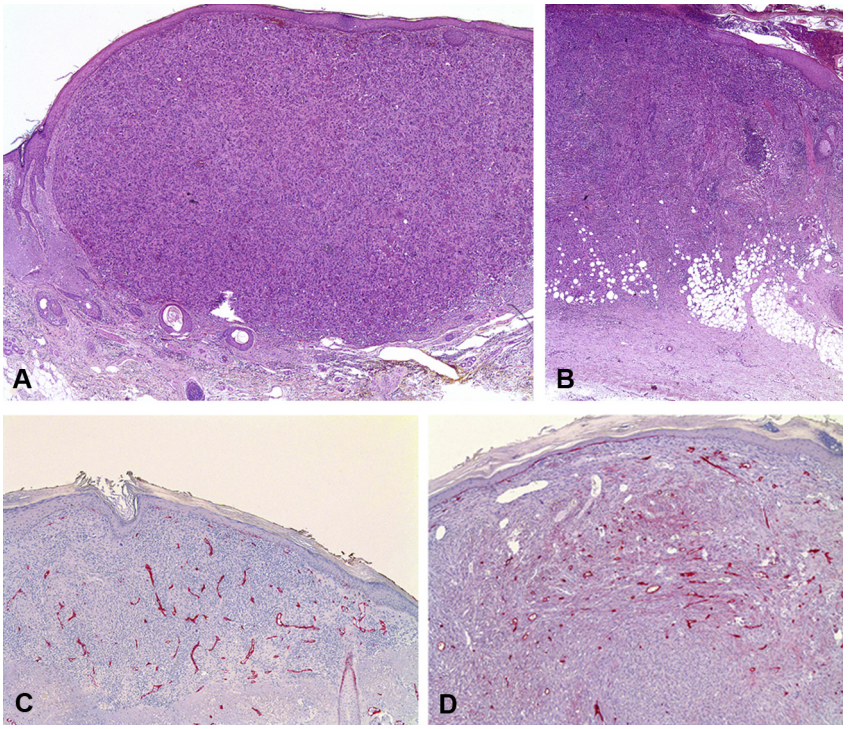

Fig 1. A, Atypical fibroxanthoma. Histopathology shows a well circumscribed tumor consisting of fascicular arranged pleomorphic epithelioid, spindled, and multinucleated tumor giant cells. The tumor shows an exophytic growth pattern confined to the dermis and does not infiltrate the subcutaneous tissue. (Hematoxylin-eosin stain; original magnification: ×25.) **B**, Pleomorphic dermal sarcoma: Histopathology shows a poorly circumscribed tumor with remarkable invasion of the subcutaneous tissue. (Hematoxylin-eosin stain; original magnification: ×25.) **C**, Atypical fibroxanthoma. (D2-40 stain; original magnification ×100.) **D**, Pleomorphic dermal sarcoma (D2-40 stain; original magnification ×100.)

growth.[1] Histologically AFX is a well circumscribed tumor based within and confined to the dermis. AFX is composed of mainly fascicularly arranged pleomorphic epithelioid, spindled, and multinucleated giant cells (Fig 1).[1,2] Mitoses are frequent, including atypical ones. Other malignant neoplasms, such as poorly differentiated squamous cell carcinoma, spindle cell melanoma, or leiomyosarcoma, closely ressemble AFX histologically. Negativity for S100, cytokeratin, CD34, and desmin is a prerequisite for the diagnosis of AFX.[1]

Nevertheless, there are tumors that closely resemble AFX and are indistinguishable by single cell morphology and immunhistochemistry. These tumors are asymmetrical and poorly circumscribed, and show adverse features such as invasion of subcutaneous tissue, perineural infiltration, tumor necrosis, or lymphovascular invasion (Fig 1).[1] Because these tumors are associated with an aggressive clinical behavior and a worse prognosis, they should be regarded separately from AFX. Dr Christopher Fletcher (Department of Pathology, Brigham and Women's Hospital, Boston, MA) has proposed the term "pleomorphic dermal sarcoma" (PDS).[1,3] Nevertheless, it is still controversial whether AFX and PDS are indeed 2 distinct entities or just 2 parts of a disease spectrum, in which molecular events take place that enable tumor cells to become invasive and metastasize.

Recently we demonstrated the usefullness of analyzing lymphatic vessels to gain further insights in the biological behavior and metastatic potential of malignant tumors.[4,5] Therefore we were interested in comparing the lympovascular architecture of AFX and PDS in order to shed more light on the debate whether AFX and PDS are actually 2 different tumors. We analyzed lymphovascular density (LVD) in 25 AFX and 22 PDS cases by D2-40 immunohistochemistry as described previously (Table I).[4,5]

Tumors showing infiltration of the subcutis were diagnosed as PDS. Furthermore tumors involving the deep dermis without an exophytic growth