Commentary on the Accuracy of Ultrasonography on the Location of Lipomas in the Forehead

I read with interest the article by Huh and colleagues.[1] Lipomas are the most common tumor of mesenchymal origin and are found throughout the body, including the forehead. Depending on the study, lipomas of the face and scalp comprise from less than 2% to 14.5% of all lipomas.[2] The clinical differential diagnosis of forehead lipomas includes other adipose-associated tumors, cystic growths, osseous growths, intracranial extensions, intracranial protrusions, nonadipose tumor or carcinoma-related tumors, infectious processes, and vascular growths.[3]

Preoperative imaging studies can be useful in differentiating tumors of adipose tissue from other tumor types. Imaging studies can also help to determine the benign versus malignant nature of the tumor. For example, computed tomography (CT) or magnetic resonance (MR) imaging studies can help classify tumors of adipose tissue as malignant liposarcomas, atypical lipomatous tumors, or benign lipomas. Diagnosis can only be confirmed histologically, but when imaging studies show that the tumor of adipose tissue is comprised greater than 75% fat, it is assumed to be a benign lipoma.[4]

While forehead lipomas are benign in nature, they can be unsightly, thus making surgical removal desirable. To minimize the risk of intraoperative and postoperative complications of nerve damage or bleeding caused by incision and dissection, the surgeon may choose to preoperatively assess the depth of the lipoma using imaging studies. Most commonly, CT scan, MR, or ultrasonography is used to determine the plane in which the lipoma lies. Forehead lipomas usually lie in one of several planes within the forehead. The lipoma is superficial if it lies in the subcutaneous fat plane or deep if it lies in one of the following planes: within the frontalis muscle deep to the superficial fascia, between the frontalis muscle and the deep fascia, within the subgaleal space, or beneath the periosteum.[5,6]

When Huh and colleagues, in their article, "The Accuracy of Ultrasonography on the Location of Lipomas in the Forehead," assessed the accuracy of using ultrasonography as a tool in helping to identify the location or plane of forehead lipomas, they found it to be only 64.3% accurate. Their results are comparable with previous findings[7] and less than desirable.

During surgical excision of forehead lipomas, the greatest risk of nerve damage occurs when dissecting within boundary zones, which are areas through which nerves pass between anatomic fat compartments. Boundary zones are superficial or deep to the fascia and muscle of the forehead. On the forehead, the lateral edge of the supraorbital compartment represents the boundary between the central forehead and the temporal region. It is through this boundary zone that the deep branch of the supraorbital nerve travels. This boundary is approximately 1.5 cm medial to the temporal fusion line, which is a palpable landmark.[8] Deep dissection within and lateral to this boundary zone can cause damage to the deep branch of the supraorbital nerve, thus leading to anesthesia of the scalp. The area medial to this boundary zone, the central forehead, is safe for dissection as there is some crossover of sensory innervation between the supraorbital and supratrochlear nerves and, therefore, compensation in the event of nerve damage.[9]

The vascular supply to the forehead originates from both the external carotid and internal carotid arteries. The anterior branch of the superficial temporal branch of the external carotid artery traverses the temporal fossa in

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a superficial plane and supplies the forehead. It anastomoses with the supraorbital and supratrochlear arteries, both of which enter the forehead area near the orbital rim and originate from the internal carotid arteries.[10] As the vascular supply to the forehead is rich with anastomoses, intraoperative and postoperative bleeding are possible complications of dissection, but necrosis is not.

Although the findings by Huh and colleagues reveal a disappointing 64.3% accuracy, they are very helpful in clinical practice because they beg 2 questions. First, is it worth the cost and effort of obtaining preoperative imaging studies if the accuracy is doubtful? Second, will obtaining preoperative imaging studies change the treatment recommendations or the surgical outcome if the prudent surgeon has an appropriate understanding of anatomy, exercises caution, and practices excellent surgical techniques? My answer to both of these questions is, "I doubt it."

References

1. Huh JW, Kim MS, Choi KH, Park HJ, et al. The accuracy of ultrasonography on the location of lipomas in the forehead. Dermatol Surg 2016;42:191–4.
2. Truhan AP, Garden JM, Caro WA, Roenigk HH. Facial and scalp lipomas: case reports and study of prevalence. J Dermatol Surg Oncol 1985;11:981–4.
3. Sewell LD, Adams DC, Marks VJ. Subcutaneous forehead nodules: attention to the button osteoma and frontalis-associated lipoma. Dermatol Surg 2008;34:791–8.
4. Einarsdottir H, Söderlund V, Larsson O, Mandahl N, et al. 110 subfascial lipomatous tumors. MR and CT findings versus histopathological diagnosis and cytogenetic analysis. Acta Radiol 1999;40:603–9.
5. Salache SJ, McCullough ML, Angeloni VL, Grabski WJ. Frontalis-associated lipoma of the forehead. J Am Acad Dermatol 1989;20:462–8.
6. Zitelli JA. Subgaleal lipomas. Arch Dermatol 1989;125:384–5.
7. Lee JS, Hwang SM, Jung YH, Kim HI, et al. Clinical characteristics of the forehead lipoma. Arch Craniofac Surg 2014;15:117–20.
8. Pessa JE, Rohrich RJ. *Facial topography: clinical anatomy of the face*. St. Louis, MO: Quality Medical Publishing, Inc; 2012.
9. Knize DM. *The forehead and temporal fossa: anatomy and technique*. Philadelphia, PA: Lippincott Williams and Wilkins; 2001.
10. Prendergast PM. *Cosmetic surgery*. Berlin, Germany: Springer-Verlag; 2012.

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