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DISCUSSION

Lower Lid Deformity Secondary to Autogenous Fat Transfer: A Cautionary Tale

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This case report relates one treatment option for a new problem of fat grafting: overcorrection and longevity. The authors present a brief but ominous overview of potential complications associated with fat grafting.

Over the past two decades, physicians have gradually abandoned simple excision or suspension of tissue to rejuvenate the lower eyelid. Instead, they currently rejuvenate by a variety of methods including adjustment of the lower lid's topography through transposition and grafting of fat [1–4]. In the case study presented, grafting of fat to the tear trough and the adjacent lateral infraorbital rim by the original surgeon resulted in excess fullness. Dr. Aston treated this deformity by excision of all of the grafted fat through a subciliary incision and a skin flap.

Alternative Physical Treatments

In my experience, several other options are available for the treatment of excess grafted fat in the lower eyelid [5, 6] including massage, direct excision, suctioning, steroid injections, and other chemical injections. In cases with small diffuse areas of overcorrection, aggressive massage may diminish or reposition excessive grafted fat over the course of a few weeks. Using this technique, an area of fullness is positioned between a finger and the underlying bone while firm but gentle pressure exerted with a slight rolling motion. This is done for 30 s four to six times per day.

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Small irregularities visible directly under the skin can be excised through a tiny incision placed directly over the grafted fat. This approach is especially useful in the removal of small, well-circumscribed lumps or irregularities. However, for such a large collection of fat as that in Dr. Aston's case, the large incision or multiple smaller incisions needed may result in unacceptable cutaneous scarring.

The technique I most commonly use to approach a large amount of excess grafted fat to the lower eyelid is simple suctioning [6]. A number 1 Coleman infiltration cannula (Mentor Corporation, Santa Barbara, CA, USA) attached to a 3-ml Luer-Lok syringe is inserted through a tiny incision and advanced into the excess grafted fat. Any capsule around the fatty collection is perforated initially to access the fat. Negative pressure is applied by retracting the barrel of the syringe while moving the cannula through the fatty tissue in a curetting fashion.

The suction should continue until the surgeon is convinced by the look and feel of the lower eyelid that an adequate amount of tissue has been removed. This approach requires more vigorous suctioning than might be expected, and may require more than one procedure for removal of sufficient grafted fat. Centrifugation of the aspirate can confirm and document the amount of fatty tissue present in the aspirate.

Chemical Injections

Usually, fat injected under lower eyelid skin improves the quality and color of the skin [7]. The authors describe the skin overlying the grafted fat as atrophic and hyperpigmented. I have observed thinning of skin over grafted fat only after the grafted fat has been injected with steroids,

which most likely happened in the reported case. Catabolic steroid injections such as triamcinalone are extremely unpredictable. Although the injection of catabolic steroids can occasionally produce a desirable decrease in volume, frequently, even low concentrations and minimal volumes of catabolic steroids injected into grafted fat precipitates excessive atrophy of the fat. However, even if no atrophy of the fat occurs, there can be remarkable thinning of the overlying skin, hyperpigmentation, and visible crystals under the skin. In addition, the atrophy is sometimes temporary, and when it returns, the fat can rebound to a larger volume. This may have happened in the reported case, contributing to the patient's condition.

Another potential but as yet unproven method of decreasing excess fat grafted to the lower eyelids is "lipolysis" through injection of combined chemicals such as phosphatidylcholine and deoxycholate [8, 9]. Studies regarding these substances and their ability to reduce fat are ongoing.

Problems with Removing Grafted Fat

In their discussion, the authors did not mention the ectropion or remarkable increase in lower eyelid wrinkling present in the 1-year postoperative appearance. My first attempts to remove fat infiltrated into the lower eyelid were through a lower eyelid skin flap. I found that after open removal, ectropion was a common sequela. In my experience, ectropion is much less common with suctioning of the lower eyelid, as described earlier.

Obviously, removal of the offending excessive grafted fat by either excision or suctioning can restore the lower eyelid to the original state, with increased wrinkling and dark circles. Loss of subcutaneous fullness in the infraorbital region removes the volume expansion and optical barrier so that the thin skin of the lower eyelids wrinkles, with the color of the obicularis oculi muscles and blood vessels seen through the thin, less supported skin. In addition, the tear troughs deepen. Therefore, I frequently place more fatty tissue into the surrounding areas at the same time as the attempted suctioning or later. This restores a more subtle fullness to the lower eyelids, which softens wrinkles and crow's feet and can lighten infraorbital darkness.

Safety

The authors add a foreboding tone to their article by beginning their abstract with the caution that "the safety of autologenous fat grafting to the periorbital region remains ill defined." The beginning of their summary uses the same exact words of warning. In fact, more than one-half of the authors' discussion of this single case report from Germany is devoted to safety issues entirely unrelated to the case or the procedure the authors performed. In addition, 10 of the 20 references address the complications of fat grafting, and more than one-third of the references address catastrophic intraarterial injections.

Safety is of paramount importance to all of us, but the authors' lengthy mention of intraarterial injection of fatty tissue and their conclusions about the safety of fat grafting are out of place. The original surgery in Germany did not appear to have a safety problem, only a poor aesthetic outcome. The authors review the literature on unrelated, extremely rare complications to warn us not about any experience they have had, but about problems they have researched in the literature.

Intraarterial injections are possible when any particulate substance is injected into the body, and this complication is obviously most likely when a sharp needle is used. Not only fat, but also particulate substances such as hyaluronic acid, collagen, injectable alloderm, silicone, catabolic steroids, and the like have caused catastrophic phenomena after intraarterial injections [10]. A physician should inject any particulate substance into the body with great care.

The authors' only suggestion "to avoid these tragic complications" is to use a blunt cannula and "inject fat under low pressure." Larger blunt cannulas are less likely to perforate the wall of an artery or vein than sharp cannulas, small cannulas, or needles. However, the authors' advice not to inject under high pressure is confusing. An intravascular injection is easily attainable with relatively low pressure injections of any particulate substance.

A catastrophic intravascular phenomenon from the injection of a soft tissue filler is dependent not only on the cannulation of a vessel with a needle or cannula, but also on injection of sufficient particulate matter in one bolus to create a problem. To cause blindness, a column of fat must be injected into a peripheral artery and must extend back to the proximal ophthalmic artery. The column must reach the internal carotid artery to cause a stroke. If the surgeon limits the amount of any filler injected to less than 0.1 ml with each pass, the probability of a column of the filler reaching all the way back to the ophthalmic artery is minimized.

Other methods for minimizing the chance of intravascular injections include vasoconstriction of the recipient bed and limiting of the bolus injected with each pass. The vasoconstriction from epinephrine makes vessels harder to cannulate.

Summary

This case report is a welcome discussion of a method for treating excess grafted fat of the lower eyelid. However,

the authors conclude from this one case of an unknown technique performed in Germany that periorbital fat grafting is an unsafe operation that should be stopped until "objective outcome studies" have been completed. Unfortunately, their comments and warnings are overly portentous and out of place with this one case report.

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