

Complications in Fat Grafting

Angelo Cuzalina, MD, DDS^{a,*}, Andre V. Guerrero, MD, DDS^{b,c}

KEYWORDS

- Fat grafting • Fat complications • Microdroplet • Microcannulas • Irregularity • Resorption • Intravascular injection
- Neovascularization

KEY POINTS

- Fat grafting complications from overinjection or underinjection volumes are common issues that are dramatically improved by proper instrumentation and the techniques discussed herein.
- Management of contour irregularities created from fat grafting is challenging at times but various methods to improve outcomes after complications occur exist and are discussed herein.
- Serious complications from fat grafting, such as intravascular events, are rare but could occur, especially with smaller injection cannulas and needles, and surgeons must know how to prevent and treat these.

Signs of facial aging are multifactorial. The facial skeleton undergoes resorptive changes, decreasing its support for the overlying soft tissue. The subcutaneous fat, muscle, and dermis of the face also lose volume. In addition, elastin, collagen, and hyaluronic acid are lost from the dermis and the facial ligaments lose their tightness. This combination of losses of supporting structures, soft tissue volume, and elasticity contributes to the appearance of the aging face.

To achieve esthetic harmony, strategies for facial rejuvenation must improve hard and soft tissue atrophy, volume loss, and soft tissue ptosis. At the forefront of addressing these issues is volume augmentation because of its ease of recovery and short downtime. Fat is of particular interest because it is autogenous and permanent, and has been shown to be very successful at providing the augmentation.

As demand for facial augmentation has increased, facial fat grafting procedures have become more common. As a result, certain complications can arise. This article discusses the complications that can arise from fat grafting, their proposed mechanism, and how to prevent and manage them.

Blindness or stroke (intravascular injection)

Blindness or stroke can occur as a result of facial filler or fat injections. In 2012, Lazzeri and colleagues¹ published a review in which they reported 32 cases of blindness due to injectable fillers. Fifteen of the 32 cases were due to fat injection in which none of the patients regained vision.¹ Several other cases of facial fat grafting intravascular injection leading to complications have been reported in the literature.^{2–7}

Disclosure Statement: The authors have nothing to disclose.

^a Cosmetic Surgery Fellowship Program, AACCS, 7322 East 91st, Tulsa, OK 74133, USA

^b Inland Institute, 1333 East Foothill Boulevard Suite 1, Upland, CA 91786, USA

^c Department of Oral and Maxillofacial Surgery, Loma Linda University, 11092 Anderson Street, Loma Linda, CA 92350, USA

* Corresponding author.

E-mail address: angelo@tulsasurgicalarts.com

Understanding of the pathophysiology is of great importance in preventing and managing this complication.

Mechanism

High-pressure intraarticular injection of fat into the dorsal nasal, angular, or supratrochlear arteries can overcome arterial pressures and cause retrograde movement of embolized fat into the ophthalmic artery and internal carotid (Figs. 1 and 2). When the injection pressure is released, the arterial pressure then embolizes the fat anterogradely from (1) the ophthalmic artery to its terminal retinal and ciliary arteries (blindness) or (2) the internal carotid to the cerebral arteries (stroke).^{1–7}

Prevention

Being well-versed in facial vascular anatomy is of utmost importance to minimize the risk for intraarticular injection. Aspiration before injection helps detect if the needle has been placed intravascularly. Low-pressure injection using small syringes along with small-bore needles or cannulas have also been advocated to lower the risk for intravascular injection. Furthermore, frequent movement of the needle or cannula will avoid large amounts of fat being injected in the same location.

Management

Acute onset of pain is the chief complaint of a retinal artery embolism. Stroke symptoms make take minutes to hours to manifest. Early diagnosis is of utmost importance to improve patient outcomes and attempts should be made to restore retinal circulation within 60 to 90 minutes.⁷ Vigilance for signs and symptoms of stroke or blindness during the injection period is required.

Unfortunately, a strong level of evidence is not available for management of intravascular injection. If symptoms of blindness do arise, the patient should be transferred to a hospital as soon as possible.^{5–7} While waiting for a transfer, attempts should be made to lower the intraocular pressure. One to 2

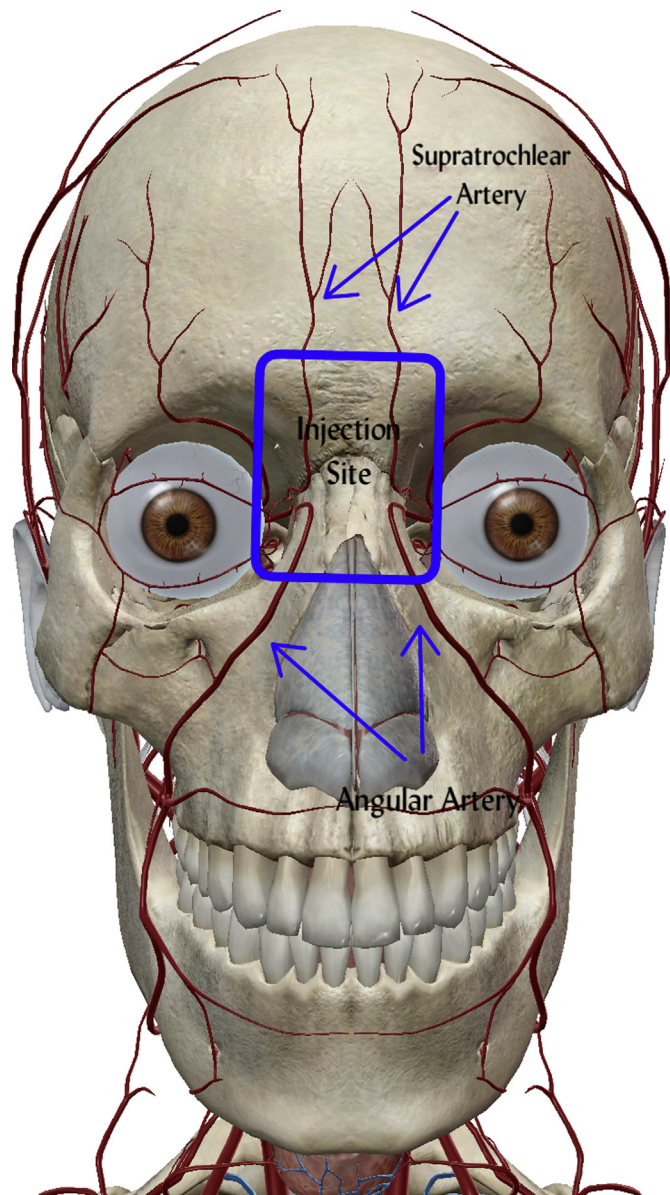


Fig. 1 Vasculature of facial injection sites that commonly lead to blindness.

drops of timolol 0.5% should be placed in the affected eye.⁵⁻⁷ If available, aspirin 325 mg and acetazolamide 500 mg should also be given to the patient.⁵⁻⁷ Ocular massage by indenting the globe 2 to 3 mm for 5 to 15 seconds, followed by sudden release of pressure, is hypothesized to help dislodge the embolus.⁵⁻⁷ Retrobulbar lavage, steroids, heparin drip, and aqueous paracentesis have all been suggested but without strong evidence for their use.⁷

Contour irregularity, unpredictability, and overcorrection and undercorrection

One of the disadvantages of fat grafting is that the amount of fat graft survival can be unpredictable. Although autologous fat is often marketed as a permanent filler, studies show that the range of fat survival is 20% to 80%.⁸ This amount of unpredictability can lead to asymmetry, contour irregularities, and undercorrection. Overcorrection can also occur because some surgeons inject more fat to compensate for the resorption that occurs.

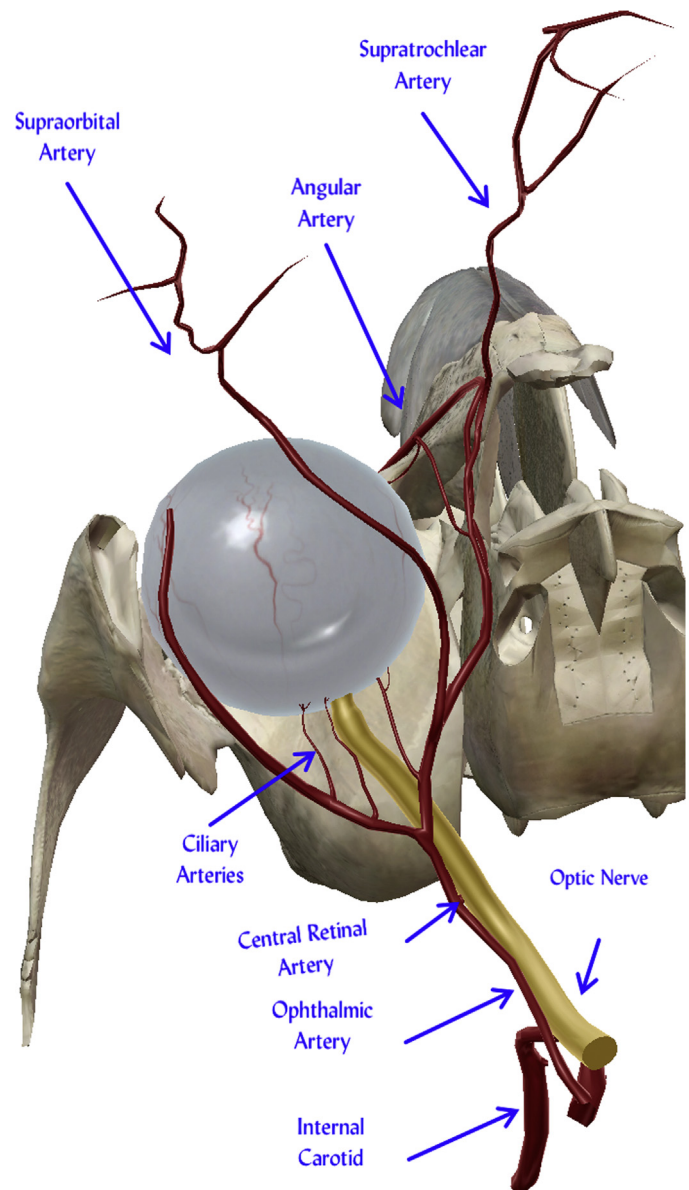


Fig. 2 Periorbital vasculature involved in the retrograde flow of a fat embolus after autologous fat grafting to the face.

Mechanism

Grafted adipose tissue relies on plasmatic diffusion for nourishment until neovascularization occurs. During this period, the grafted fat is in a hypoxic environment and adipocytes furthest away from the host tissue bed will die.⁹ The dead adipocytes will be phagocytized and scar tissue or oil cysts will replace them. This will contribute to contour irregularities and unpredictability.⁹ In addition, contour irregularities can also be a result of superficial deposition of the grafting material.

Prevention

Predictable results in fat grafting necessitate meticulous techniques. Fat should be injected using a microdroplet technique with the diameter of the fat particles being no wider than 2 mm.⁹ This will maximize the amount of fat

Download English Version:

<https://daneshyari.com/en/article/8696659>

Download Persian Version:

<https://daneshyari.com/article/8696659>

[Daneshyari.com](https://daneshyari.com)