Varyous techniques are used to address tear trough deformities, and though procedures are largely successful, complications can occur, one of the most severe of which can be a vascular occlusion that causes blindness.

“There have been several documented cases of blindness following filler treatment of the glabella and nasal bridge. However, blindness following treatment of the tear trough can also occur, further underscoring the need for physicians to practice extreme caution when injecting in the face,” says Julie Woodward, M.D., assistant professor, department of ophthalmology, Duke University Eye Center, Durham, N.C.

The face is a very vascular region, and because injections are “blind,” there is always the possibility of an intravascular injection, regardless of which area of the face the physician injects. If a filler is inadvertently injected into an artery, the product could travel in a retrograde fashion and then blood flow can push the filler along another vessel branch that can result in complications. This is called embolia cutis medicamentosa, or Nicolau syndrome.
INJECTION TECHNIQUE The choice of injection technique can be instrumental in helping to avoid adverse events. Ideally, injections are placed between the orbicularis oculi muscle and periosteum. This area may be a safer approach because it is beneath the larger vessels in the orbicularis muscle. Therefore, it may pose a decreased risk of intravascular embolisation of product.

Tear troughs may also be complicated by bruising, since the orbicularis muscle is very vascular, and damage to a very small vessel can cause a frustrating bruise.

“I like to place my gel fillers a little bit more superficial, but I still try to stay under the orbicularis oculi muscle. Instead of injecting right into the depth of the tear trough, I usually make my needle puncture lower on the cheek and then carefully ride the orbital rim up to the tear trough. By placing the needle entry about half an inch below the tear trough, I have seen much less bruising in my patients, and thankfully, less adverse events on a whole,” says Joe Niamtu III, D.M.D., F.A.A.C.S., a board-certified oral and maxillofacial surgeon with a practice limited to cosmetic facial surgery in Richmond, Va.

“Also, as the tear trough area is a bound-down tissue, carefully injecting at the periosteum as well as in a more superficial plane could help to aesthetically fill out the area much better.”

“I prefer to inject while withdrawing a 30-gauge needle along the periosteum with a slight wiggling motion to evenly distribute the filler because I believe it would be more difficult to have an intravascular incident with this style.”

Julie Woodward, M.D.
Durham, N.C.

Some physicians may prefer to deposit their fillers while the needle is pushing through the tissue, because this technique creates a pathway for the filler. Others may prefer to inject while withdrawing, as this may less likely result in intravascular injection of product. Aspiration just prior to injecting is another technique that could also help avoid intravascular injection, but this technique is not fail-proof.

Many physicians are now beginning to introduce fillers through blunt-tipped canulas instead of needles in the hopes that the canulas will not damage or enter a vessel. According to Dr. Woodward, physicians should refrain from injecting a bolus of filler and then expect to massage the area and spread the product, as this could also increase the risk of complications.

According to Dr. Woodward, there are numerous documented cases of blindness following the injection of steroids around the eye, which can even occur when injecting as far as the earlobe.

“I think it is really hard to say which technique (anterograde versus retrograde injection) is best, as there is not enough data to support either technique as ideal,” Dr. Woodward says. “I prefer to inject while withdrawing a 30-gauge needle along the periosteum with a slight wiggling motion to evenly distribute the filler because I believe it would be more difficult to have an intravascular incident with this style. However, some believe that smaller needles can more easily enter a vessel.

“Regardless of the needle used, it is very important to take your time, inject slowly and keep the needle moving. A still needle inside a vessel with a bolus injected would be the most likely scenario for an embolic event.”

According to Dr. Woodward, one way to help avoid visible nodules as well as an embolism is to stop injecting after withdrawing the needle about two-thirds of the way from the targeted tissue, as one can better avoid introducing filler to any vessel in the orbicularis.

DEBATES, COMPlications

There is much debate as to which filler is optimal in treating the tear trough. Some believe Restylane (hyaluronic acid, Medicis Aesthetics) is the superior filler for this indication because it is less hydrophyllic. According to Dr. Niamtu, however, data is still lacking as to which filler is optimal.

“I may either use Juvederm (cross-linked hyaluronic acid, Allergan) or Restylane in this region, but I will not use a product where I cannot reverse its effect because aesthetic tastes may change and over time, the patient may not be happy with their ‘new’ look,” Dr. Niamtu says.

A severe complication such as blindness is not filler-specific, and it can occur with any product one injects. According to Dr. Woodward, there are numerous documented cases of blindness following the injection of steroids around the eye, which can even occur when injecting as far as the earlobe.

“In the case of intravascular product injection, the central retinal artery could become totally blocked, resulting in complete unilateral blinding of the patient, which is the worst-case scenario. Partial areas of blindness could result if the local veins become blocked to a greater or lesser degree,” Dr. Woodward says.

Dr. Niamtu says the injector must be vigilant in observing the area injected as well as the surrounding anatomy. The typical symptoms of an inadvertent arterial injection followed by retrograde embolisation can include pain and pallor of the treated areas (if injected into an artery), and livedo, a purplish discoloration of the skin (if injected into a vein).

Local areas of ischemia can be treated with the immediate administration of aspirin and topical nitro-paste, as well as the application of heat and massage. Additionally, the physician can inject with hyaluronidase, even if a hyaluronic acid filler was not the product used.

Patients should also be monitored closely for several days for any signs of impending tissue necrosis, not only at the site of injection, but along the route of the offending vessel, as well.

“Regardless of the experience of the physician, one needs to be extremely judicious when injecting any product in the face and particularly the periorbital area because adverse events can occur,” Dr. Woodward says.

Disclosures: Dr. Niamtu has received lecture honorarium from both Allergan and Medicis. Dr. Woodward has received honorarium from Medicis.