AAD
DermWorld
directions in residency
A Publication of the American Academy of Dermatology | Association

boards fodder

Filler complications

By Eduardo Michelen-Gomez, MD, Andrea Paola Caro-Muñiz, MD, and Karina J. Cancel-Artau, MD

Eduardo Michelen-Gomez, MD,
is a PGY-3 resident in the department of dermatology at the University of Puerto Rico School of Medicine in San Juan, Puerto Rico.

Andrea Paola Caro-Muñiz, MD,
is a PGY-2 resident in the department of dermatology at the University of Puerto Rico School of Medicine in San Juan, Puerto Rico.

Karina J. Cancel-Artau, MD,
is a PGY-3 resident in the department of dermatology at the University of Puerto Rico School of Medicine in San Juan, Puerto Rico.

Table 1: Injection site reactions

Complication	Clinical presentation	Risk factors	Most common site	Prophylaxis	Treatment	Other considerations
Edema	Localized swelling due to expansion of interstitial fluid volume to the affected tissue Transient swelling is normal Usually resolves after 1-2 weeks	Timing and severity are dependent on the specific product used	Lips Periorbital region	Cold compresses (about 5 min) Arnica gel	Mild: Cold compresses Moderate: Diclofenac 50mg BID x 4 days Ibuprofen 400-600mg TID x 3-4 days Severe: Prednisone 30mg + pantoprazole 40mg x 3-5 days	N/A
Bruising/ echymosis	Nonblanching purpuric patches >1cm common complication	Fanning and threading technique	N/A	Avoid strenuous exercise for 24h Use Arnica with vitamin K creams for 3 to 4 days	Arnica with vitamin K creams for 3 to 4 days Photoprotection	The risk of bleeding in patients taking oral anticoagulants is small Discontinuation may increase the risk of thrombosis Omega-3 fatty acids, fish oil and vitamins/ herbal supplements can be discontinued
Erythema	Red discoloration of the skin due to dilation and irritation of superficial capillaries Post-procedural erythema is normal	Past medical history of rosacea	N/A	N/A	If prolonged (more than 3-4 days), may consider: Oral tetracycline Low-potency topical steroid Vitamin K cream	N/A
Erysipelas	Tender erythematous well-demarcated plaque	N/A	N/A	N/A	Penicillin V 250 - 500mg PO q6h x 10-14 days Clindamycin 300-450mg PO q6h x 5-7 days	Most common culprits: *Staphylococcus Aureus* *Streptococcus pyogenes*
Abscess	Subcutanous tender nodule +/- purulence Rare complication Can occur from 1 week to several years after treatment May persist for weeks, and periodically recur for months	Permanent hydrogel fillers	N/A	Sterile techniques: Clean injection site before and after procedure, use of chlorhexidine gluconate	Incision & drainage Culture Empirical broad-spectrum antibiotic Tailor treatment after sensitivity results	Usually culture positive; midfacial and periorbital infection can result in intracerebral complications

Filler complications

By Eduardo Michelen-Gomez, MD, Andrea Paola Caro-Muñiz, MD, and Karina J. Cancel-Artau, MD

Complication	Clinical presentation	Risk factors	Most common site	Prophylaxis	Treatment	Other considerations
Herpetic outbreak	Angioedema-like swelling, erythema, local pain, and crusting commonly observed 24 to 48 hours after filler injection in the area where the filler has been injected (perioral area, nasolabial folds, etc.); can extend to neighboring areas	Treatment of lips or mouth + hx of cold sores (3 or more episodes)	Lips and nasolabial fold	Prophylactic Valaciclovir 1g PO 1 day before and 3 days after filler injection	400mg Acyclovir three times per day for 10 days or 1g Valacyclovir BID x 7 days	In patients with active infection, injection should be delayed until complete resolution

Table 2: Adverse effects from improper technique

Complication	Clinical presentation	Risk factors	Most common site	Treatment	Other considerations
Non-inflammatory nodule	Presents as an isolated lump in the area of the injection Does not grow Well-defined from the surrounding tissue When too much material accumulates in an area Appears early after the procedure (days to week)	Overcorrection Superficial placement of a filler Use of a filler for an incorrect indication	In highly mobile areas such as the lips when using particulate fillers	Early nodules may respond to vigorous massage If HA filler, the nodule will resolve with hyaluronidase IL Kenalog (small amount) IL 5-FU + lidocaine +/- kenalog Needle aspiration Minimal stab wound incision with evacuation (last resort)	N/A
Biofilm (inflammatory nodule)	Presents as a red, indurated, persistent nodule that recurs after resolution A mature biofilm can release individual free-swimming bacteria in the tissues Local infection Systemic infection	Chronic skin ulcers, dental work, surgery, trauma	N/A	Antibiotic treatment is the first step Ciprofloxacin 500mg BID AND clarithromycin XL 500mg BID x 4-6 weeks Removal of the filler Hyaluronidase if HA filler was used If long-term indurated area persists (despite above tx) IL 5-FU If refractory, optic laser microfiber or radiofrequency heating Surgical excision (last resort)	Usually culture negative; do NOT use IL steroids
Foreign body granuloma (inflammatory nodule)	Present as red papules, nodules, or plaques (+/- ulceration) Lesion becomes indurated over time Longstanding inflammatory nodules are most frequently foreign body granulomas	Larger volumes injected Intramuscular injections Previous infection or trauma The shape of the microspheres (irregular and sharp-edged particle)	N/A	If granulomatous reaction to HA filler, hyaluronidase IL Kenalog If unresponsive: IL Kenalog + 5-FU Surgical excision (last resort)	Usually culture negative; commonly appears several months to years after the injection; can occur with all injectable dermal fillers

Filler complications

By Eduardo Michelen-Gomez, MD, Andrea Paola Caro-Muñiz, MD, and Karina J. Cancel-Artau, MD

Table 3: Allergy and hypersensitivity reactions

Complication	Clinical presentation	Risk factors	Most common site	Treatment	Other considerations
Angioedema	Presents with rapid swelling of deep layers of skin. May occur after initial or repeated exposure Occurs within hours of exposure Edema can be severe and last for several weeks	History of type 1 and type 4 hypersensitivity reactions	Face and lips	Cold compresses PO antihistamines If no response, PO corticosteroids	IgE-mediated immune response to filler
Delayed edema	Characterized by erythema, edema, and induration Typically occurs 1 day after injection May occur several weeks after the procedure Symptoms may persist for months	N/A	N/A	Remove filler, use hyaluronidase if HA filler Lowest dose of PO corticosteroids necessary to control symptoms	Delayed hypersensitivity reaction (mediated by T-lymphocytes); NOT responsive to PO antihistaminics

Table 4: Vascular-mediated events

Complication	Clinical presentation	Risk factors	Most common site	Treatment	Other considerations
Vascular occlusion *with* blindness	Post-injection immediate blurring or vision loss	Syringe complications Rapid injection with high plunger pressure Injection of large volumes with each pass	Most common areas leading to blindness Nose > glabella > forehead > nasolabial fold	Evaluate visual status prior to any intervention Evaluate for signs and symptoms of central nervous system involvement Inject >150 units of hyaluronidase Repeat in quick succession as needed Specialist treatments include anterior chamber paracentesis, direct intra-arterial or IV injection of hyaluronidase +/-urokinase Other conservative measures: Breathing into a paper bag Ocular massage Press the globe firmly for cycles of 5-15 seconds intercalated by rapid-release Topical timolol and oral acetazolamide Sublingual nitroglycerin 0.6mg	Most common arterial branches that when occluded lead to blindness Supraorbital, supratrochlear, dorsal nasal, angular, zygomaticofacial, and zygomaticotemporal artery

Filler complications

By Eduardo Michelen-Gomez, MD, Andrea Paola Caro-Muñiz, MD, and Karina J. Cancel-Artau, MD

Complication	Clinical presentation	Risk factors	Most common site	Treatment	Other considerations
Vascular occlusion without blindness	Presents as post-injection reticulated tissue blanching May be associated with slow capillary refill, pain and/or asymmetric edema	Syringe use Rapid injection with high plunger pressure Injection of large volumes with each pass	Main areas with higher incidence of vascular occlusion include: Glabella, nasal tip, alar triangle, and nasolabial fold	Hyaluronidase 125 units @ 15-minute intervals Apply warm gauze and massage the area Apply topical nitroglycerin 2% paste BID Other strategies: Prednisone 20-40mg daily x 5 days Acetylsalicylic acid 500mg TID x 2 day Low molecular weight heparin Sildenafil 100mg daily x 5 days Hyperbaric oxygen	If a calcium hydroxylapatite filler is responsible for an occlusion, sodium thiosulfate injection may help dissipate filler

Table 5: Other

Complication	Clinical presentation	Risk factors	Most common site	Treatment	Other considerations
Delayed inflammatory reaction following COVID-19 vaccination	Induration, edema, painful nodules and discoloration at sites of dermal filler injection Occurs within 24-48 hours after COVID-19 mRNA vaccine	COVID-19 vaccination: timeline can extend up to > 1 year prior to filler administration	N/A	Lisinopril 5-10mg PO daily x 5-10days	mRNA that codes for COVID-19 spike proteins enter cells after vaccine administration Spike proteins active ACE-2, which converts angiotensin-1 to angiotensin-2 Angiotensin-2 increases TNF-alpha, IL-5, -8, and leads to an increase in the Th1 response. It promotes a pro-thrombotic, profibrotic, and inflammatory state that may lead to complications in patients with hyaluronic acid residues.

References

1. King M, Walker L, Convery C, et al. Management of a Vascular Occlusion Associated with Cosmetic Injections. *J Clin Aesthet Dermatol*. 2020 Jan;13(1):E53-E58.
2. Wang C, Sun T, Yu N, et al.. Herpes reactivation after the injection of hyaluronic acid dermal filler: A case report and review of the literature. *Medicine* (Baltimore). 2020 Jun 12;99(24):e20394.
3. Jones DH, Fitzgerald R, Cox SE, et al. Preventing and Treating Adverse Events of Injectable Fillers: Evidence-Based Recommendations From the American Society for Dermatologic Surgery Multidisciplinary Task Force. *Dermatol Surg*. 2021 Feb 1;47(2):214-226.
4. Urdiales-Gálvez F, Delgado NE, Figueiredo V, et al. Treatment of Soft Tissue Filler Complications: Expert Consensus Recommendations. *Aesthetic Plast Surg*. 2018 Apr;42(2):498-510.
5. Lolis M, Dunbar SW, Goldberg DJ, et al. Patient safety in procedural dermatology: Part II. Safety related to cosmetic procedures. *J Am Acad Dermatol*. 2015 Jul;73(1):15-24.
6. Funt D, Pavicic T. Dermal fillers in aesthetics: an overview of adverse events and treatment approaches. *Clin Cosmet Investig Dermatol*. 2013 Dec 12;6:295-316.