

# Hyaluronic Acid Filler Emergency Protocol

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## Background

Filler has gained growing popularity over the past several years. Currently, fillers are used in a variety of situations including but not limited to facial contouring, wrinkle correction, and improvement of congenital defects. With increased use has come increased complications. Prevention of these complications is important which can be accomplished through a detailed understanding of vascular anatomy. However, equally important is the prompt management of these complications when they arise by physicians and nursing staff.

Early complications are well understood and are similar through all types of fillers. These result from technical errors and infections and can result in prolonged pain and swelling. However, late complications due to things such as product migration, have no consensus on management. With this study, we hope to review clinical signs for complications to aid in early recognition and to provide an emergency protocol with a premade kit for when this occurs.

## Objectives

Establish an emergency protocol and kit for hyaluronic acid (HA) filler complications in the outpatient setting. To provide guidance and reduce stress for providers, nurses, and patients on how to be prepared and handle these complications in the acute setting.

Prevent serious or permanent negative outcomes of hyaluronic acid filler including, but not limited to blindness, skin necrosis, anaphylaxis, or even death.



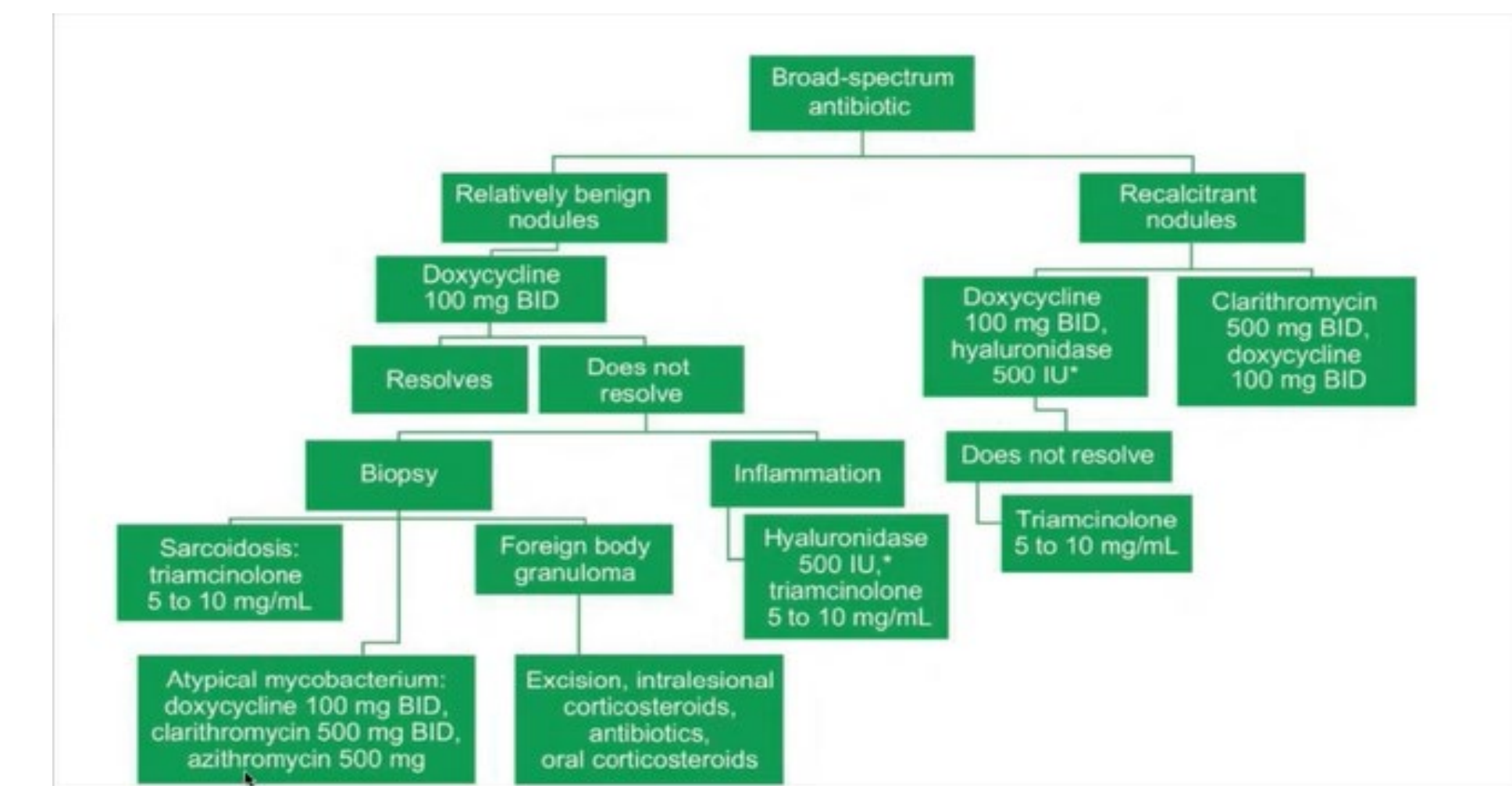
Figure 1. Occlusion of dorsal nasal and supratrochlear vessel

Reference: Alam M, Jones D, Carruthers J, Fitzgerald R, Cox S, Humphrey S. "Preventing and Treating Adverse Events of Injectable Fillers: Evidence-based Recommendations from ASDS." American Society For Dermatologic Surgery. 27 Feb 2021. <https://www.pathlms.com/asds/courses/27561>

This research was supported (in whole or in part) by HCA Healthcare and/or an HCA Healthcare affiliated entity. The views expressed in this publication represent those of the author(s) and do not necessarily represent the official views of HCA Healthcare or any of its affiliated entities.

## Protocol

Complication	Steps:
<b>Skin Necrosis</b> (see Figure 1)	<ol style="list-style-type: none"> <li>1. Early recognition is crucial: persistent blanching can provide early diagnosis before the appearance of more obvious livedo reticularis; day 2-3 will start seeing blisters/pustules/skin breakdown/scarring. Look for capillary refill: if slow, it's time to be worried</li> <li><b>STOP INJECTING</b></li> <li>2. Inject hyaluronidase 500 units with cannula into every localized affected area/vessel that is visualized (900 units if in the nose) -&gt; best results within 4 hours of administration of HA but not after more than 72 hours</li> <li>3. Area should be massaged, and warm compresses should be applied to increase vasodilation</li> <li>4. Administer sublingual aspirin 325 mg (next 6 days should take aspirin 81 mg per day)</li> <li>5. Re-evaluate patient every 30-60 minutes; subsequent injections should only be in the areas in which ischemia remains visible, likely following the path of the vessel (typically most will resolve after 3-4 days with 2-3 injections per day; regions should be smaller at every reevaluation)</li> <li>6. Give antibiotics to prevent infection: Ciprofloxacin 500 mg q12 hours for 7 days or Clarithromycin 500 mg q12 hours for 7 days</li> <li>7. Oral Prednisolone 25 mg or Dexamethasone 8 mg IM can be given as well to reduce inflammation if needed</li> <li>8. If above steps do not show increased signs of blood flow, call for emergent hyperbaric oxygen therapy: nearest is Carilion Clinic Wound Center, Roanoke, VA. (540) 224-4325</li> </ol>
<b>Blindness</b>	<ol style="list-style-type: none"> <li>1. Can recognize with complete or unilateral vision loss, ocular pain/headache, nausea/vomiting, ophthalmoplegia, ptosis, skin changes or CNS findings</li> <li>2. <b>Assessment:</b> <ul style="list-style-type: none"> <li>Near vision should be checked at 33 cm, 1 eye at a time</li> <li>Swinging flashlight test to screen for normal pupillary reaction</li> <li>Extraocular movements and ptosis should be evaluated</li> <li>Ask: pain, visual changes, weakness in extremities or other symptoms such as nausea, headache and dizziness</li> <li>Strength exam of extremities should be performed</li> <li>Skin findings including blanching, erythema, duskiness or reticulate changes should be documented and capillary refill tested in the affected area</li> </ul> </li> <li><b>NO CURRENT EVIDENCE BASED, ACCEPTED STANDARD OF CARE:</b> <ul style="list-style-type: none"> <li>The following can be used and should be initiated within 15 min:</li> <li>3. Administer sublingual aspirin 325 mg</li> <li>4. Get patient to start breathing into a paper bag and perform ocular massage</li> <li>5. Should contact ophthalmologist ASAP if vision does not return within 15 min:                             <ul style="list-style-type: none"> <li>Dr. Parisa Farhi, in Blacksburg, VA. (540) 552-1120</li> <li>Should contact neurologist immediately if CNS symptoms:                                     <ul style="list-style-type: none"> <li>Dr. Manuel Maruffo in Blacksburg, VA. (540) 951-5090</li> </ul> </li> </ul> </li> <li>6. Can inject hyaluronidase 450 units at site of injection and along path of anastomosing arteries; consider injecting at supraorbital OR supratrochlear notch OR dependent on provider due to complexity of injection: inject 800 u (5mL) hyaluronidase SLOWLY using a 25-G x 38 mm cannula inserted through the skin at the junction of the lateral one-third and medial two-thirds junction of the infraorbital rim.</li> <li>7. Administer timolol 0.25% solution immediately followed OR mannitol 1.5 g/kg IV as 20% solution over a period of 30 min OR IV acetazolamide 5 mg/kg (rule out sulfa allergy)</li> <li>8. After above measures, expedite to Emergency Department, the retina can tolerate approximately 90 minutes of ischemia until damage becomes permanent</li> </ul> </li></ol>
<b>Anaphylaxis</b>	<ol style="list-style-type: none"> <li>1. Administer epinephrine 1:1000, 0.01 mg/kg, should be given as IM injection in outer thigh</li> <li>2. Give bolus of IV hydrocortisone (5mg/kg, max of 200mg)</li> <li>3. Give promethazine (25 mg/mL, 2mL) by IV</li> <li>4. If bronchospasm present, give salbutamol 8-12 puffs using spacer</li> <li>5. Monitor with cardiac monitor and pulse oximeter for vital signs</li> <li>6. Immediately transfer to Emergency Department after above steps completed</li> </ol>
<b>Nodules</b>	<ol style="list-style-type: none"> <li>1. Thorough H&amp;P: infection vs classic new HA nodule                     <ul style="list-style-type: none"> <li>Inflammatory vs noninflammatory</li> <li>Patient's sense of urgency</li> </ul> </li> <li>2. Watchful waiting is appropriate in absence of infection</li> <li>3. Evaluate and determine use of (case by case basis):                     <ul style="list-style-type: none"> <li>Oral antibiotics (refer to chart below)</li> <li>Oral steroids (risk of worsening infectious process)</li> <li>Hyaluronidase (every 48 hours into center of nodule)</li> <li>Massage</li> </ul> </li> <li>4. Symptomatic use of antihistamines and NSAIDs</li> <li>5. Can consider IL 5 FU +/- steroids for recalcitrant cases</li> <li>6. Last resort is surgical excision</li> </ol>
<b>Overfilling</b>	<ol style="list-style-type: none"> <li>1. This can present days, weeks, or months after treatment (common around eyes, lips, and mandibles); can see blue gray discoloration due to Tyndall effect</li> <li>2. Administer Hyaluronidase* into the affected area and massage:                     <ul style="list-style-type: none"> <li>5-10u/.1ml Restylane</li> <li>10-20u/.1ml Hyalacross</li> <li>15-25u/.1ml Vycross</li> </ul> </li> <li>3. Re-evaluate in 24 hours and can repeat dose as needed</li> </ol> <p>*Patients on high doses of salicylates, cortisone, ACTH, estrogens or antihistamine may require higher dose HA</p>



## Filler Emergency Kit

Hyaluronidase bottle 1500 units (minimum 2 bottles)	Lidocaine 2% 50 mL
0.9% NaCl 250 mL for dilution	Sterile swab
Aspirin tablets 325 mg	Cannula 25G x 50 mm
Ciprofloxacin tablets 500 mg	Cannula 25G x 38 mm
Clarithromycin tablets 500 mg	Angiocath 22G x 25 mm
Dexamethasone 8 mg IM	Timer
Prednisolone 25 mg tablets	Salbutamol 100 ug/dose
Hydrocortisone 100 mg IV	Epinephrine 1:1000
Timolol drops 0.25%	Pulse oximeter
Syringes 1mL, 3mL, 5mL (2 each)	Acetazolamide 500 mg/vial IV
Needles 33Gx9 mm, 23Gx25 mm, 18Gx38 mm (2 each)	Mannitol 20% 1L
Povidone-iodine prep pads	Connector
Promethazine (25 mg/mL, 2 mL by IV)	

**Dermatology Offices in the Area with available Hyaluronidase in an Emergency:**

River Ridge Dermatology (540) 951-3376 3706 South Main St Blacksburg, VA 24060	Dr. Phillip E. Grubbs (Plastic Surgery) (540) 951-8885 817 Davis St Ste 2 Blacksburg, VA 24060
Dr. Michael Bowman (Plastic Surgery/ENT) (540) 443-7400 830 Davis St Ste 1 Blacksburg, VA 24060	Dr. Daniel Hurd (Dermatology) (540) 953-2210 2617 Sheffield Drive Blacksburg, VA 24060

## Conclusion

Although filler complications are rare, it is important to be equipped for when they do occur. Even with knowledge of anatomic structures and the right technique, the risk of filler complications still exists. With this study, we hope to implement this protocol and filler emergency kit in our own practice to produce more favorable outcomes, reduce stress, and help providers and nursing staff feel more prepared to handle these events.

## References

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