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HSI Clinical Rescue™

Complications in Aesthetic Medicine

An emergency and complications protocol for practitioners using botulinum toxin and hyaluronic acid dermal fillers. Recognition thresholds, first actions, hyaluronidase dosing, the vision-loss pathway, and the staged management of nodules, delayed inflammatory reactions, infection and biofilm.

Compiled from the HSI Vascular Occlusion Emergency Protocol and the HSI Dermal Filler Complications Protocol Handbook.

For trained healthcare professionals. Version 1.0 · 2026 · harleystreetinstitute.com

Emergency quick reference

Keep this page with the emergency kit. Every clinician on site should be able to follow it without reference to notes.

Any visual disturbance, ptosis, ophthalmoplegia or neurological symptom after filler is an emergency. Transfer immediately to the nearest emergency department or ophthalmology service. Approximately 19% of reported filler vision-loss cases had concurrent cerebral infarction.

Vascular occlusion kit

Hyaluronidase on site	Minimum 7500 IU available, in date, with reconstitution instructions attached to the box
Reconstitution	1–5 ml diluent; 2 ml bacteriostatic saline commonly used in vascular compromise
Initial infiltration	450–1500 IU infiltrated throughout the affected tissue and along the course of the involved vessel
Reassessment	At one hour; repeat hourly for up to four cycles while capillary refill remains impaired
Aspirin	300 mg where no contraindication exists
Endpoint	Clinical — restoration of capillary refill, colour and warmth, not a fixed unit total

Vision-loss kit

Timolol	0.5% eye drops
Aspirin	300 mg
Rebreathing	Paper bag
Ocular massage	While awaiting transfer, provided it does not delay definitive assessment
Transfer	Nearest emergency department / ophthalmology, immediately, by a named contact held on the kit

Massage standard

Pressure	Firm — the tissue visibly deforms; two-point compression with the tissue supported
Duration	60–120 seconds per site, repeated
Review	Re-mould at the two-week review before any hyaluronidase is considered

1. Triage: which pathway is this patient on?

Timing tells you what the differential is; severity tells you how fast you must move. The most dangerous error is to place an acute vascular presentation into a routine review pathway — to offer an appointment in 24 hours when the correct answer is to be seen within the hour.

Presentation	Likely category	Response
Pain out of proportion, blanching, mottling or dusky change, delayed capillary refill	Vascular compromise	Treat now as occlusion. Do not wait for certainty.
Any visual symptom, ptosis, ophthalmoplegia, neurological symptom	Ophthalmic / cerebral emergency	Immediate transfer. Holding measures only.
Sudden diffuse swelling, urticaria, airway or systemic upset	Hypersensitivity / anaphylaxis	Standard emergency protocol; adrenaline available and in date.
Days to weeks: pain, erythema, warmth, fluctuance, systemic upset	Infection / abscess	Treat as infection first. Do not start steroids into undiagnosed infection.
Weeks to years: swelling, erythema, tender inflammatory nodules, often after a trigger	Delayed inflammatory reaction	Exclude infection, then substrate removal; steroids last.
Firm, painless lump; segmented lip; irregular contour	Non-inflammatory nodule / moulding failure	Firm moulding first; targeted hyaluronidase only if that fails.
Blue-grey discolouration, typically tear trough	Tyndall effect	Hyaluronidase — massage will not correct a depth error.
Bruising, swelling, tenderness, transient erythema	Expected side effects	Reassure, review as planned, safety-net in writing.

Pain may be absent in vascular occlusion, particularly where local anaesthetic has been used, and the appearance may evolve over minutes to hours. A normal-looking area immediately after injection does not exclude compromise.

2. Vascular occlusion: recognition

Vascular compromise may occur through direct intra-arterial injection or through external compression by filler and associated oedema. Early recognition is the single most important determinant of a successful outcome.

- Immediate blanching of the skin, often extending beyond the injection site
- Severe or disproportionate pain — but its absence does not exclude occlusion
- Delayed capillary refill compared with the equivalent contralateral site
- Cool skin temperature over the affected territory
- Reticulated livedo pattern and progressive dusky discolouration
- Distribution corresponding to a recognised vascular territory

Capillary refill is the most valuable bedside measure. Apply gentle pressure until blanching occurs and observe the speed of colour return, comparing with the contralateral side. Repeat throughout treatment as the objective guide to whether further hyaluronidase is required.

3. The first twenty minutes

1. Stop injecting immediately.
2. Assess the extent of tissue involvement and identify the likely vascular territory.
3. Mark and photograph the affected area so progression or resolution can be judged objectively.
4. Assess capillary refill and record the time.
5. Commence hyaluronidase without delay — 450–1500 IU along the course of the involved vessel.
6. Apply adjunctive measures: firm massage over the ischaemic territory and local warmth.
7. Aspirin 300 mg where no contraindication exists.
8. Explain to the patient what is happening, take and document verbal consent for hyaluronidase.
9. Reassess at one hour; repeat hourly for up to four cycles while refill remains impaired.
10. Arrange close, defined follow-up and document every action with times.

The most common failure is diagnostic hesitation. Because irreversible injury may occur within hours, and hyaluronidase carries a comparatively low risk profile here, treat a suspected occlusion. Treating a bruise costs a dissolved result; missing an occlusion costs tissue.

4. Hyaluronidase: dose, territory, endpoint

Hyaluronidase hydrolyses hyaluronic acid and remains the only targeted pharmacological treatment capable of reversing HA filler-induced vascular compromise. Repeat administration is often required because of the persistence of highly cross-linked products and the short tissue half-life of the enzyme.

- Dose follows territory. Distribute the enzyme along the anatomical course of the affected vessel, not concentrated at the injection point — the embolus may have travelled.
- The endpoint is clinical. Restoration of capillary refill, colour and warmth, not a predetermined unit total.
- Under-dosing a large territory is a recognised cause of apparent hyaluronidase failure.
- Caution with documented allergy to hyaluronidase or to bee or wasp venom; resuscitation facilities available. In the emergency setting the risk of withholding almost always exceeds the risk of administering.

5. Adjuncts: what helps, what is theatre

Measure	Status
Firm massage and local warmth	Recommended as adjuncts; may disperse embolic product and increase regional flow. No prospective evidence of independent benefit. Must never delay hyaluronidase.
Aspirin 300 mg	Commonly recommended where no contraindication. Avoid in NSAID hypersensitivity, active GI bleeding or ulceration, bleeding disorders, severe hepatic impairment, aspirin-exacerbated respiratory disease; caution with anticoagulation, uncontrolled hypertension, prior haemorrhagic stroke.
Nitroglycerin paste	No longer recommended routinely. Vasodilatation does not address embolic obstruction and distal embolisation remains a theoretical concern.
High-frequency ultrasound	Increasingly used to locate filler, assess nodules and guide dissolution. Should support, never delay, emergency treatment.
Retrobulbar hyaluronidase	Weak evidence: 3 of 17 published cases (17.6%) showed any visual improvement. Only by clinicians trained in periocular or retrobulbar injection. Not a substitute for immediate transfer.

6. Vision loss and cerebral involvement

The AAO Ophthalmic Technology Assessment reviewed 198 published cases of filler-induced vision loss: HA accounted for 83% and autologous fat for 15%, and vision remained unchanged in approximately 70% of patients despite treatment. Concurrent cerebral infarction was identified in nearly one-fifth of cases.

Recognise

- Sudden visual loss, blurred vision, visual field defect, diplopia, ocular pain, loss of colour vision
- Ptosis and ophthalmoplegia
- Any stroke-like feature — every patient with visual symptoms must also be assessed for cerebral involvement

Act

1. Stop. Transfer immediately to the nearest emergency department or ophthalmology service.
2. While awaiting transfer, and only if it does not delay definitive assessment: ocular massage, timolol 0.5% eye drops, aspirin 300 mg, paper-bag rebreathing.
3. Send the product details, volume, site and timing with the patient.
4. Document times of onset, of recognition and of each action.

High-risk sites

Site	Share of reported blindness cases
Nose	40%
Forehead	25%
Glabella	12%
Temple	9%

Your role in vision loss is rapid recognition, the holding measures above, and immediate transfer. Attempting a retrobulbar injection without training is not heroism; it is a second complication.

7. Nodules, lumps and the moulding problem

Distinguish non-inflammatory from inflammatory nodules first, because management diverges completely.

Non-inflammatory — visible or palpable lump, no tenderness, erythema or swelling

1. Observe and reassure where recent and minor.
2. Firm two-point compression moulding: deposit trapped between thumb and index finger, or finger against bone in the midface; 60–120 seconds per site, worked along the intended vector.
3. Teach the patient the same compression at home — the common failure is a stroke rather than a compression.
4. Re-mould at the two-week review, examining the lip at rest, on stretch and on eversion.
5. Only where moulding fails: low-dose targeted hyaluronidase at the deposit, ultrasound-guided where available. The goal is to remove the excess, not the result.

Inflammatory — erythema, tenderness, swelling, induration

1. Exclude infection: fever, fluctuance, rapidly progressive erythema, systemic upset, purulence.
2. If infection cannot be excluded, treat as infection first with a broad-spectrum agent covering skin flora.
3. Where infection is excluded or treated and inflammation persists, consider hyaluronidase to remove substrate.
4. Reserve oral corticosteroids for significant inflammatory reactions after infection has been addressed.
5. Involve a colleague with complications experience early rather than late.

Never massage an inflammatory nodule aggressively or dismiss it as a moulding issue. Tyndall effect is a depth error: hyaluronidase is the treatment of choice, and massage will not correct it.

8. Delayed inflammatory reactions, infection and biofilm

Delayed inflammatory reactions may occur weeks, months or years after treatment, and are thought to involve interaction between filler material, host immunity and bacterial contamination. Triggers include systemic infection, dental treatment, trauma and vaccination.

- Most infections follow contamination at injection; haematogenous spread from a distant site, including dental infection, is described — defer treatment where active infection exists anywhere.
- Biofilms may explain recurrent inflammatory episodes months or years after treatment. Repeated steroid courses without microbiological consideration should raise suspicion.
- True allergy to modern HA is uncommon. Mild reactions: observation and antihistamines. Significant reactions: corticosteroid and specialist review. Be prepared to recognise and manage anaphylaxis.

9. Botulinum toxin complications

Complication	Mechanism	Management and prevention
Eyelid ptosis	Diffusion to levator palpebrae superioris after glabellar treatment	Apraclonidine 0.5% drops; reassure — resolves as effect wears off. Stay above the orbital rim; avoid deep injection near the mid-pupillary line.
Brow ptosis	Over-treatment of frontalis without balanced glabellar relaxation	Reassure and time; selective top-up of depressors. Avoid injecting below mid-forehead; tailor dose.
Asymmetry	Uneven dose, depth or diffusion, or unrecognised pre-existing asymmetry	Small corrective dose at review after 2 weeks. Assess and document baseline asymmetry, mark on movement.
Diplopia	Deep injection near the lateral canthus with orbital diffusion	Ophthalmology referral; usually temporary. Inject superficially and laterally, away from the orbital rim.
Dysphagia / neck weakness	Diffusion after platysma or trapezius treatment	Supportive care, dietary modification, urgent review if airway concern. Conservative dosing and accurate plane.

10. Readiness, governance and the standard to hold

Outcomes in filler complications are determined more by operational readiness than by pharmacological choice. Preparedness is not the presence of a box; it is the ability to reach it, reconstitute its contents and act within minutes, by any clinician present, at any point in the working day.

Standing actions

- Rehearse the vascular occlusion sequence as a timed team drill at least twice a year, using the actual kit.
- Audit hyaluronidase stock monthly: quantity, expiry, reconstitution instructions attached to the vial box.
- Adopt a written massage standard — firm two-point compression, 60–120 seconds per site, repeated at review.
- Make a two-week review routine for all filler patients; treat it as the correction window before any dissolution.
- Record the nearest emergency department and ophthalmology contact in the clinic phone and on the kit itself.
- Consent explicitly for blindness and stroke, and document the patient's out-of-hours route of contact.
- Photograph at baseline, at treatment, at presentation of any complication and at every review.

Every injector should be able to state without notes

1. The first five actions on suspecting a vascular occlusion.
2. Where the hyaluronidase is, how much there is, and how it is reconstituted.
3. The contents and location of the vision-loss kit.
4. The referral route for visual compromise, by name and number.
5. The difference in management between an inflammatory and a non-inflammatory nodule.

Anyone who cannot is not yet ready to be injecting the glabella, the nose or the tear trough.

Sources and further reading

Compiled from the HSI Vascular Occlusion Emergency Protocol and the HSI handbook Managing Dermal Filler Complications: A Step-by-Step Protocol Handbook, which synthesise ACE Group World and CMAC consensus guidance, the UK consensus on tissue filler-induced vision loss, and the American Academy of Ophthalmology Ophthalmic Technology Assessment. Full referenced text: harleystreetinstitute.com/journal/article/dermal-filler-complications-protocol-handbook/