Module 1: Vascular occlusion and Client Safety

You must have passed your Level 4 Anatomy and Physiology to complete this module.

If you haven't passed Level 4 Anatomy and Physiology you can purchase from our website www.evo-academy.co.uk

This course does not qualify you for replacement of any true medical advice or treatment. This module is designed for awareness and knowledge within your industry.

Complete understanding of the anatomical locations of vasculature structures, as well as how facial aging or previous surgical alterations may change the structural orientation, will aid the aesthetic provider in identifying critical "danger zones" to avoid during the dermal filler/volume enhancer injection process.

Certain regions of the face are at a higher risk for complications due to the structures that lie beneath the skin (e.g., vessels or nerves). The most severe potential complication associated with the use of dermal fillers and volume enhancers is arterial/venous occlusion, which leads to ischemia, with subsequent necrosis of the skin and/or vision loss. *These events are considered a medical emergency and must be dealt with immediately.*

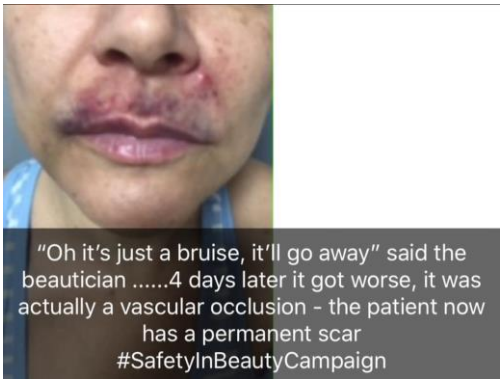
Arterial occlusion can lead to ulceration, scarring, and even vision loss due to occlusion of the ophthalmic artery (presumably via retrograde flow from the supratrochlear, supraorbital, and dorsal nasal artery.

Aesthetic providers need to be aware of the serious potential complications that can result from occlusion of specific facial arterial and venous structures. This article focuses on the anatomical "danger zones" to avoid during dermal filler and volume enhancer injection procedures. Clinical perks are provided on how to avoid these "danger zones" and what to do if a rare complication (e.g., skin necrosis or vision loss) does occur.

Arterial/venous occlusion results from direct intra-arterial injection of product, from vascular injury, or by external compression of the blood supply by surrounding filler/volume enhancer material or swelling. Arterial/venous occlusion and necrosis are generally recognized as rare.

While rare, complications do occur with the aesthetic use of dermal fillers. Careful attention to patient factors and technique can do much to avoid these complications, and a well-informed practitioner can mitigate problems when they do occur.

The majority of complications are related to accepting patients inappropriate for treatment or issues of sterility, placement, volume, and injection technique. It is clear that aesthetic practitioners need an in-depth knowledge of all aspects of treatment with dermal fillers to achieve optimal outcomes for their patients.



A wide range of dermal fillers are now available for use in facial aesthetics, All are potentially capable of causing complications, although serious occurrences are rare, Careful attention to selection, education, and injection technique can minimize the incidence of complications, and an understanding of the early signs of complications and their proactive management can decrease their impact.

Selecting appropriate patients, or perhaps more importantly, not treating inappropriate patients, is the first and a crucial step in avoiding complications with dermal fillers. This review considers the factors that should be borne in mind when assessing a patient for suitability for dermal filler treatment. It aims to give the practitioner an overview of contraindications, preventative measures, recognition of events, and appropriate treatment options.

Patients' expectations must be managed, so they do not envisage an unrealistic outcome, and they must be made aware of the limitations and risks of dermal fillers. The treatment of inadequately informed patients can be fraught with problems and may cause dissatisfaction.

Patients with infections such as sinusitis, periodontal disease, ear, nose, or throat infections, or dental abscesses should not be treated until the condition has resolved.

Dermal filler treatment can also aggravate more generalized skin conditions or connective tissue disease, or might not be suitable in some of these conditions.

Increasingly, clinical evidence is emerging indicating that these infections might subsequently invade implanted filler areas, inducing bio film reactions.

Later, transition from infection to an established hypersensitivity, via toll-like receptors, is possible, since these molecules have been shown to be involved in the

development of many pathological conditions, including infectious diseases, tissue damage, and autoimmune and neurodegenerative diseases.

A full medical treatment history is essential, and although there are no defined interactions, certain immunosuppressive agents and steroids should flag up the need to understand the patient's medical history more clearly. Even agents that interfere with cytochrome P450 should be considered as signals to proceed with caution.

Patients should be advised to stop anti-inflammatory and antiplatelet agents a week prior to treatment (if medically appropriate) to minimize bruising, and they may benefit from a list of foodstuffs, herbal supplements, and over-the-counter medications to avoid.

Although the most commonly used hyaluronic acid-based products have a favourable safety profile, adverse events can and do occur. Mild and self-limiting complications are relatively common. Edema and bruising are more or less inevitable, and these mild events resolve quickly. Although bruising tends to occur more extensively with certain injection techniques, such as fast injection, aggressive fanning, high-volume filler deposits, or large bolus injections

Vascular occlusion can occur if filler is injected into a blood vessel or when sufficient quantity is injected near the vessel to cause a compression blockage. The two types are arterial (generally an acute onset – during injection) and venous (generally a delayed onset – often when the patient has left the clinic), although the two are not mutually exclusive.

Arterial occlusion is the more serious complication and can potentially be very damaging, leading to ischemia, tissue degradation, and necrosis. In rare cases, it can even cause visual impairment or blindness if it affects the retinal artery. The underlying mechanism is related to retrograde remobilization from peripheral vessels into the ophthalmic arterial system. This makes it vital for the clinician to be aware of the early warning signs to facilitate quick diagnosis and an immediate, aggressive response.

Vascular occlusion is a blockage of a **blood vessel**, usually with a clot. It differs from thrombosis in that it can be used to describe any form of blockage, not just one formed by a clot. When it occurs in a major **vein**, it can, in some cases, cause deep **vein** thrombosis.

The condition is also relatively common in the retina, and can cause partial or total loss of vision. An occlusion can often be diagnosed using Doppler sonography (a form of ultrasound)

When vascular occlusion is suspected, it is vital that the injection is stopped immediately and treatment is rapidly instigated. The goal is to promote blood flow to the affected area, which may be achieved by applying a warm compress, massaging or tapping the area, and applying 2% nitro-glycerine paste to promote vasodilatation. Attempts should be made to dissolve or eliminate the injected product.

hyaluronidase should be injected all over the affected area, “flooding the area with hyaluronidase”, as soon as possible in a dose applicable to the product to be reversed, for example, 10–20 units per injection point.

If a hydroxyapatite filler has been used, saline could be injected. Hyaluronidase has been suggested as a treatment for all cases of vascular compromise, regardless of filler employed, since it can reduce edema and potentially decrease vessel-occluding pressure.

It is important to be aware that hyaluronidase has been associated with rare immediate and delayed reactions, and prescribing guidelines should be closely followed

Hyaluronidase (or alternative) injections should be repeated on a daily basis where appropriate and continued for at least 4 days or as long as there are signs of ischemia

An anticoagulant, such as low-molecular weight heparin, aspirin, clopidogrel, or pentoxifylline, could also be prescribed to increase blood flow to the wound. This will need to be given by a GP under medical advice

Antibiotics (oral and/or topical) and anti virals are recommended to reduce infection in the case of pustule/blister formation. In severe cases, hyperbaric oxygen could be used to aid survival of compromised tissue.

Classic wound care procedures (wet-to-dry dressings, petroleum gauze with 3% bismuth tribromophenate, emollients, debridement, etc) should be followed, and the patient assessed for scar evaluation and management. Surgery and reconstruction may be indicated at a later date.

Hypersensitivity and allergic reactions such as angioedema can occur when the injected dermal filler (or an agent used in gel production or injection procedure) triggers an immune response. This can be a type I hypersensitivity reaction, which typically has an early onset (within minutes to hours of injection), or a type IV reaction, which has a delayed onset (1–3 days up to several weeks after injection). Although not demanding the urgent attention that vascular occlusion requires, it can be a problem that causes considerable patient distress.

The primary diagnostic symptoms of hypersensitivity reactions may include edema (either localized around injection sites or more generalized), erythema, pruritus, pain or tenderness (related to pressure effects) or rash

Hypersensitivity reactions can be severe, and occasionally, anaphylactic shock has been reported. Generalized edema is suggestive of anaphylaxis; vital signs should be checked to differentiate between anaphylaxis and angioedema, as the latter or localized urticaria do not cause alteration in vital signs. Check out your anaphylaxis booklet for more notes

Any procedure that breaks the surface of the skin carries with it a risk of infection, and injecting dermal fillers is no exception. Treatment-related infections are generally bacterial (but can be fungal or viral). They can be broadly categorized as acute infections, which appear as acute inflammation or abscesses at the site of injection Acute, mild infections can be treated with oral antibiotics.

Examples of antibiotic courses that are typically prescribed to treat complicated infections are as follows:

- Ciprofloxacin 500–750 mg bid for 2–4 weeks
- Clarithromycin 500 mg + moxifloxacin 400 mg bid for 10 days
- Vancomycin IM 600–1,000 mg five times every second day, followed by 300–500 mg od for 10 days
- A quinolone at 500 mg bid for up to 50 days
- Minocycline 100 mg od for 6 months
- Cephalexin, dicloxacillin, or nafcillin
- Topical antibiotics – fucidic acid.

Assessment

Send your completed assessment to info@evo-academy.co.uk.

What is a vascular occlusion?

Arterial occlusion can lead to what?

Why is A full medical treatment history essential?

Patients should be advised to stop what a week prior to treatment?

Arterial/venous occlusion results from what?

Certain regions of the face are at a higher risk for complications due to what?

Why should patients' expectations should must be managed?

For How many weeks must you take Ciprofloxacin 500–750 mg for an infection?

What milligram must Minocycline be for an infection?

Dermal filler product is made from what?

Dermal filler treatment can also aggravate what?

What is hypersensitivity?