Illustrated Guide to Injectable Fillers
Basics | Indications | Uses
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1 The Skin

(Chapter written by U. Paasch)

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The Skin

1 The Skin

1.1 Structure and Function of the Skin

The Skin is the largest organ in the human body. Its core function is to provide a protective barrier, by encasing all of the body’s core structures. It is known as the integument (integumentum commune).

In addition to being a purely mechanical barrier and providing UV protection, the skin also plays an important role in thermoregulation and water homeostasis. This structure also allows for direct communication with the outside world. For this reason, skin takes on many and varied functions involving the conduction of stimuli, which in turn inform us of the state of our surrounding environment. Furthermore, the skin performs a crucial role in preventing pathogens entering the body. In this context, it has evolved a variety of immunological activities. A diverse architecture of cellular and acellular components forms the basis of this complex range of functions.

With regard to the basic structure of this organ, the true upper skin or epidermis is of ectodermal origin, whereas the dermis (also known as corium) is of mesodermal origin. The basal membrane represents the link between these two structures, and is also known as the junction zone or interface. Below the dermis lies the subcutaneous tissue or subcutis, made up of adipose tissue.

Although the fundamental structure of skin is the same in all humans, there are significant differences in the epidermal architecture of the face between different genders and ethnicities. These are apparent in the form of differences in the size and number of pores, water content and elasticity (see image below).

![Fig. 1.1 Significant differences in the epidermal architecture of the skin of the face between different genders (female on the left, male on the right) and ethnicities. These are apparent in the form of differences in the size and number of pores, water content and elasticity.](image)

1.1.1 The epidermis

The multi-layered epidermis is the outermost layer of the skin, and around 95% of it is made up of keratinocytes. During their differentiation process, the keratinocytes migrate through all the layers of the epidermis until they reach the surface. Once there, having been transformed into corneocytes, they represent the skin’s outermost boundary, the horny layer, and are eventually rejected. Accordingly, the various cells of the epidermis merely represent the various differentiation stages of a single cell type over a period of some 26–42 days, until they are rejected as dead skin cells.

The epidermis exerts its protective barrier function via its horny layer (stratum corneum). Nails, hair, sebaceous glands and sweat glands form its integral appendages.
**Structure and Function of the Skin**

**Fig. 1.2** Schematic structure of the skin. At the level of the stratum granulosum, the alignment of the keratinocytes changes into the regular, columnar structure of the horny layer through differentiation. With a diameter of c. 30 µm, the keratinocytes are among the largest cells of the human body. Adhesion organelles (desmosomes, maculae adhaerentes) and intermediate junctions (zonulae adhaerentes) mediate the bonding of the keratinocytes to each other and to the basal membrane (hemidesmosomes).

**Fig. 1.3** Adhesion organelles mediate cell contact and cohesion. They are not static structures. Their constant generation and degeneration enables cell migration. The prickly appearance of the stratum spinosum is due to the fact that the cells shrink, but cannot detach themselves from the desmosomes. There are also communication channels, known as gap junctions.

**Fig. 1.4** Formation of lipid cement. The key differentiation stage of the keratinocytes occurs in the stratum granulosum. As the cell nucleus and organelles degenerate, what occurs is not just a morphological change into a hexagonal corneocyte. With dehydration, the cement-like lipid substance in the intercellular space and the cornified envelope is formed on the plasma membrane. The covalently bound envelope is juxtaposed onto this. Bound directly to the barrier lipid, this structure achieves considerable chemical resistance to alkalis, detergents or reducing substances, but not to proteolytic agents.
Facial Anatomy and Ageing

Direct comparison of the chronological changes in the faces of different individuals clearly shows that the visible characteristics are different but comparable. Each individual face ages at its own speed and with an individual extent of changes in regional structures. However, there are certain basic characteristics that are common to all aged faces, and include:

- Inversion of the youthful upside-down triangle of the face
- Irregular skin surface (creases, rough patches, wrinkles)
- Skin discoloration (dark circles, superficial capillaries, pigmentary disorders)
- Loss of proportion of the skin envelope (loss of subcutaneous fat, downward sagging of the soft tissues)
- Glabellar lines
- Sagging of the eyebrows (ptosis)
- Sunken eyes (supraorbital hollowness)
- Wrinkles around the eyes
- Infraorbital hollowness (dark circles under the eyes, tear trough deformity)
- Fat atrophy in the upper cheek region (malar fat pad)
- Deep nasolabial folds
- Wrinkles around the mouth
- Loss of lip volume and perioral wrinkles
- Drooping corners of the mouth and jowls (marionette lines)
- Wrinkle below the lips (sublabial fold)
- Irregular chin contour and ‘sagging’

The occurrence of common inter-individual characteristics of ageing suggests that their mechanism of development is based on a system of which the causality can be explained and influenced by aesthetic treatments to a certain extent. The anatomical relationships described below are fundamental to this understanding of ageing.

![Fig. 2.7 Landmarks that may be used for facial measurements (lateral view).]
2.2 Anatomical Structures of the Face

Every face is constructed of an anatomical blueprint that is common to all humans yet characteristic in each individual, making each person unique. The human face is comprised of the following basic anatomical structures:

- Bones
- Muscles
- Retaining ligaments
- Subcutaneous fat and connective tissue
- Neurovascular and lymphatic tissue
- Skin

A network of nerves, blood vessels and lymph vessels permeate the tissue complex to innervate the individual tissue compartments and to ensure the flow of nutrients and fluids. The anatomical tissues of the face are not static, but rather a dynamic tissue complex subject to the dynamics of muscle activity in different parts of the face.

There are several ways to obtain standardised measurements of facial structures and proportions and to assess them from an aesthetic viewpoint (Fig. 2.7). Knowledge of theoretically ‘ideal’ facial proportions is certainly important when planning measures to enhance facial attractiveness (Fig. 2.8). However, these ‘ideals’ should not be used alone, but rather in conjunction with the patient consultation, whereby their subjective concerns and ideas are also taken into account. Furthermore, differences between male and female faces, as well as those between different ethnic backgrounds and age groups should also be considered.

**Fig. 2.8** ‘Ideal’ facial proportions.
Injectable Fillers

3.3 ‘Filler Navigator’

A summary of the different (mainly hyaluronic acid-based) commercial fillers, called the ‘Filler Navigator’, is presented in the following pages. The authors have attempted to compile a representative selection of the available products that they recommend, based on their own reproducible treatment results.

In general, the available fillers can be classified in terms of the following features:

• Concentration and degree of cross-linking of hyaluronic acid (determines the viscosity and elasticity of the gel)
• Specific filler properties post-injection (e.g. lifting/projection effect, modelling capacity, biodegradability)
• Depth of desired injection (injection plane)
• Lumen diameter of the needle or cannula used to inject the filler

The fillers presented below are classified into groups according to their intended depth of injection and indication (Filler Navigator classification). The following chapters will make reference to this classification when discussing special applications or loco-regional treatments. We hope this classification proves useful in distinguishing the fillers available based on their intended indication, plane of placement and injection technique.

Filler Navigator classification

1. Superficial injection (intradermal augmentation)
2. Medium injection (subdermal augmentation)
3. Deep injection (subcutaneous augmentation)
4. Ultra-deep injection (supraperiosteal augmentation)
A. Special indication: skin surface regeneration and mesotherapy (skin boosters)
B. Special indication: lips – perioral complex and tear trough

Important note

The product information provided in this book was derived from the manufacturers’ product descriptions and was verified by the manufacturers in 2015. It is quite possible that the manufacturers may have placed new fillers on the market or removed some of those listed in this book in the interval between the date of verification and the date of publication. Therefore, we make no claim of completeness for the data presented on the following pages. For current and additional information, please refer to the websites of the filler manufacturers.

The classification of fillers into the individual indication groups below has been provided solely as a navigation aid. The individual decision regarding the selection of a particular product depends on clinical findings and product-specific compatibility (indication/contraindication).

Further information on the indications, contraindications and interactions may be found in the fillers advice sheets, provided by the manufacturers and should be regarded as the primary and up-to-date source of advice.

1. Fillers for superficial injections (p. 62)

Depth of injection: intradermal

Indications:
• Fine modulation (camouflage) of various very superficial deficits
• Relining of the skin and homogenisation of the skin surface
• Improvement of skin texture (revitalisation and rehydration)
• Fine facial wrinkles

Filler properties:
• Degree of cross-linking
• Viscosity and/or particle size
• Horizontal distribution of the filler
• Projection effect
• Duration of effect (due to the biochemical properties of the fillers)

Injection tool:
• 30 G needle

2. Fillers for medium injections (p. 63)

Depth of injection: subdermal, superficial subcutis

Indications:
• Decorative correction and concealment (camouflage) of volume deficits
• Remodelling of the skin surface relief
• Relining of the skin and homogenisation of the skin surface
• Improvement of skin texture
• Scars
• Lips
• Fine wrinkles not due to volume loss
• Hands

Filler properties:
• Degree of cross-linking
• Viscosity and/or particle size
• Horizontal distribution of the filler
• Projection effect
• Duration of effect (due to the biochemical properties of the fillers)

Injection tool:
• 27 G needle or cannula
3 Fillers for deep injections (p. 66)

**Depth of injection: subcutaneous, supramucosal**

*Indications:*
- Remodelling of the facial contours
- Volume augmentation to compensate for loss of the subfascial fat
- Widespread tissue mobilisation and relining with a blunt cannula
- Focused volume projection of wrinkles over non-bony areas
- Soft tissue stabilisation
- Forehead
- Temples
- Eyebrows
- Sunken eyes (supraorbital hollow)
- Cheeks
- Nasolabial folds
- Lips (including lip atrophy)
- Marionette lines
- Neck volumisation
- Scars

*Filler properties:*
- \( \circ \) Degree of cross-linking
- \( \circ \) Viscosity and/or particle size
- \( \circ \) Horizontal distribution of the filler
- \( \circ \) Projection effect
- \( \circ \) Duration of effect

*Injection tool:*
- 25–28 G needle
- 22–25 G cannula

---

4 Fillers for ultra-deep injections (p. 67)

**Depth of injection: supraperiosteal**

*Indications:*
- Remodelling of the facial contours
- Compensation for volume loss in the supraperiosteal fat plane
- Greatest possible lifting/projection effect with minimum filler consumption
- Tightening of the retaining ligaments
- Focused volume projection of wrinkles over bony areas
- Static tissue stabilisation
- Forehead wrinkles
- Infraorbital hollows
- Rhinoplasty
- Nasolabial fold (proximal part)
- Chin volumisation
- Jawline recontouring (sagging)
- Scars

*Filler properties:*
- \( \circ \) Degree of cross-linking
- \( \circ \) Viscosity and/or particle size
- \( \circ \) Horizontal distribution of material
- \( \circ \) Projection effect
- \( \circ \) Duration of effect (due to the biochemical properties of the filler)

*Injection tool:*
- 25–27 G needle

---

A Special indications: skin surface regeneration and mesotherapy (skin boosters) (p. 69)

**Depth of injection: intradermal, subdermal (mesotherapy: subcutaneous, supraperiosteal)**

*Indications:*
- Rehydration and revitalisation of the skin surface
- Prevention and treatment of wrinkles
- Harmonisation of the skin appearance
- Refreshing the overall complexion

*Filler properties:*
- \( \circ \) Degree of cross-linking
- \( \circ \) Viscosity and/or particle size
- \( \circ \) Horizontal distribution of material
- \( \circ \) Projection effect
- \( \circ \) Duration of effect (due to the biochemical properties of the fillers)

*Injection tool:*
- 30–32 G needle
- 25–27 G cannula

---

B Special indications: lips – perioral complex and tear trough (p. 70)

**Depth of injection: intradermal, subdermal, subcutaneous/supramucosal**

*Indications:*
- Lip volumisation
- Lip contouring
- Lip surface regeneration

*Filler properties:*
- Dependent on the indication and/or depth of injection

*Injection tool:*
- 30–32 G needle
- 25–27 G cannula (depending on the indication and filler used)

The here given ‘durations of effect’ refer to the relative duration until the next injection is required due to the biochemical properties of the filler. The comparison between different products is made based on general practical aspects following the authors’ experiences. An absolute comparison is not possible since this duration depends on skin type, indication, application site and injected volume among others.
Treatment

poules containing added adrenaline. Acute warning signs of an allergic reaction include skin reddening, restlessness, anxiety and dyspnoea. The following may also occur: erythema; urticaria; fall in blood pressure; tachycardia; nausea; vomiting; abdominal pains; bronchospasm; respiratory arrest with hypoxia and circulatory arrest. The full clinical picture of this type of allergic reaction is known as anaphylactic shock.

Intoxication can occur if the local anaesthetic is accidentally administered into a blood vessel or at an excessive dose. Patients may report subjective signs of central intoxication, such as dizziness, a metallic taste in the mouth, tinnitus and sudden onset of anxiety. The objective warning signs of intoxication, including confusion, word repetition, restlessness and tremor can give the therapist an indication of the problem. Further administration of the anaesthetic must be stopped as soon as the first symptoms appear. Central nervous system excitation manifests as irregular breathing, muscle tics, nausea, vomiting, generalised seizures, as well as an increased pulse rate and blood pressure. Severe intoxication can lead to loss of consciousness, respiratory arrest, bradycardia, a fall in blood pressure and finally to cardiac arrest. The practitioner should have adequate knowledge and skills in managing such complications.

Furthermore, it is important to highlight to the patient that anaesthetic injections carry the risk of haematomas and focal oedema, which need to be expected and accepted by the patient in advance.

Nerve irritation caused by the needle itself is rapidly reversible, and is most common with conduction anaesthesia. If the desired numbing effect is insufficient or absent, this is usually due to a poor injection technique or perhaps due to anatomical variants in the course of a nerve.

6.9 Injection Techniques and Effects

A number of injecting techniques have been developed over the years, allowing a tailored approach to be used when delivering the filler to achieve a specific clinical outcome. This section explores the choice of injecting methods available for a practitioner.

6.9.1 Basic rules

When performing an injection, attention should be paid to the posture and positioning of the practitioner and the patient to ensure optimal safety and comfort. The basics of ergonomic working are explored in further detail in section 6.4. Furthermore, the syringe should be held in the dominant hand, and the non-dominant hand used for fixing and stretching the skin to aid the injection. A variety of holding positions are used and the authors particularly like the one whereby the filler syringe is held between the index and middle fingers, with the thumb resting on the plunger (Fig. 6.18). The anchor allowing stability of the injecting hand is achieved either by the little finger or the lateral side of the injecting hand firmly resting on the skin (Fig. 6.19).

6.9.2 Classic injection techniques

Tunneling Technique

The tunneling technique is the currently practised technique derived from the basic techniques in augmentation therapy referred to as ‘linear techniques’ (Figs 6.20 to 6.23). This technique is suitable for the treatment of straight, narrow lines and wrinkles. The tunneling technique, in particular, aims at ensuring the filler does not spread...
Injection Techniques and Effects

through the tissues, but rather remains exactly where it has been injected. This is particularly ideal when treating numerous small lines and wrinkles that lie close together. The tunneling technique is not restricted solely to injections into the middle dermis, but may be used for all skin layers.

Normally, the substance is injected as the needle or cannula is being withdrawn (also known as retrotracing or retrograde injections), but some also inject the filler when the needle or cannula is advanced forward (referred to as the "push-forward" technique or anterograde injections). The retrograde technique is considered safer when using needles, as it alerts the injector should a vessel be transected upon

Caution
Too much pressure on the plunger can sometimes cause the needle or cannula to undo from the syringe itself. Overcorrection with more viscous, highly stabilised hyaluronic acid products should always be avoided in superficial line correction, as this can result in the unsightly Tyndall effect. This phenomenon results in bluish discolouration of the skin where the filler has been injected due to the light refraction.

Tunneling Technique

Fig. 6.20 Insert the needle at an acute angle or tangentially to the skin.

Fig. 6.21 Inject the substance while withdrawing the needle.

Fig. 6.22 The injection channel should follow the direction of the line or wrinkle.

Fig. 6.23 The result should be full levelling or slight undercorrection of the defect.
positioning before the filler is delivered. Furthermore, retrograde injections allow a plane to be created in the desired level before the filler is delivered, which again ensures the correct plane of injection is achieved.

**Tips and tricks:** For deep lines caused by loss of subcutaneous tissue volume, further padding can be provided by injections into the deep dermis and more superficial subcutaneous planes (see p. 108, 'Sandwich Technique').

**Point Technique**

Synonyms: serial technique; droplet technique; micro-droplet technique; multi-puncture technique; multiple microinjections; microwheal injections; serial puncture technique. This technique involves deposition of small droplets of filler along a fine line or wrinkle in the upper dermis at a short distance from one another, e.g. 2 mm (Figs 6.24 to 6.27). Material wastage is minimal due to the short injection path.

This technique is also commonly used when performing mesotherapy to improve overall hydration and quality of the skin of a large surface area, as opposed to fine line and wrinkle correction.

**Tips and tricks:** A particularly good result can be achieved with small, superficial, fine lines if the needle is inserted with the bevel facing down. The point technique produces superficial augmentation, which is particularly suited for seborrhoeic skin.

---

**Fig. 6.24** Administer the filler into the upper dermis.

**Fig. 6.25** Insert the needle at a 90-degree angle to the line or wrinkle being augmented.

**Fig. 6.26** The individual injection points should be close together, forming an almost continuous line.

**Fig. 6.27** The result allows for successful augmentation with reduced material consumption.
Injection Techniques and Effects

**Stretching Technique**

Video: Stretching Technique
http://www.kvm-tv.de/FIL/002.mp4

**Caution**
A bluish discolouration over the injected area known as Tyndall effect may be produced if excess material is injected or if the droplet is too close to the surface. This effect can occur with all superficial injections.

**Stretching Technique**

The stretching technique is a modified point technique, in which maximum stretching of the skin is used to alter the interstitial tissue pressure in preparation for the augmentation procedure (Figs 6.28 to 6.31). This influences substance distribution during the injection. The assisted stretching technique is suitable for fine lines on the upper lip or fine superficial lines on the forehead. It enables accurate augmentation to be achieved while reducing filler consumption.

**Tips and tricks:** The practitioner or their assistant stretches the patient's skin to a point where any excess filler is immediately visible below the skin. The interstitial tissue pressure determines the distribution of the filler in the tissues. This prevents bulges, particularly with horizontal lines on the forehead or radial lines around the

---

**Fig. 6.28** An assistant stretches the skin transversely relative to the course of the line.

**Fig. 6.29** With the skin stretched, advance the needle into the upper dermis in the augmentation area. The contours of the needle should be visible under the stretched skin.

**Fig. 6.30** Inject the substance into the upper dermis while withdrawing the needle.

**Fig. 6.31** The blanching effect produced by the stretching technique becomes clearly apparent.
**Regional Applications**

*Treatment planning – Volume correction of the forehead*

Volumising filler treatments in the forehead allow compensation for profound volume loss and simultaneously smooth out the static forehead wrinkles. This treatment involves either focal vertical depots into the ligaments, along the skin folds, with a needle or horizontal cannula augmentation techniques.

**Technique: VSDT**

**Injection sites:** three to four injection sites or ‘hot spots’ per line; approximately 30 injection sites in total for the forehead

**Depth:** supraperiosteal

**Volume:** 0.02–0.05 ml/point; approximately 1 ml in total for the forehead

**Tool:** 27 gauge needle

**Caution:** Injections should be done carefully and under close continuous monitoring of the augmentation effect to avoid overcorrection. The injected filler needs to be thoroughly massaged in and distributed immediately post-treatment.

**Video:** Forehead VSDT

[http://www.kvm-tv.de/FIL/007.mp4](http://www.kvm-tv.de/FIL/007.mp4)

**Technique: DHAC**

**Insertion site:** close to the hairline in the lateral third of the forehead

**Volume:** 0.2–0.5 ml/side

**Depth and direction:** subcutaneous, in a fan-like fashion from the hairline radiating inferiorly

**Tool:** 22 gauge cannula

**Caution:** Horizontal wrinkles running parallel to each other are defined by ligaments, which in turn result in the formation of compartments created in a horizontal fashion, making it challenging to distribute the filler in a horizontal plane with horizontal augmentation techniques.
Forehead Region: Horizontal lines and volume loss of the forehead

**Treatment – Volume correction of the forehead**

**VSDT**

Fig. 7.6 Upon forehead contraction, the injections are made along the horizontal lines into the forehead ligaments with vertical injections aiming to raise the ligaments. Take care to insert the needle slowly and gently into the ‘hot spots’ of the line and down to the bony base to deliver 0.02–0.05 ml/depot. When injecting the filler, monitor the volumising effect closely to determine the correct volume and to avoid overcorrection. To achieve greater precision, slight stretching can be provided with the non-injecting hand during the injection.

**DHAC**

Fig. 7.7 Alternatively, the cannula can be used to inject the filler in horizontal direction. A point incision is made at the hairline (small picture). The cannula then is moved in a fanning fashion and 0.2–0.5 ml are injected.

**Treatments steps**
- Remove makeup
- Disinfection
- Anaesthesia (optional)
- Injection: VSDT or DHAC
- Massage and mould (ensure appropriate distribution of the filler)
- Inform patient about post-treatment dos and don’ts
- Arrange a follow-up appointment

**Filler selection**

3 Deep injection (p. 66)
4 Ultra-deep injection (p. 67)

**Practical tip**

Because of the vertical ligamentous septation of the forehead, it is challenging to uniformly distribute the filler with horizontal augmentation techniques. Therefore, serial vertical depot injections (VSDT) followed by thorough massage and moulding may prove a more effective approach to restoring forehead volume. The results can be further optimised with botulinum toxin type-A injections a couple of weeks before filler treatment.

Select a filler with adequate viscoelastic properties, allowing it to be moulded after injection.

**Combined treatment options**

Dynamic wrinkles are best treated with botulinum toxin type-A 1 up to 2 weeks before filler augmentation. Typically, the glabella is treated simultaneously with the forehead wrinkles.

**Complications/Managing complications**

- Overcorrection in the thicker forehead skin should be avoided at all times, and the stretching technique is useful in that respect.
- Palpable nodules may form due to the aggregation of the filler used. Thorough massage and moulding of the injected filler directly after the treatment allows uniform distribution.

**Caution**

The regions around the temples and the glabella have a highly dense network of vessels, and hence care should be taken to avoid traumatising these structures when performing deeper injections. Therefore, it is recommended to perform vertical injections with a needle onto the supraperiosteal plane. When using a cannula, it is recommended to utilise a large bore 22 gauge needle to gently mobilise the tissues.

⚠️ Before applying any product, please consider the directions for use and dose recommendations coming from the manufacturer at any rate.
Regional Applications

Treatment planning – Eyebrow augmentation
The primary goal of eyebrow augmentation is to compensate for the volume loss of the atrophied ROOF. The deep depot injections into the upper orbital ligaments fill the fat pad, which in turn increases the stabilising forces arising from the ligaments. This promotes the stabilising forces of the eyebrows and the upper eyelid, while harmonising the entire supraorbital complex. Filling techniques can either involve vertical supraperiosteal depots using a needle or horizontal tissue mobilisation using a cannula. Superficial injections can further assist in elevating the lateral part of the brow arch.

Technique: VSDT
Injection sites: Five to six ‘hot spots’ along the brow at the site of the upper orbital ligaments (when injecting a ‘hot spot’ a crunching sound should be heard)
Volume: 0.02 ml/injection
Tool: 27 gauge needle

Caution: Insert the needle slowly down to the bone and inject as much filler as is required to achieve the desired visual lifting effect.

Technique: (DHAC)
Insertion point: superior to the lateral end of the eyebrow
Injection depth and direction: subcutaneous into the ROOF above the ligaments, from lateral to medial
Volume: 0.2–0.3 ml/side
Tool: 22–25 gauge cannula

Technique: tunneling technique
Injection site: lateral aspect of the eyebrow
Volume: 0.2–0.5 ml/side (depending on findings)
Tool: 30 gauge needle
Periorbital Region: Supraorbital region

Treatment – Eyebrow augmentation

VSDT

Fig. 7.19 The needle is inserted vertically into the retro-orbicularis oculi fat pad. A lifting effect is achieved by applying several vertical depots of approximately 0.02 ml next to each other along the eyebrow length. Thereafter, a cannula is inserted into the fat pad and approximately 0.2–0.3 ml is injected per eyebrow in a horizontal direction while mobilising the soft tissues gently.

DHAC

Fig. 7.20 The practitioner grasps the skin at the lateral end of the eyebrow and creates an insertion hole with an introducer needle.

Fillers with lower water-binding capacity are ideal in this region, given this area is prone to oedema.

Combined treatment options

Chemical denervation (using botulinum toxin type-A) of the orbicularis oculi muscle 1 to 2 weeks before filler augmentation.

Complications/Managing complications

Palpable nodules may form due to the aggregation of the filler used. Thorough massage and moulding of the injected filler directly after the treatment allows uniform distribution.

Practical tips

- When treating the upper eyelid region, it is advisable to use a filler with a limited water-binding capability to avoid swelling and an undesired distribution of the filler.
- If the eyebrows are asymmetric from the outset, take care and highlight this to the patient before treatment. It may be appropriate to only treat the one eyebrow that is lower to achieve bilateral alignment.
- The outcome of the augmentation treatment can be optimised adjuvant additional botulinum toxin type-A treatment (‘chemical brow lift’), which should ideally be conducted before filler augmentation.
- Should accidental eyebrow ptosis develop as a result of botulinum toxin type-A treatment in the orbital region, the ptosis can be improved with filler augmentation to achieve a lifting effect.

Before applying any product, please consider the directions for use and dose recommendations coming from the manufacturer at any rate.
Regional Applications

Treatment planning – Upper eyelid
The aim of the treatment is to volumise the upper eyelid to improve the manifestation of a supraorbital hollow and/or skin wrinkling. A two-level cannula technique can be used to minimise the risk of bleeding. At first, an injection of a small volume of filler is made into the deep subcutaneous supraperiosteal plane directed to the medial crease of the upper eyelid, to improve the hollowness. Subsequently, a superficial subdermal injection is delivered over the entire upper eyelid in order to support, regenerate and tighten the skin surface.

Technique: DHAC
Insertion site: lateral rim of the orbit close to the lateral canthus
Injection depth and direction: subcutaneous, following the course of the upper eyelid fold, from lateral to medial into the supramuscular fat plane
Volume: 0.05–0.1 ml/side
Tool: 22–25 gauge cannula

Technique: SHAC
Insertion site: lateral rim of the orbit close to the lateral canthus
Injection depth and direction: subdermally from lateral to medial, covering the entire upper eyelid
Volume: 0.1–0.2 ml/side
Tool: 22–25 gauge cannula
Periorbital Region: Supraorbital region

Treatment – Upper eyelid

Treatment steps
• Remove makeup
• Disinfection
• Anaesthesia (optional)
• Injection: DHAC and SHAC
• Massage and mould (ensure appropriate distribution of the filler)
• Inform patient about post-treatment dos and don’ts
• Arrange a follow-up appointment

Filler selection
1 Superficial injection (p. 62)
2 Medium injection (p. 63)

Fillers with lower water-binding capacity are suitable in this region, as it is prone to oedema.

Combined treatment options
Chemical denervation using botulinum toxin type-A in the orbicularis oculi muscle 1 to 2 weeks before filler augmentation.

Complications/Managing complications
• When injecting subdermally, a 22–25 gauge cannula is optimal, as the large bore size allows navigation around the vessels and reduces the risk of bleeding.
• Palpable nodules may form due to the aggregation of the filler used. Thorough massage and moulding of the injected filler directly after the treatment allows uniform distribution.

Practical tips
• It is advisable to use fillers with limited water-binding capacity in the upper eyelid region in order to avoid swelling.
• The dual technique utilises two planes of injection, and hence this allows for a more natural clinical outcome, while also promoting fibrogenetic regeneration of the treated area. In turn, this enables management of the age-related tissue atrophy, as well as achieving improvement in skin quality.

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Regional Applications

Treatment – Lip contour
Contouring of the vermilion border is a popular treatment, as it enables better lip definition to be achieved, particularly for aged lips. The treatment goal is to attain a uniform, precise, harmonious-looking enhancement of the vermilion border, as well as to avoid overinjection and a resultant overprojection.

Technique: linear tunneling technique
Injection point: close to the angle of the mouth in the sequence shown above 1 to 4
Direction of injection: following the vermilion border, up to the apex of the Cupid’s bow

Volume: approximately 0.1 ml/quadrant of the lip
Tool: 30 gauge needle
Treatment – Lip contour

Tunneling technique

Fig. 7.61 The needle is inserted at the corner of the mouth within the vermilion border, and threaded towards the apex of the Cupid’s bow. End-to-end linear threads are delivered with the needle. Once the needle is advanced as far as it will go, the filler is then injected as the needle is being withdrawn (i.e. in a retrograde fashion).

Fig. 7.62 The same procedure is used to contour the lower vermilion border.

Treatment steps
• History: e.g. recurrent herpes infections (herpes prophylaxis with e.g. aciclovir may be necessary)
• Remove makeup
• Disinfection
• Anaesthesia
• Injection: linear tunneling technique
• Massage and mould (ensure appropriate distribution of the filler)
• Inform patient about post-treatment dos and don’ts
• Arrange a follow-up appointment

Filler selection
1 Medium injection (p. 63)
3 Special indications: lips (p. 70)

Moderately cross-linked hyaluronic acid fillers are ideal for this indication due to their viscoelastic properties and longevity.

Complications/Managing complications
• Palpable nodules may form due to the aggregation of the injected filler. Thorough massage and moulding of the filler immediately after the injection allows uniform distribution.

Practical tips
• Not everyone will benefit from a contouring lip treatment, and hence it is worth discussing with the patient his or her desired treatment outcome, and assessing if filling the vermilion border will enhance and rejuvenate the overall aspect.
• It is essential that filler injections do not impair the functionality of the lips (e.g. when speaking) or feel unnatural to touch (e.g. when kissing).
• Pain control is an important aspect to consider when treating lips, and particularly when injecting with needles. Anaesthesia (see section 6.8, p. 99) will need to be considered in most cases.

⚠️ Before applying any product, please consider the directions for use and dose recommendations coming from the manufacturer at any rate.
Case 14 – Incipient volume loss in the perioral and periorbital regions

Baseline: 36-year-old female with incipient volume loss in the periorbital and perioral regions.

Result: 3 months after a single augmentation treatment using a total volume of 3 ml of a hyaluronic acid filler injected vertically into the infraorbital hollow and around the mouth. Harmonisation of the lips has been achieved with vertical injections in the white upper and lower lip (compare with Ch. 7, p. 192 and 193).
Case 15 – Asymmetrical lips and a prominent tear trough

Baseline: 52-year-old female with incipient elastosis and volume loss around the eyes, mouth and cheeks. Furthermore, a marked asymmetry of the red lips is noted, particularly when assessed in dynamic repose.

Result: 6 months after a single augmentation treatment with a hyaluronic acid filler using the vertical injection technique. A total volume of 3 ml was injected.
Case Studies

Case 16 – Advanced facial elastosis

Baseline: 53-year-old female with global volume loss and senile elastosis.

Result: 3 years after three augmentation treatments using hyaluronic acid fillers injected vertically into the infraorbital hollow and around the month. A total volume of 8 ml was injected. Additionally, four adjuvant treatments with botulinum toxin type-A in the forehead and glabellar region were performed.
Case 17 – Advanced elastosis and volume loss

Baseline: 68-year-old male with advanced elastosis and volume loss around the eyes, mouth and cheeks. Furthermore, pronounced forehead and glabellar lines are also noted.

Result: 2 years after two augmentation treatments using a total volume of 6 ml of a hyaluronic acid filler injected vertically. Additionally, a further single botulinum toxin type-A treatment in the upper third of the face was performed.