

## Filler Complications



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### KEYWORDS

- Filler complications
- Filler ischemic complications
- Filler skin necrosis
- Filler blindness
- Hyaluronic acid gel filler
- Dermal filler complications
- Filler soft tissue ischemia

### KEY POINTS

- Global filler safety includes understanding facial anatomy, patient selection, product selection, and product placement.
- Fillers function as implants; injectors should become familiar with the properties of individual fillers.
- Education, recognition, and treatment are important in addressing filler complications.
- Complications may occur after any filler injection, even in the hands of the most experienced injectors.
- Always have hyaluronidase available when injecting fillers.

## INTRODUCTION

Dermal fillers represent a popular nonsurgical method for facial rejuvenation because patients and caregivers perceive them as simple and safe. In 2016, the estimated number of injectable filler procedures in the United States reached 2.7 million, according to the American Society for Aesthetic Plastic Surgery [1]. Hyaluronic acid gel fillers represented most, 2.5 million, of these injections. The supposed reversibility of hyaluronic acid gel fillers and the increasing variety of approved applications and formulations of these products add to their popularity. However, increasing use of these fillers will produce more of the less-common but significant complications observed with these filler products. Some of these complications can be devastating and irreversible, like scarring distant from the site of injection and blindness. Injectors should understand the complications associated with dermal fillers. Mild complications, such as contour irregularities and nodules,

occur relatively commonly; but severe complications, such as infections and ischemia, that may produce permanent cosmetic or visual deficits may also occur. Some complications may occur more frequently with certain filler products; therefore, the injector must understand the properties of each filler product injected. As the Food and Drug Administration has approved more than 25 dermal fillers [2], this represents an increasingly daunting task. Favorable properties, such as generally isovolumic, temporary, and reversible effects, have propelled hyaluronic acid gel fillers to dominate the filler product landscape. Each hyaluronic acid gel filler product possesses unique properties that produce a particular complication profile for each product [3]. Practicing global filler safety, including knowledge of the facial anatomy, patient selection, product selection, and product placement, can minimize complications.

Despite best practices, complications still occur. Thus, the informed consent process must include a

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detailed discussion of all the risks and potential complications. Further, early recognition and treatment of complications may limit their consequences. The injector, staff, and patients should understand the signs of complications, especially ischemic complications, and initiate prompt evaluation and treatment.

## GLOBAL FILLER SAFETY

Although injecting facial fillers is an art, the accurate and safe placement of product depends on a thorough understanding of the patients' history as well as facial anatomy and the product's properties.

A thorough patient history will guide the decision to inject, the type of product injected, and the placement of the filler. A detailed filler history should be obtained, including the date, location and type of filler placed, as well as any adverse reactions to the filler. Some patients may not readily admit to recent fillers or may have forgotten this history, so it is important to explain the importance of this history to the patients. Previous facial surgeries should be noted, and any history of old trauma or scars should be documented as well. A history of facial, particularly eyelid, swelling should be elicited; patients should be specifically questioned regarding their recent use of anticoagulants and antiplatelet medications.

A detailed description of facial anatomy is beyond the scope of this article; however, it is imperative that the injector understands the underlying bony, soft tissue, and vascular anatomy when injecting fillers. Additionally, following recommended injection techniques, such as moving the tip of the needle or cannula at all times, having low injection pressure on the plunger, and injecting small amounts per pass, will allow for safer and more accurate product placement (Box 1).

## COMPLICATIONS

Some investigators divide complications based on timing: early versus late [4]; however, dividing complications into nonischemic versus ischemic may represent a more clinically useful perspective [5] (Box 2).

## NONISCHEMIC COMPLICATIONS

Nonischemic filler complications include nodules, granulomas, prolonged edema, the Tyndall effect (blue-grey hue), and infections.

### BOX 1

#### Recommended Injection Techniques

1. Understand periorbital anatomy.
2. Inject small volumes per pass and less than 0.1 mL in any one area.
3. Keep moving the tip of the injection needle/cannula.
4. Attempt aspiration before injection, however, sometimes because of the length of the needle or nature of the filler product, may not produce a flashback
5. Use low injection pressure; do not force injection, especially in areas of previous scarring, injection, or surgery.
6. Consider the use of blunt cannulas, but remember they do not eliminate risk.
7. Smaller needles and cannulas may be more likely to penetrate vascular walls.
8. Always know where the tip of the needle or cannula is in 3 dimensions, including depth (can use nondominant hand to protect globe and feel the tip of cannula before injection).
9. Consider local anesthesia with epinephrine to vasoconstrict blood vessels; however, blanching may delay the recognition of ischemic complications.

## NODULES/GRANULOMAS

Contour irregularities typically arise after unintended superficial product placement or inappropriate product selection (Fig. 1). Nodules often represent superficial collections of filler and appear as uninfamed, palpable, and often visible hemispherical lesions within 4 weeks of injection. Granulomas typically

### BOX 2

#### Filler Complication Classification

##### Nonischemic complications

- Nodules
- Granulomas
- Prolonged edema
- Tyndall effect
- Infection
- Biofilm

##### Ischemic complications

- Skin ischemia/necrosis
- Blindness/visual compromise

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