SIRIRAJ MEDICAL LIBRARY



# Fillers

**Supadanu Oddie Sriratana, MBBS., Jinda Rojanamatin, M.D.**
*Institute of Dermatology, 420/7 Ratchvithee Rd., Ratchatevee, Bangkok 10400, Thailand*

**Siriraj Med J 2007; 59: 26-27**
***E-journal: http://www.sirirajmedj.com***

A major component within the dermis of the skin is collagen fibres, which have an important role in providing the properties of strength and elasticity, giving the skin the appearance of youthful firmness. However, after the ageing process sets in, the amount of collagen fibres in the skin slowly reduces, resulting in changes to the features of skin including thinning of the skin and the appearance of wrinkles. To solve this problem, external substances have been injected into the skin, to compensate for the breakdown of collagen fibres. These substances are generally known as "fillers". At present, there are many types of fillers used for the treatment of skin problems, as shown in Table 1. Classification is made according to the source of the filler of which there are 4 major types as follows:

1. **Heterografts** are fillers that are derived from living sources, which are non-human species including collagen extracted from porcine or bovine sources, or a substance known as hyarulonic acid extracted from rooster comb or from bacterial culture in the laboratory. Since heterograft fillers are non-human origin, so allergic section should be aware. It is recommended to perform skin test before using this type of filler by injecting a small amount of filler intradermally at forearm. The test needs to be performed twice, each time being two weeks apart. If the tests show no allergic reaction, it will be safe enough for treatment. Another limitation for this type of filler is its short lifespan (about 4 to 5 months) depending on the substance used. This results in the need for ongoing treatment.
2. **Allografts** are fillers that are derived from living sources, which are human species. This type of filler can be developed from direct extraction of collagen fibers from cultured human fibroblast. This type of filler has higher safety profile compares to heterograft in terms of lower allergic risk. The limitation of using these types of fillers is high cost and a short lifespan of about 6 months.
3. **Autografts** are fillers derived from the same person being treated. The filler was prepared from a donor anatomical site for injection into the same person at a different recipient anatomical site. For example, the process where abdominal fat is suctioned and prepared for injection into the same person around the nasolabial fold. The suctioned fat needs to undergo tissue processing using appropriate methods before it can be injected into the skin at a different anatomical site. The benefit of using this type of filler is the is less concern about an allergic reaction to the injected

**TABLE 1.** Classification and examples of various types of fillers.

| Classification of fillers | Examples of Products |
|---|---|
| Heterograft | Zyderm, zyplast, hylaform, restylane |
| Allograft | Cosmoderm, cosmoplast, dermalogen |
| Autograft | Autologous fat transplantation |
| Synthetic material | Silicone, new fill |



**Fig 1.** Before treatment photo showed wrinkle around lower corner of mouth.



**Fig 2.** After treatment with filler injection showed improvement of wrinkle.

substance, since it is derived from the same person. Nevertheless, the limitations are the pain and wound at the donor anatomical site.

4. **Synthetic Materials** are fillers artificially produced from chemicals, such as silicone. The benefits of these fillers are long lifespan, because as artificial substances they are not metabolized. However, limitations are the risk of allergy, which may occur as erythematous papules on the skin after treatment. In addition, there is a risk of the migratory effect, for example after augmentation of cheekbones the filler moves to the chin.

Apart from wrinkle reduction (Fig 1,2), filler can be used in depressed area or atrophic scar correction. Another purpose of using filler is tissue augmentation for nose, chin or lips. The clinician must choose a filler type and molecular size appropriate to the anatomical site to be treated. For correction of shallow wrinkles around the corner of eyes, a small molecular-sized filler should be used to avoid excessive lumpiness to the treated area. In contrast, injections for augmentation of the nose or chin require a large molecular-sized filler for increased viscosity, which helps to reduce migration of filler from the injection site, and also increases the lifespan of the filler.

Treatment with fillers should be avoided in pregnant women, patients with a history of anaphylaxis or bleeding disorders and in patients currently taking anticoagulant medications, such as aspirin or coumadin. Apart from this, some filler types are combined with anaesthetic agents, such as Zyderm or Zyplast, hence treatment with these fillers should be avoided in patients with a history of allergy to anaesthetics. Possible adverse effects include erythematous rashes or bruises around the injection site that will resolve spontaneously. Tissue reaction against the fillers can result in inflamed erythematous nodules which last for many months, or even years, following the injection depending on filler lifespan. Another serious adverse effect may arise from injection into blood vessels that may result in vascular occlusion. Blindness after a filler injection was reported caused by retinal vessel occlusion by filler.

In conclusion, the use of fillers for the treatment of wrinkles or augmentation of skin at various anatomical sites has a good outcome, which shows immediate results. It is relatively convenient for the patient due to minimal pain, no wound, being easy to care for post-procedure and no recovery period. These factors make this modality of treatment a widely popular procedure. Nevertheless, fillers should be used when there is a good indication and an appropriate choice of the fillers should be considered to avoid undesirable side effects.

## REFERENCES


1. Baumann L. Dermal fillers. J Cosmet Dermatol 2004; 3: 249-50.
2. Lupo MP. Hyaluronic acid fillers in facial rejuvenation. Semin Cutan Med Surg 2006; 25: 122-6.
3. Ward BB, Feinberg SE, Friedman CD. Tissue matrices for soft tissue and mucosal augmentation and replacement. Facial Plast Surg 2002; 18: 3-11.