



[Authoritative facts](#) about the skin from the [New Zealand Dermatological Society Incorporated](#).

[Home](#) | [Procedures](#)

Collagen replacement therapy

Collagen treatment is a safe, non-surgical procedure that softens [lines and furrows](#) on the face.

Tiny quantities of collagen are injected under the line or scar through very fine needles, boosting the skin's natural collagen. The effects can be maintained by small 'top-up' collagen injections two or three times a year.

What is collagen?

Collagen is a natural substance that is found in skin, muscle, tendons and bones and provides structural support. In the dermis (the mid-layer of skin), collagen is made by fibroblast cells. It forms a fibrous network on which new cells can grow. Through the natural processes of aging, collagen in the dermis is gradually lost and contributes to the formation facial lines.

Injectable bovine collagen is made of sterile, purified collagen from cow skin. Human collagen implants are highly purified and isolated from human skin grown in a laboratory. The cells have been grown for the last ten years or so primarily to manufacture living skin-equivalents to treat burns and ulcers.

When injected into the body's skin both forms of collagen are accepted as if they were the body's own collagen, forming a network of collagen fibres.

Zyderm® and Zyplast® are popular brands of injectable bovine collagen. Others include Resoplast®. Human collagen brands include Dermalogen®, Cymetra, CosmoDerm® and CosmoPlast®. Zyderm® and Cosmoderm® are used for fine lines and Zyplast® and CosmoDerm® are used for deeper furrows.

There is also a product derived from porcine collagen, Fibrel®, which is injected with the patient's own serum. The injections are said to be rather painful and may cause allergic reactions.

A person's own skin may be used to produce fibroblast cultures (Isolagen®) or a suspension of collagen (Autologen®). It can also be mixed with synthetic [PMMA](#) beads (Artecoll®).

Where can collagen implants be used?

Collagen injections can be used to improve the skin's contour and fill out depressions in the skin due to scars, injury or lines.

Facial lines and features that can be smoothed out using collagen implants include:

- Frown lines that run between the eyebrows (glabellar lines)
- Smoker's lines which are vertical lines on the mouth (perioral lines)
- Marionette lines at the corner of the mouth (oral commissures)
- Worry lines that run across the forehead (forehead lines)
- Crow's feet at the corner of the eyes (periorbital lines)
- Deep smile lines that run from side of the nose to corners of the mouth (nasolabial furrows)
- Cheek depressions
- Redefining lip border
- [Acne scars](#) (collagen is not suitable for narrow 'ice-pick' scars)
- Other facial scars, providing they don't have a sharp edge

Collagen treatment can be combined with other cosmetic procedures, including botulinum toxin injections and laser resurfacing.

Am I suitable for collagen replacement therapy?

Your doctor will take a complete medical history. Medication that reduce blood clotting, such as aspirin, anti-inflammatory agents, warfarin and some herbal medications, may increase the chance of bleeding. People with severe allergies ([anaphylaxis](#)) or allergy to injected [local anaesthetics](#) should not be treated with bovine or human collagen.

Since injectable bovine collagen is derived from cows it may cause allergic reactions. Approximately 3% of the population is allergic to bovine collagen; these individuals should not receive these implants. Human collagen is a better choice in the following circumstances:

- Allergies to foods, especially meat products
- Family or personal history of severe allergies (including asthma, hay fever and [atopic dermatitis](#))
- Any previous reaction to a test dose of collagen.

To see if you are eligible for bovine collagen replacement therapy you will require one or two skin tests. No skin test is necessary for human collagen as allergic reactions are very unlikely.

Procedure for collagen skin test

1. Test dose of bovine collagen injected just below the skin's surface on forearm
2. Observe the site closely for at least 4 weeks for any of the following signs:
 - redness
 - swelling
 - hardness
 - itching
 - tenderness
3. Most reactions will occur within the first 3 days, but can happen at anytime within this timeframe.
4. If it appears that you have a very mild reaction, the doctor may need you to have a second skin test on the other arm to confirm sensitivity.
5. Report all reactions to your doctor. After the 4-week observation period (or 8 weeks if second test is required) your doctor will advise whether or not you can proceed with bovine collagen replacement therapy.

Reactions to collagen test



Positive collagen test



Abscess formed 2 months after collagen test dose

How is collagen treatment given?

Collagen treatments are carried out in a medical centre by a specially trained nurse or doctor. The treatment

usually take 20 minutes to an hour.

Procedure for collagen replacement treatments

1. Wash the face thoroughly.
2. The treatment site is wiped with an antiseptic.
3. Using a very fine needle, the collagen, [local anaesthetic](#) and saline are injected just below the skin to fill out the depression.
4. Depending on the area treated, massaging may be used to smooth out the collagen before it firms up.

Immediately after injection the site may be tender, red and swollen. This will gradually settle over the next few days. It is safe to cover the treated areas with make-up if you wish. Avoid strenuous exercise, [sunburn](#) and alcohol during this time. Your therapist may ask to check the results in 2 or 3 weeks and top up with more collagen if necessary.

How long does the collagen implant last?

Collagen implants are not permanent. Because collagen is a natural protein it slowly breaks down into amino acids that are then absorbed by the body. In most cases, implants last anywhere between one to six months, although in some people one implant may be sufficient for up to two years. Repeat treatments will be necessary to maintain the results.

The longevity of the implant will depend on its location and individual response. Muscular activity such as smiling and frowning will reduce how long it lasts. Conversely, it may last longer than expected in scars because these are not caused by facial muscle movement.

Are there any side effects from collagen replacement therapy?

At the time of treatment most patients report minor discomfort. This is minimized by the addition of lignocaine (lidocaine) to the collagen preparation. This is local anaesthetic to numb the treatment area, and is known as 'lidocaine' in America.

Immediately after treatment the area may be red, swollen and tender; this usually improves over the following days. Temporary bruising and discolouration may also occur. The collagen is sometimes visible for a while in the form of small white bumps at the treatment site. This generally smoothes out within a few weeks.

Very rarely, if a blood vessel is accidentally blocked by the collagen injection, a small area of skin may die resulting in an ulcer that scabs. This reaction may leave a permanent scar. It has most often been reported in the glabellar area.

Injections through the skin carry a risk of bacterial infection ([impetigo](#)). This is more likely if inflammation is present in the treated area such as [acne](#) or [rosacea](#) spots. Injections in and around the lips may also provoke [cold sores](#) in those prone to them.

Allergic reaction to bovine collagen is usually recognized after one or two test doses. In rare cases, allergic reactions may occur during the course of treatment even though there was no reaction to the test dose. They may occur rapidly after treatment or arise weeks to months afterwards. The reaction may clear up in a few days or persist for months. See your doctor immediately if you have an allergic reaction.

Allergic reactions may include:

- Shortness of breath, low blood pressure, and chest pain.
- [Urticaria](#) (hives)
- Red, itchy or sore lumps at injection sites
- Scarring when the lumps have resolved
- Shorter lasting effect of collagen injections

Reactions to collagen injections



Temporary bruising

Allergy to collagen injected
into lip lines a month earlier

People with connective tissue diseases such as [rheumatoid arthritis](#), [systemic lupus erythematosus](#), [systemic sclerosis](#) and [dermatomyositis](#) may be more likely to experience an allergic reaction to bovine collagen, and the effect of the treatment might not last as long. There have also been reports of connective tissue disease arising for the first time after bovine collagen injections. However a connection between the injections and the connective tissue disease has not been established.

The safety of collagen implants in pregnancy or in children has not been established.

Related information

On DermNet NZ:

- [Facial rejuvenation](#)
- [Facial lines and wrinkles](#)
- [Facial implants](#)
- [Fat grafting](#)
- [Hyaluronic acid implants](#)
- [Polytetrafluoroethylene implants](#)
- [Hydrophilic polyacrylamide gel](#)
- [Polyethylene implants](#)
- [Hydroxyapatite implants](#)
- [Polymethyl-methacrylate \(PMMA\) implants](#)
- [Silicone implants](#)

Other websites:

- [Collagen injections](#) - emedicine, the online textbook
- [Dermal fillers](#) - emedicine dermatology, the online textbook

Author: Vanessa Ngan, staff writer; updated by Amanda Oakley, 2004

DermNet does not provide an on-line consultation service.

If you have any concerns with your skin or its treatment, see a [dermatologist](#) for advice.

Created 2002. Last updated 26 Dec 2006. © 2007 NZDS. Disclaimer.