

The Fillers

©Clínica Naturale 2008

Autor Prof. Dr. Miguel Francischelli Neto

Clínica Naturale

Av. Moema, 87 cj 51-52, Moema, São Paulo - SP, Brasil

Fone 11 50511075

1- What is Fillers ?

Botox won the physicians and patients' preference for the correction of the furrows and wrinkles of the forehead, of the glabella (among the brows) and of the Crow's feet. But to the wrinkles of another place Botox is not so efficient. One of the treatments used in Aesthetic Medicine is the Fillers Injections.

The wrinkles and furrows can be filled out with several materials. The medical research throws new products frequently, this products can be used in agreement with each situation. The Technique is safe and simple and performed at the own clinic without need of anesthetics, besides a topical cream. A new derived technique of applying Fillers in deep positions of the body was developed more recently and is called : Bioplasty.

We can say in a simplified way that the Fillers is performed in the most superficial tissues, as the skin and the transition between the skin and the fat tissue that it is exactly under the skin. Bioplasty, is a procedure performed in the muscles and over the bones, therefore, on deeper tissues. We will discuss the Superficial Fillers here and in another part the Bioplasty, deep Fillers.

The Fillers is used to the wrinkles in the areas where the muscular action is important and cannot be abolished with Botox, as it is the situation of the furrow that is going from the nose to the corner of the mouth. Besides the Fillers techniques we also utilized as accomplice the Botulinum Toxine when the expression wrinkles are old and they already marked so much the skin. The Filling for wrinkles and furrows, with several substances are now made since a so much time. The treatment is simple and consists of the injection of these products in the furrows and wrinkles of the face turning them smoother and giving to the face a younger appearance.

2-In what areas can the Fillers be applied?

The Fillers can be applied in the nasolabial folds, the furrow that is formed or accentuated by the laxity of the cheek's skin on the face. The lightest furrows can be treated with the superficial Fillers, while the deepest ones need the technique of Bioplasty. The mouth wrinkles can be minimized with the Fillers, and the furrows of the corner of the mouth and infralabials can be also minimized. Fine wrinkles of the face can also be treated. The increase of the lips can be obtained with the Fillers. The Technique of Bioplasty increases the indications of the Fillers a lot, it is a more complete technique, could be applied in most of the areas of the face and in several

conditions. For being a deep Filler has more complete results and it will be presented in another part of this article.

3-How is the Fillers applied?

In the initial consultation, Naturale Clinic's physician, explained to the patient the indications, and the expected results of the treatment of the skin, in an personalized and detailed way. All options are presented and the most suitable techniques to the case is decided together by the doctor and the patient .

The patient comes in the day scheduled for the procedure to the clinic. Should not use on this day , any medicine, cosmetic or make-up in the face. When arrives to the Clinic an anesthetic ointment is applied on the area that will be treated. This ointment stays some minutes in contact with the skin, when it is obtained a transient anesthetic numbness of the skin. The patient is ready to receive the Fillers.

An asepsis of the skin is performed with antiseptics.

The Filler is applied with micro needles, very fine, imported of Europe, and that possess a layer of protecting silicone, that it allows the puncture to be very easy, and with low pain. After the application that lasts about 10 minutes, the patient is liberated to return to regular activities.

The patient can return to the regular activities immediately, besides the work. The home recommendation is to avoid heavy gymnastics in the day of the application. In the following day, the activities are totally re established.

Preceding the application of the Fillers if it have been programmed, the Botox can be applied in the same session.

4-the products used in the Fillers

We will present to follow the products more used all over the world as Fillers. Naturale Clinic's physicians, research continually and they participate in Congress and events in Brazil and abroad and they are updated and then are capable to choose the most appropriate Fillers products for each aesthetic alteration that their patients present.

Restylane and Juvederm are modern products used as the Fillers for wrinkles. The base is the no animal Hialuronic Acid. He is not definitive and it only causes very rarely allergy. The results are very good but it should be repeated after on average of 6 months. They are favorite for lips and fine wrinkles. PMMA, has been used now and it is the base of the new technique known like Bioplasty and it is very well accept, the results are more durable, staying by years. It is preferred for Bioplasty, correction of the Nose and deeper wrinkles and furrows.

They still exist several other products that has been used as Fillers for wrinkles on the face. Every day a new product is offered to the doctors , showing the interest that this treatment type is bringing.

The Naturale Clinic always accompanies the emergence of new products to offer to the patients the best. However, we stood out that is very important that this treatment be performed by physicians with experience in this area. The bad application performed can be disastrous.

Several available products exist, and they can be used in agreement with the patient's needs, the physician's experience and the legislation of health and readiness of the products that it is not the same in all the countries.

The diversity of products demonstrates the great interest that this procedure, the Fillers, caused among patients and that it was transmitted to the chemical industry. This interest ended for producing a great amount of options. Only the physician will be able to choose the best product for each situation, based on experience and in the patient's needs. In the list below some of the knownest products used today and follow comments on some of the Fillers.

Product	Manufacturer	Material
The own patient's origin		
PlasmaGel		Plasma of the own patient with vit. C
Isolagen		Culture of the own patient's tissue
Gordura		Paciente fat
Hyaluronic Acid – animal origin		
Hylaform	Biomatrix	Hyaluronic Acid
Hyaluronic Acid – industrial		
Restylane	Q-Med	Hyaluronic acid
Perlane		Hyaluronic acid
Juvederm	Laboratory: L.E.A. Derm	Hyaluronic acid
Reviderm		Hyaluronic acid e dextran
Polymethyl methacrylate		
PMMA	Biomedical	Polymethyl methacrylate
Metacrill	Nutricell Laboratory	Polymethyl methacrylate
Arteplast	Rofil Medical Inc	Polymethyl methacrylate
Collagen and polymethyl methacrylate		
Artecoll	Rofil Medical Inc	Polymethyl methacrylate e Collagen bovino
Human Origin - dermis		
Cymetra	LifeCell Corp	AlloDerm Micronized
AlloDerm	LifeCell Corp	Human Cell
Autologen	Collagenesis	Collagen Dermis Human Autolog
Dermalogen	Collagenesis	Human Dermis
Human Origin - fascia		
Fascia		
Human Origin – cell culture		
CosmoDerm	INAMED Aesthetics	Human Collagen
CosmoPlast	INAMED Aesthetics	Human Collagen
Animal Collagen		
Zyderm I	Collagen Aesthetics	Bovine Collagen
Zyderm II	Collagen Aesthetics	Bovine Collagen
Zyplast	Collagen Aesthetics	Bovine Collagen with Glutaraldeide
Dimethyl-Siloxane		
Bioplastique	Bioplasty, Inc	Dimethyl-Siloxane
Silikon 1000		Dimethyl-Siloxane
Adatosil 5000		Dimethyl-Siloxane
SilSkin		Dimethyl-Siloxane

Sebbin	Dow Corning	Dimethyl-Siloxane
DMS	Dow Corning	Dimethyl-Siloxane
Hydroxyapatite		
Radiance (bioform)		
Expanded Polytetrafluoroethylene		
Goretex	W.L. Gore & Associates	PTFE
Softform	Collagen Aesthetics	PTFE
Fibrin Gel		
Tisseel	Baxter	Human Fibrin
Polyethylene		
Marlex	Davol , Inc	Polyethylene
Polylactic acid		
Sculptra		Polylactic acid - PLLA

PlasmaGel®

Proteins of the own patient's plasma treated with C Vitamin.

It is a mixture derived of the own patient, an emulsion of the patient's plasma is prepared and treated with C Vitamin . the protein of the own patient's plasma is removed and mixed with vitamin C. The product can be injected again to obtain Fillers of tissues. It is not permanent, the obtained product lasts from 3 to 5 months, but a part stays as a permanent Filler, about 7 to 10%. It doesn't cause allergies, because it is derived of the own patient.

Source Patient	Duration	Allergy	Indication
	Non Permanent	Non	Thin Wrinkles Lips Augmentation

Restylane®

Perlane®

Restylane Touch®

Restylane Dies Lines ®

Macrolane®

Hyaluronic Acid

Laboratory Q - Méd Suécia

It is an Hialuronic Acid that exists in 3 molecules sizes . With 10.000 molecules per ml, 100.000 per ml, and Perlane, with 500.000 per ml . Each molecular size is indicated for a different treatment, from the fine wrinkles to the Fillers of lips.

Source	Duration	Allergy	Indication
Non animal	Non Permanent	rare	Thin Wrinkles Lips Augmentation Folds

Hylaform®

Hyaluronic Acid

It is an Hialuronic Acid of animal origin, obtained of rooster crest. As the other hialuronic acids is not permanent.

Source	Duration	Allergy	Indication
Animal	Non Permanent	rare	Thin Wrinkles Lips Augmentation Folds Acne Scars

Juvederm®

Hyaluronic Acid

Laboratory: L.E.A. Derm

It is an Hialuronic acid with a non animal origin, available in 3 molecular sizes, 18, 24 and 30. As the other Hialuronic acids is not permanent. Juvederm 18 is used for fine wrinkles as around of the eyes and the wrinkles periorais. Juvederm 24 for medium wrinkles and furrows and Juvederm 30 for increase of lips and wrinkles and deeper furrows.

Source	Duration	Allergy	Indication
Non Animal	Non Permanent	rare	Thin Wrinkles Lips Augmentation Folds Acne Scars

Rofilan Hylan Gel®

Hyaluronic Acid

It is an Hialuronic acid with no animal origin. It is crossed with a natural acid, and their molecules has a larger size, 2,5 million Daltons, while most of the others have 1,5 million Daltons. being expected a larger duration, but as the other hialuronic acids it is not permanent.

Source	Duration	Allergy	Indication
Non Animal	Non Permanent	rare	Thin Wrinkles Lips Augmentation Folds Acne Scars

Zyderm®

Collagen

INAMED Aesthetics

It is a Collagen of bovine origin and needs tests before the treatment, because the allergy risk. Although rare, it is real and it reaches from 1 to 4% of the patients. The test should be applied and to wait from 4 to 6 weeks to observe the reaction. The

applications are a little painful. Two types 1 and 2 exist and they are used for wrinkles and small and medium furrows.

Source	Duration	Allergy	Indication
Animal	Non Permanent	Yes We need Tests	Thin Wrinkles Acne Scars

Zyplast®
Collagen
INAMED Aesthetics

It is a Collagen of bovine origin and needs tests before the treatment, because the allergy risk, although rare, it is real and it reaches from 1 to 4% of the patients. The test should be applied and to wait from 4 to 6 weeks to observe the reaction. The applications are a little painful. They are used for wrinkles and more pronounced furrows.

Source	Duration	Allergy	Indication
Animal	Non Permanent	Yes We need previous tests	Wrinkles maiores Folds Acne Scars

Restoplast®
Collagen

It is a Collagen of bovine origin and needs tests before the treatment, because the allergy risk, although rare, it is real. The test should be applied and to wait from 4 to 6 weeks to observe the reaction. The applications are a little painful.

Source	Duration	Allergy	Indication
Animal	Non Permanent	Yes We need previous tests	Wrinkles Folds Acne Scars

CosmoDerm®
Collagen humano
INAMED Aesthetics

It is a Collagen of human origin and according to the manufacturer doesn't need tests before the treatment. It is obtained at laboratory. Elaborated with Lidocaine for larger comfort in the application.

Source	Duration	Allergy	Indication
Human	Non	Rare	Thin Wrinkles

Permanent

CosmoPlast ®
Collagen humano
INAMED Aesthetics

It is a Collagen of human origin and according to the manufacturer doesn't need tests before the treatment. It is obtained at laboratory. Elaborated with Lidocaine for larger comfort in the application.

Source	Duration	Allergy	Indication
Human	Non Permanent	Rare	Wrinkles Folds e Acne Scars

Bioplastique ®
Dimethyl-Siloxane

It is a polymer consisting of a phase gel, no permanent, the Polyvinilpirrolidone plasdone hydrogel, and a permanent phase, constituted of **Dimethyl-Siloxane** in a base of 38% of siloxane and 62% of the absorbable part.

origin duration allergy indications

Source	Duration	Allergy	Indication
Laboratorial	Permanent	Rare, Tests is not necessary	Wrinkles Folds and Bioplasty

Arteplast ®
Polymethyl methacrylate

Composed of microesferas of suspended Polymethyl methacrylate in a gelatinous solution. In studies with mice demonstrated that a reabsorption of the gelatin that was substituted by autogenous collagen happened. In this animal model they found migration of fibroblasts in 9 days and presence of new collagen in 3 weeks.

Source	Duration	Allergy	Indication
Laboratorial	Permanent	Rare Tests is not necessary	Wrinkles Folds and Bioplasty

Artecoll ®
Polymethyl methacrylate

Artecoll, that consists of spheres of Polymethyl methacrylate - PMMA, suspended in bovine collagen. In the base of 75% of a suspension of collagen to 3,5%, for 25% of PMMA, associated with Lidocaine to 0,3%. Because of the presence of bovine collagen, there is risk of allergic reactions, that it can be minimized with previous tests.

Source	Duration	Allergy	Indication
Laboratorial and animal	Permanent	Yes We need previous tests	Wrinkles médays Folds and Bioplasty

Metacrill ®

Polymethyl methacrylate

Microesferas of PMMA, from 40 to 60 mμ, in colloidal vehicle the carboxi-gliconato hidrolático of magnesium, form the implant Metacrill.

Source	Duration	Allergy	Indication
Laboratorial	Permanent	Rare Tests is not necessary	Wrinkles Folds and Bioplasty

PMMA ®

Polymethyl methacrylate

Biomedical

The polymethyl methacrylate was synthesized in 1902 and patented like Plexiglas in 1928 and used as orthopedic cement. It was used since 1950 as as orthopedic cement, odontologic material, and intraocular lenses. Since 1991 it comes been used as Fillers material.

It is radiolucent, extremely durable, and completely biocompatible. It is no carcinogenic and it presents low thermal and electric conductivity. Local side effects of the methacrylate application are rare. It is the implant that we prefer in Bioplasty at Naturale Clinic . PMMA is offered in concentrations of polymethyl methacrylate of 2%, 10% and 30%, in solution with a gel reabsorvível and local anesthetic.

Source	Duration	Allergy	Indication
Laboratorial	Permanent	Rare Tests is not necessary	Wrinkles Folds and Bioplasty

5-History

Neuber in 1883, was the first to use autolog fat for tissue increase. Gersuny, in 1899, was the first to use a bio-material to correct an aesthetic deformity. He injected paraffin in the scrotal bag of one patient's that had removed the testicles for tuberculosis treatment. Lexer treated a malar depression and a retrognathism with injectable implants, modifying the technique of Neuber, in 1910. **Dimethyl-Siloxane** began to be used still in the decades from 40 to 50 and only recently, the siloxane 350, received a certification in Europe, as Filler.

Ersek, R. described the ideal characteristics of a material for Tissue increase. The material should be bio-inert, permanent, with size of the particles large enough to impede migration, but small enough to allow implantation with Atraumatic Cannulas, to have clear color, malleable after implantation but stable after molding, and that doesn't accumulate in other tissues.

Smaller particles than 60 μ m are susceptible to be phagocytosed and transported to regional lymph nodes. Very small particles can stay indefinitely in the intracellular and the approximately of the size of the macrophage (20 to 40 μ m) they cause the cellular death, they attract other phagocytes and they can unchain a chronic inflammatory process. It is desirable as soon as the particles of the injected material are larger than 60 μ m, because they are not susceptible to be phagocytosed.

The material presented by Ersek, R. was Bioplastique, a polymer consisting of a phase gel, no permanent, the Polyvinylpyrrolidone based hydrogel, and a permanent phase, constituted of polydimethylsiloxane, in a base of 38% of **Dimethyl-Siloxane** and 62% of the absorbable part.

The polymethyl methacrylate was synthesized in 1902 and patented like Plexiglas in 1928 and used as orthopedic cement. Were used since 1950 as orthopedic cement, odontologic material, and intraocular lenses. Since 1991 it has been used as Filler material.

It is radiolucent, extremely durable, and completely biocompatible. It is not carcinogenic and it presents low thermal and electric conductivity. Local side effects of the methacrylate application are rare.

Lemperle, G. et al, described in 1991, Arteplast, composed of **Microspheres** of suspended Polymethyl methacrylate in a gelatinous solution. In studies with mice demonstrated that a reabsorption of the gelatin that was substituted by autogenous collagen happened. In this animal model they found migration of fibroblasts in 9 days and presence of new collagen in 3 weeks. After deposition, the density of the new collagen progressively increased, resulting in an impairment of the space among the Microspheres, that possibly could take the loss of some volume of the correction with this material. It was not found phagocytosis even that with spheres from 20 to 40 μ m, with a size theoretically susceptible to they be phagocytosed.

In 1995, Lemperle G, detailed results in humans with the use of Artecoll, that consists of microspheres of PMMA from 20 to 40 μ m, suspended in bovine collagen. In the base of 75% of a suspension of collagen to 3,5%, for 25% of PMMA, associated with Lidocaine to 0,3%. Because of the presence of bovine collagen, there is risk of allergic reactions, that it can be minimized with previous tests. Lemperle describes

that the injected collagen is fagocitated by macrophages in 1 to 4 months and each microsphere of Polymethyl methacrylate is involved with autogenous collagen. The microspheres would just serve as a stimulus for formation of connective tissue .

Microspheres of PMMA, from 40 to 60 μ , in colloidal vehicle the carboxi-gliconato hidrolático of magnesium, form the implant Metacrill.

The polimetietacrilato presented by Nácul, THE, PMMA is offered in concentrations of polymethyl methacrylate of 2%, 10% and 30%, in solution with a reabsorbable gel and local anesthetic.