"The Against the Gravity"

N-COG Lift introduction and USER GUIDE

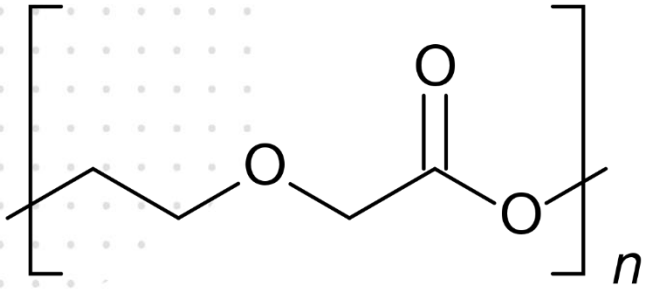
www.nfinders.com

N-FINDERS

Agenda

1. What is Polydioxanone? (PDO)
2. Minimally invasive lifting with threads
3. Effects and Clinical importance
4. Why N-FINDERS?
5. Type of threads
6. Procedures with threads
7. Avoiding complications
8. Closing

What is PDO?



Polydioxanone chemical structure

- Minly use for biomedical applications
- Coloreless, crystalline, a biodegradable synthetic polymers
- 100% biodegradable material which can be completely absorbed by the body and excreted through urine, exhaled as CO2 entirely after 6-8 months.
- Excellent flexibility, safe treatment without acute inflammation reaction.
- Used in surgical sutures and orthopedic

Minimal Invasive Lifting with Threads

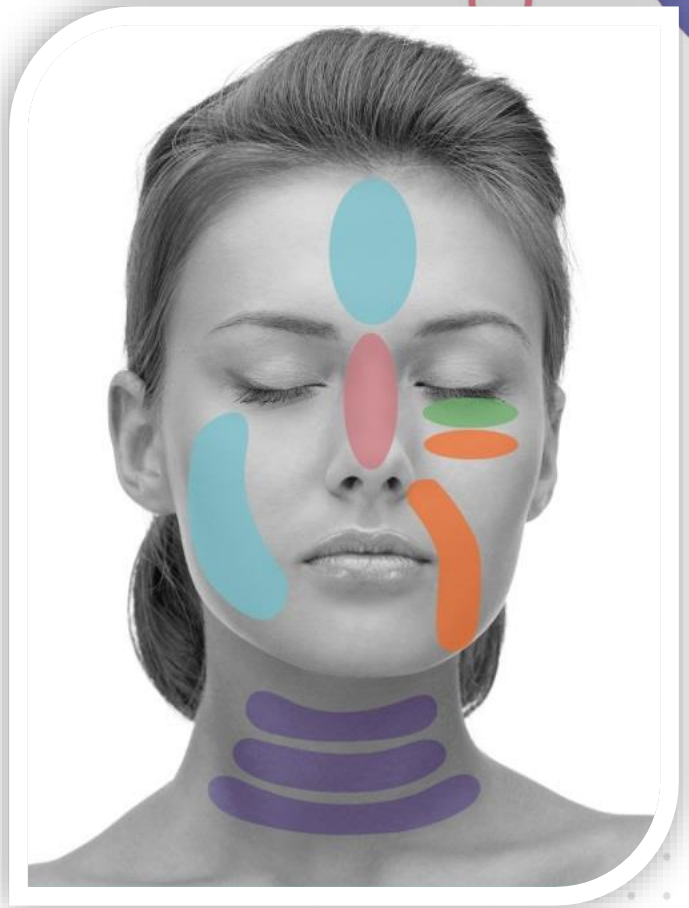
- PDO thread lifting treatment tightens sagging skin tissue instantly
- The threads are inserted by needles, anchored, and pulled to lift the skin upwards and tightening the skin of the face

Instant lifting effect

+

Long term effect : Neocollagenesis , Neovascularization

- Procedure takes only 15 - 30 minutes



Main Effects

- Instant Skin Liftinng
- Collagen stimulation -> Neocollagenesis
- Neovascularization
- Increase of growth factors synthesis
- Cellulite decrease

Skin elasticity

Skin Tightening, by contracting fat tissue

Clinical Importance

- Just local anesthesia: you can return to normal life immediately after the procedure.
- Minimal downtime
- No incisions or stitches are required
- No scars
- No secondary effects
- Suitable for everyone and applicable to the whole body

Why IN-FINDERS

- Scientifical background
- Clinical Background
- Educational system
- Several types of threads (and more coming!)
- **Hand Made (molded thread x)**

ISO 9001, ISO 13485, KGMP, CE, FSC, MFDS Certificate

Certificate of trademark registration/ ISO 9001:2015 / ISO 13485:2016 / EC Desig

n Examination certificate/

Certificate of service mark registration / Certificate of patent

Why N-FINDERS

EVIDENCE BASED MEDICINE

N-Cog lifting's effect has tested and proven by medical experiments, and clinical data and scienti fic papers (SCI reports) published on internationa l journals.

Various SCI reports

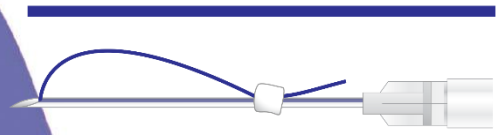
Why N-FINDERS

N-Finders has published several **PDO threads training books,** written by professors of human anatomy, plastic surgeons and dermatologist
A one of a kind complete and total guide series for perfect PDO threads lifting

N-Cog PDO Threads

MONO THREAD

- ❑ RE:MONO
- ❑ SCREW
- ❑ DERMA SPRING
- ❑ DERMA SPRING EYE
- ❑ SCAFFOLD



COG THREAD

- ❑ N-COG
- ❑ SPIRAL
- ❑ ROYAL
- ❑ Y-KO
- ❑ N-FLIP

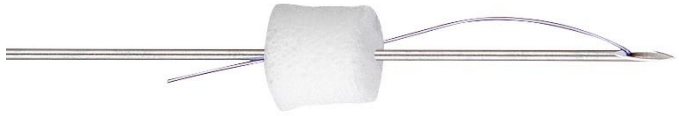
Micro Punching Thread

- ❑ N-FIX

RE:Mono

- Skin tightening and cellulitis improvement
- Prevention of sagging
- Volumizing

RE:



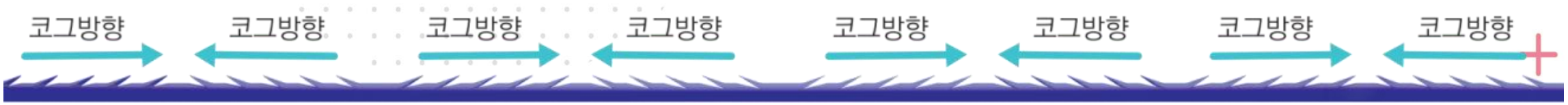
Derma-Spring

Screw

Derma-Spring EYE

Cog threads:N-Cog

N-COG
엔-코그 [Newton Cog]

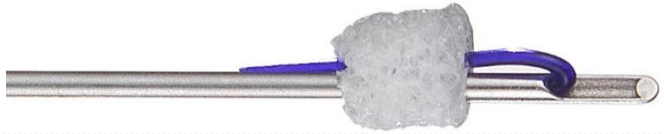


10 YEARS ANNIVERSARY

Cog Threads: N-Cog

- RE: N-COG MULTI is a multiple bidirectional barbed PDO, specially designed to prevent skin dimpling, protrusion and breakage of the thread once it is inserted inside the skin tissue.

N-Cog Multi



Needle (mm)		Thread(mm)	
Gauge	Length	USP	Length
23G	60	3-0	100
23G	90	3-0	130
Half-Cut cannula			
21G	60	2-0	100
21G	100	2-0	150

30 threads per box. (6 pouches with 5 units in individual sachet)

TREATMENT PROCESS

1. Consultation → 2. Treatment design → 3. Anesthesia → 4. Thread insertion → 5. Post care

INSTRUMENT READY

- *An array of surgical instruments for thread lifting /1 patient
- Ⓐ 10cc syringe 1ea
- 30G 38mm long needle 5ea
- Ⓒ Alcohol swab-many
- Ⓓ Sodium chloride injection 20 ml 2ea
- Ⓔ Epinephrine 1ml - , Lidocaine HCL Hydrate 2%, 20ml / Normal saline 100ml , sodium bicarbonate 5cc
- OR >Xylocaine 2% with adreanaline 2ea
- Ⓕ Operation drape (60cm*60cm) 1ea
- Ⓖ Tower clip

Ⓗ IRIS operating scissors
Ⓘ IRIS forceps
Ⓙ Dressing forceps
Ⓚ Sterilized latex surgical Glove
Ⓛ Dressing package Tray
Ⓜ Emesis Basin
Ⓝ Tray cover
*Puncture needle 18G, 25G or needed one
*Dental Lidocaine –in case need
*Dental Lidocaine injector – in case need

TREATMENT PROCESS

Design

Draw a design line on the face or treatment part
Considering patient's condition

TREATMENT PROCESS

ANESTHESIA-Anesthetic cream

9~11% lidocaine cream for 30~40 min
Wipe the cream after

TREATMENT PROCESS

ANESTHESIA - Local anesthesia

Inject the anesthesia solution evenly in the area to be treated using a long needle. This is the basic anesthesia solution and it will be made according to user's preference.

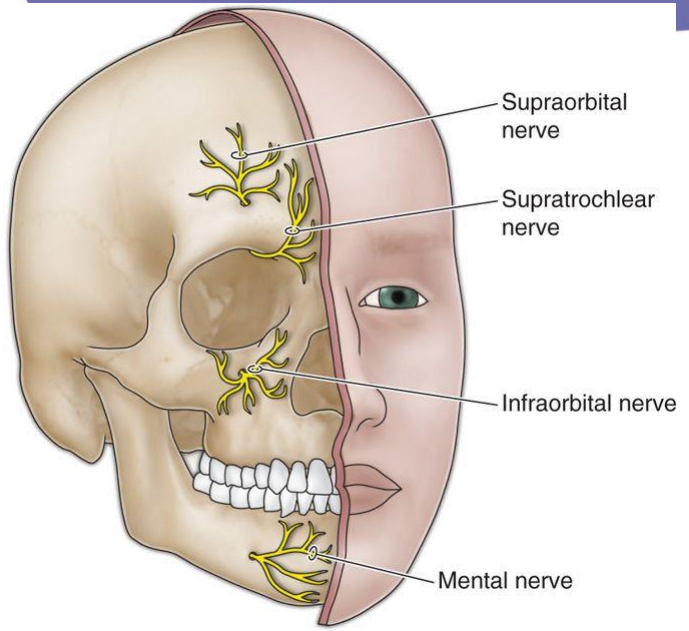
Normal saline 50ml
+ Lidocaine HCL Hydrate 2%, 20ml (anesthetics)
+ sodium bicarbonate,(Na –bicarbonate) 5cc
+ Epinephrine 1ml

TREATMENT PROCESS

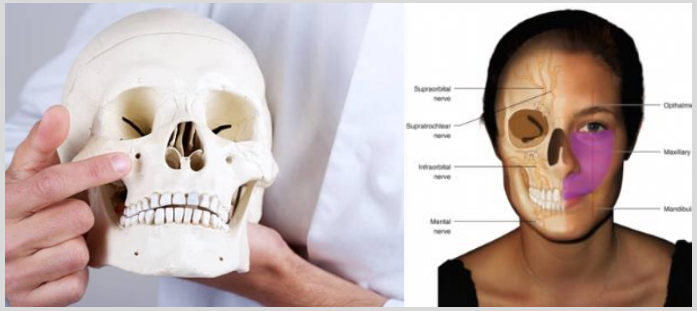
ANESTHESIA- Nerve block

* 30G needle with 10cc syringe with anesthetic solution (ex: lidocaine + Epi ,1% lidocaine 1~2cc injection)

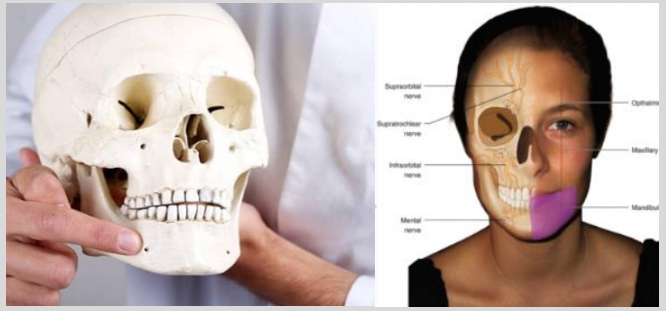
* Entry point :: local anesthesia with dental lidocaine



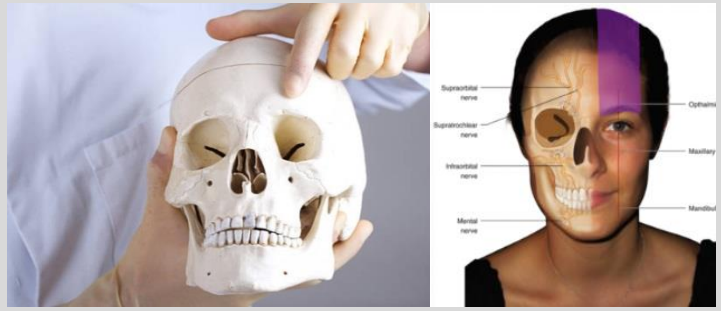
1. Midface : Infraorbital nerve - the foramen lies along a line parallel to the midline that passes through the pupil and corner of the mouth.
   - Area : lateral part of nose, lower eyelid, upper lip, cheek



2. Lower face : Mental nerve
   - Area : chin, lower lip



3. Upper face : supraorbital nerve
   - Area : supraorbital, supratrochlear, upper eyelid, forehead



POSSIBLE PRESCRIPTION

Prescriptions must be made according to the patient's circumstances at the judgment of the attending physician, and the responsibility for all prescriptions rests with the attending physician.

1. Aspirin : should not be terminated. However, bruising is more likely.
2. Patients at risk of Herpes labialis : advised to take prophylactic acyclovir tablets and should apply topical cream, especially if threads are to be inserted around the lips.
3. Arnica tablets : taken from about 5 days pre-treatment may be beneficial in reducing swelling after the treatment.
4. all blood 'thinning" supplements (Evening Primrose Oil, Vitamin C and Vitamin E and certain herbs) : Stop taking

GENERAL AFTERCARE ADVICE

Some pain/discomfort after treatment can be expected, Ibuprofen can be taken if required

Do not have any other aesthetic procedures (such as toxins, fillers, peels etc.) for 7 days

Avoid extreme temperatures, alcohol and anticoagulants for 7 days. Those taking Prescribed anticoagulants such as aspirin/warfarin must continue to do so but must be aware that bruising is more likely

Gently wash the treated area as required, but do not rub or massage for 2 weeks

It is important not to overstretch the treated area (i.e. open the mouth wide, avoid dental treatment about 2weeks if possible)

Do not have Radio-frequency, IPL, Laser or other heat treatments near the treated area for 2 weeks

Do not go to the sauna or do vigorous exercise on the day of the procedure

POSSIBLE SIDE EFFECTS

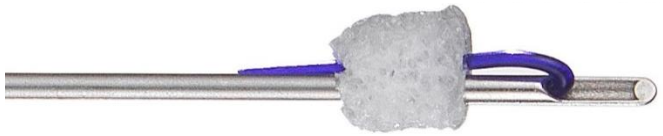
1. **Comon and mild side effects is possible from PDO Lift** : Swelling, Soreness, Bruising, Temporary skin dimpling, mild side effects could last 2~3 days.

2. **Patient may continue normal activities immediately**.

3. The side effects are mostly manageable – removal of threads may be required in cases such as migration and extrusion. There was no scarring after removal, and the problems resolved completely.

4. Serious but very rare : Infection, Granuloma, Protrusion, Facial nerve trauma, Asymmetry

Procedures : N-Cog



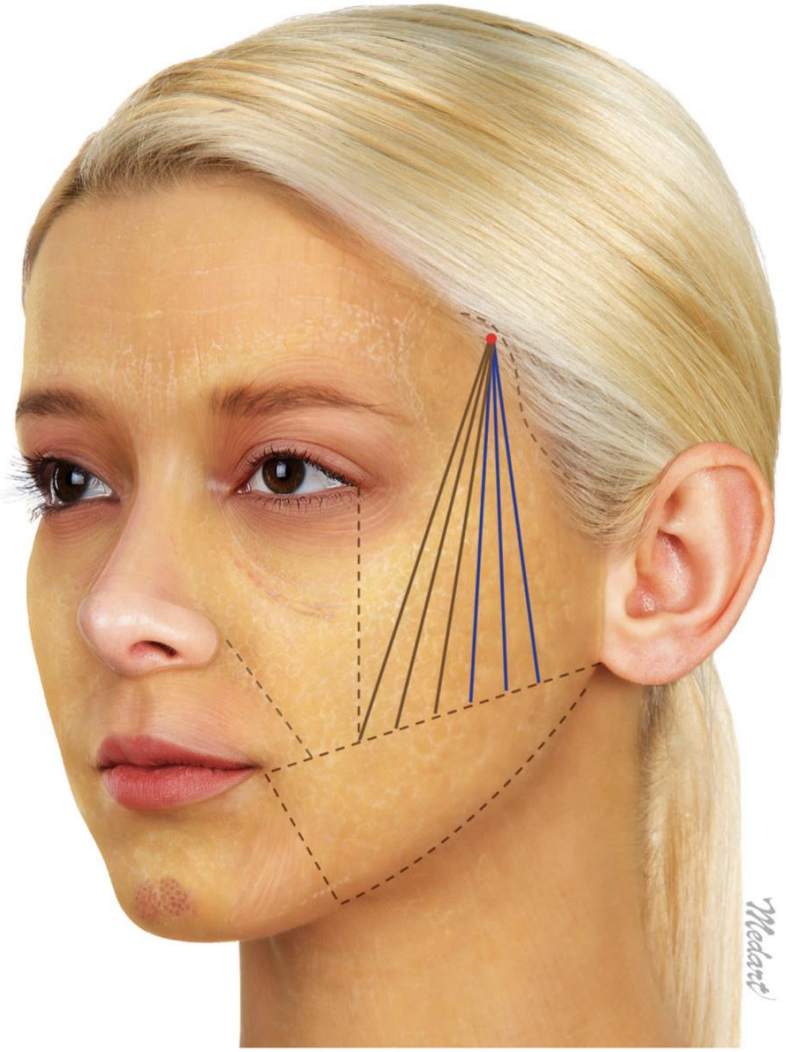
MID FACE 07-2

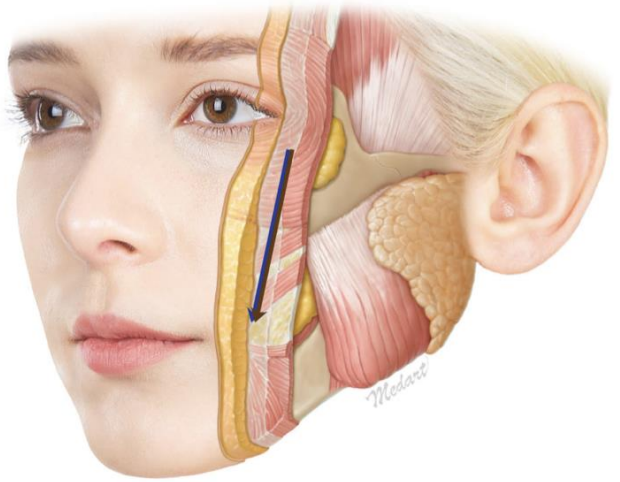
Jowl : N-Fix, N-Cog Multi / N-Cog Spiral

Entrance point : ● Temporal hair line

End point : Extension line from mouth corner to ear lobe

Layer : SMAS layer in temple and cheek





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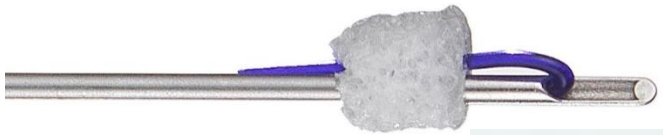

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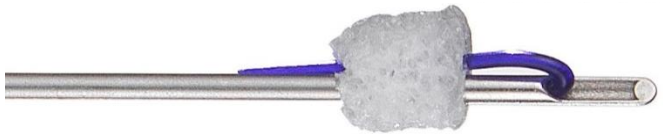

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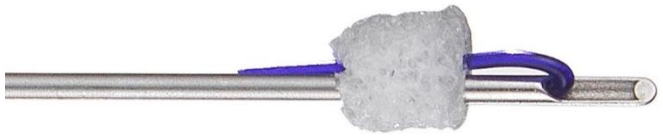

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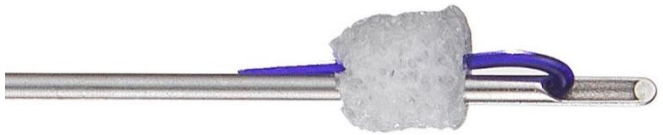

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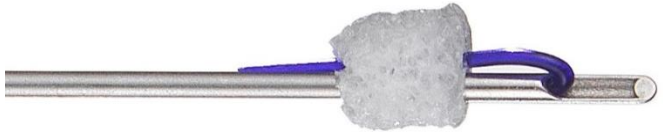
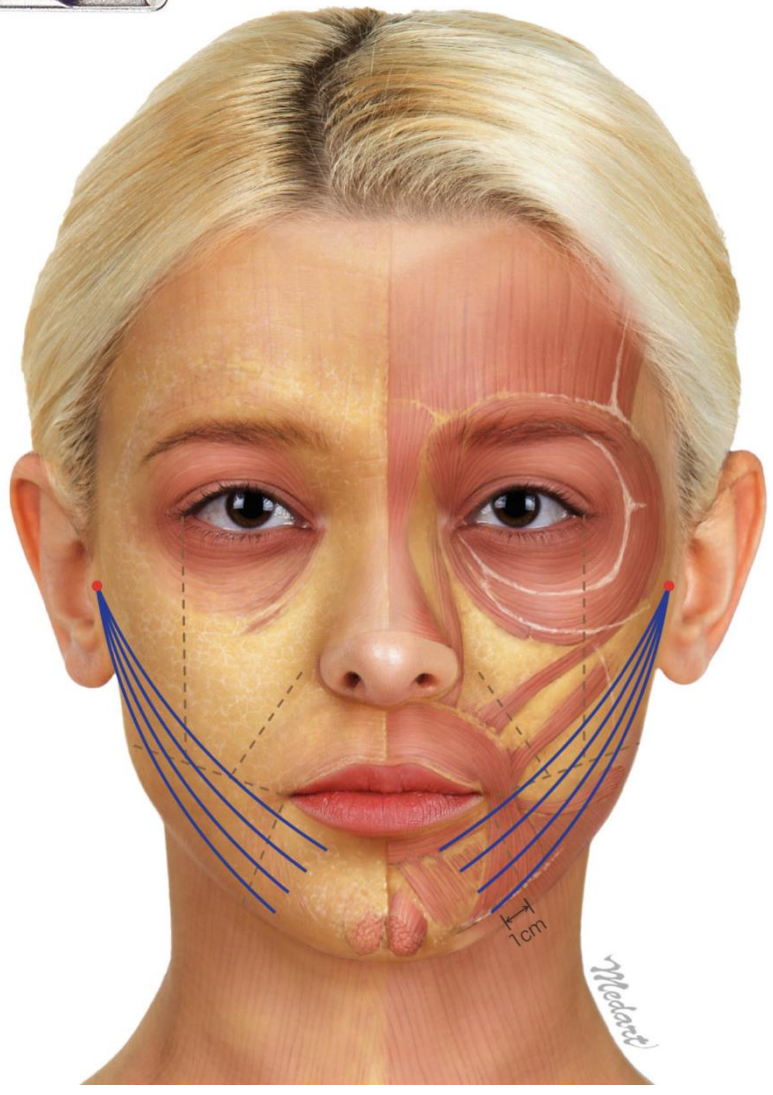




LOWER FACE 13-1

Marionette line : N-Cog Multi / N-Cog Spiral

Entrance point : ● 1 cm anterior to the tragus

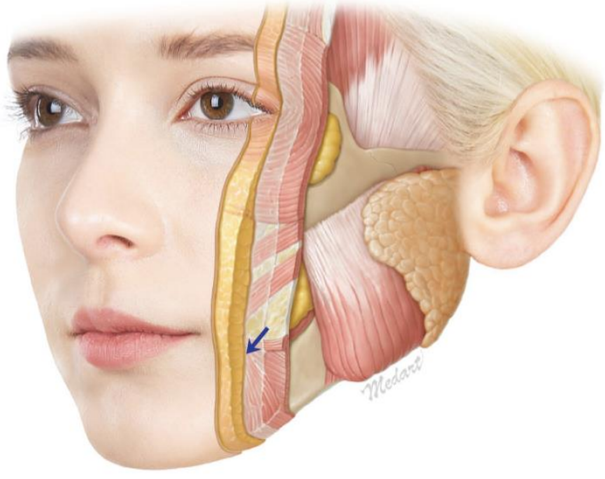
End point : 1 cm medial to the marionette line

Layer : SMAS layer

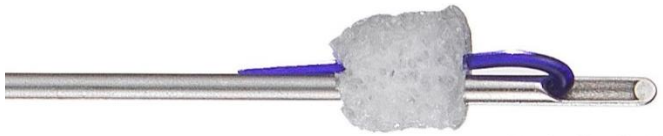
N-Cog Multi 21GX100 mm

N-Cog Spiral 21GX100 mm

To improve marionette lines, mark the marionette line with a marker and insert 3-5 strands of N-Cog thread in a fan-shaped manner into the SMAS layer, from 1 cm anterior to the tragus as the entrance point. The cannula tip should be proceeded 1cm medial to the marionette line.



Procedures : N-Cog



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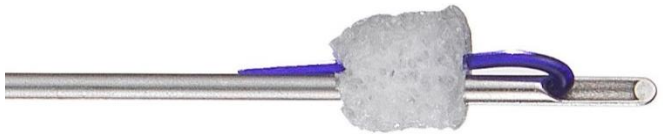


LOWER FACE 17

Submandibular line : N-Cog Multi / N-Cog Spiral

Entrance point : ● Lower border of the mastoid process

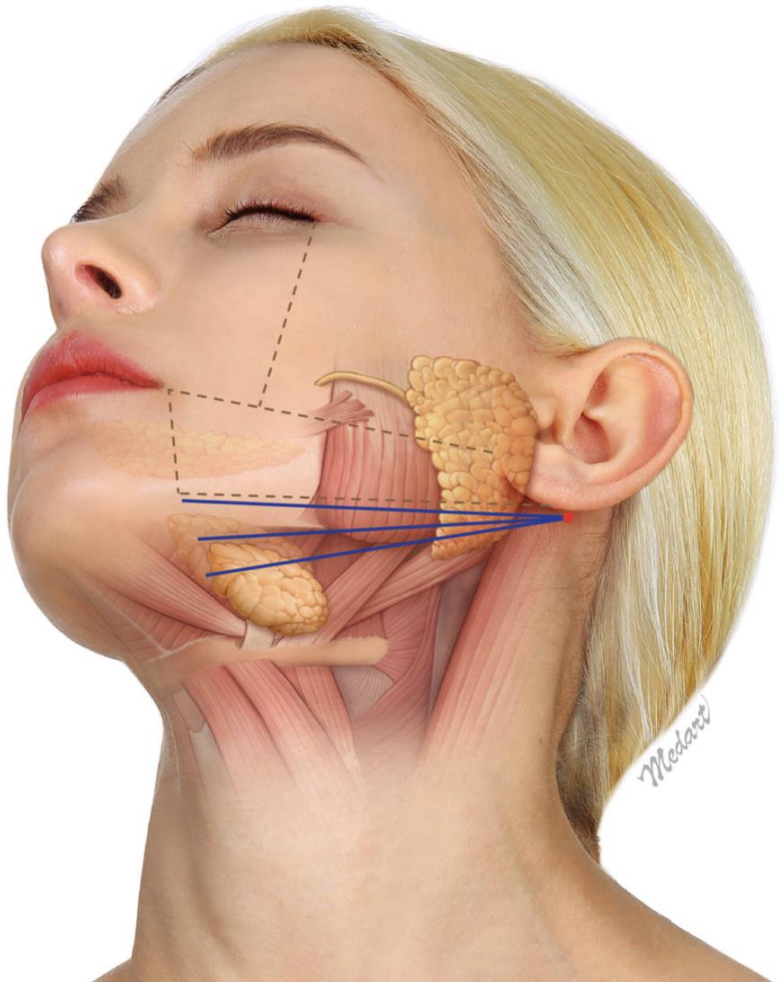
End point : Vertical extension line from marionette line

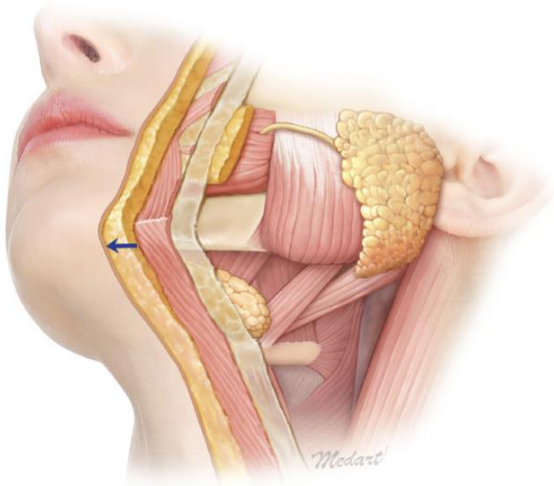
Layer : Subdermal or just above platysma muscle

N-Cog Multi 21GX100 mm

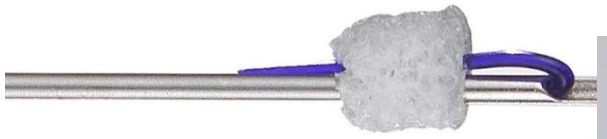
N-Cog Spiral 21GX100 mm

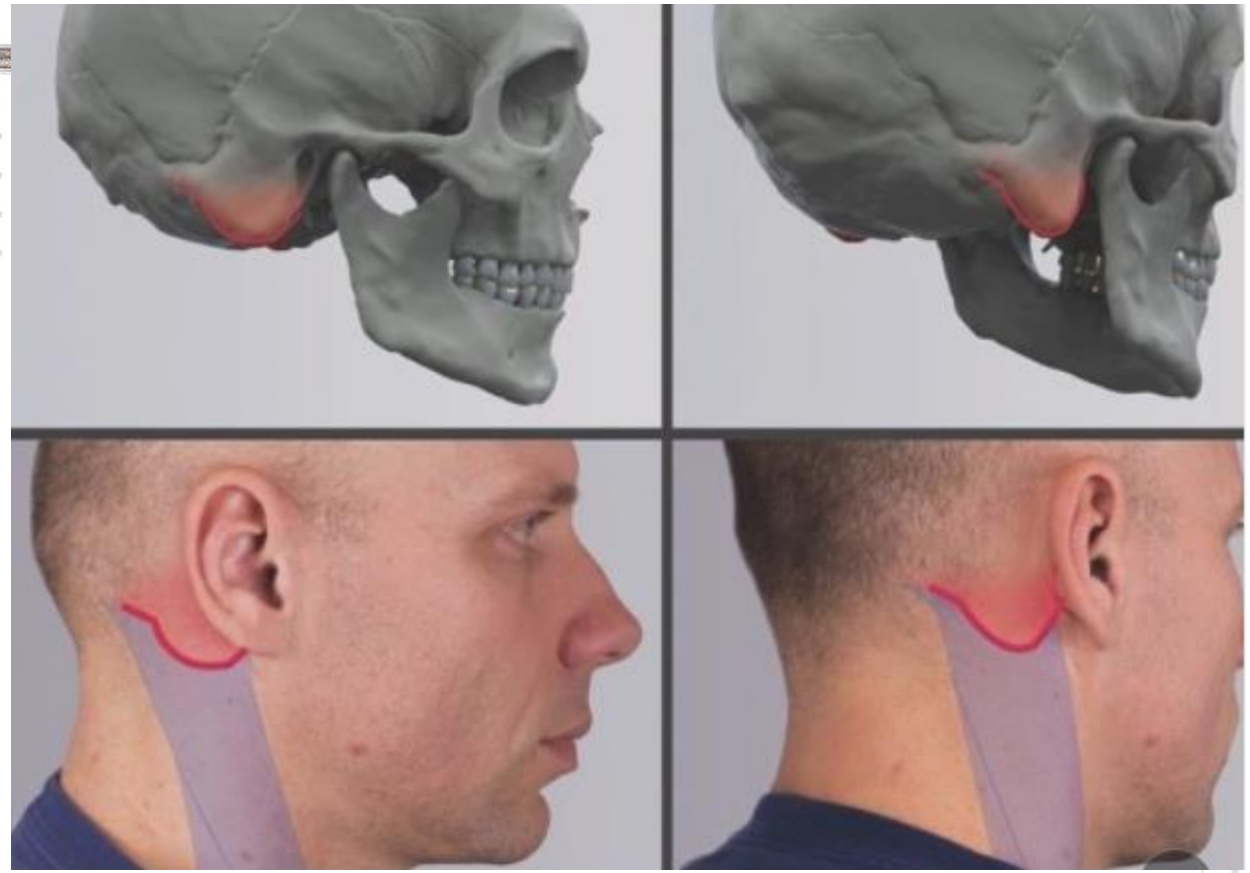
To improve submandibular lines, insert N-Cog into the subdermal layer from the mastoid process lower border following the mandibular border. The cannula tip should approach the vertical extension line from marionette line. Insert the 2nd and 3rd threads below, with a 1 cm distance between each other in a fan-shaped manner.





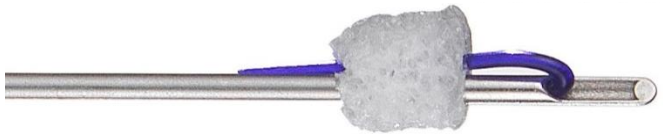
Procedures : N-Cog





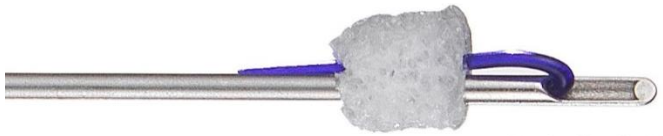
- Starting point the masteoid process (lower boarder)

Procedures : N-Cog



full face (double chin)

Procedures : N-Cog



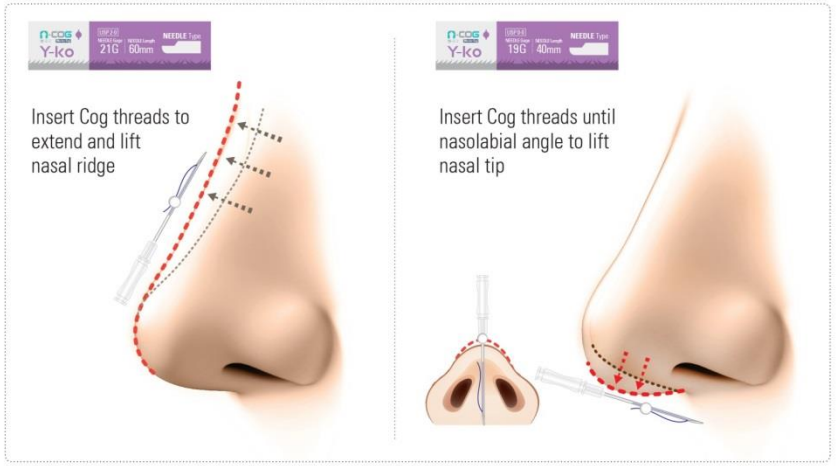
Procedures : Y-Ko

- Stimulates patient’s intrinsic healing process in order to re-shape the nose.
- Re-Shape your nose in less than 15 minutes and without surgery. Lift the tip of the nose, alignment of the nasal dorsum, and reduction of the nasal wings

N-Cog Y-KO

Half-Cut cannula (mm)		Thread(mm)	
Gauge	Length	USP	Length
19G	40	0	40
21G	60	2-0	90

30 threads per box. (6 pouches with 5 units in individual sachet)



Procedures : Y-Ko

MID FACE 12-1

Nasal dorsum augmentation, Nasal tip elevation and Nostril reduction : Y-KO

Entrance point : ● 0.5 cm below the tip of the nose

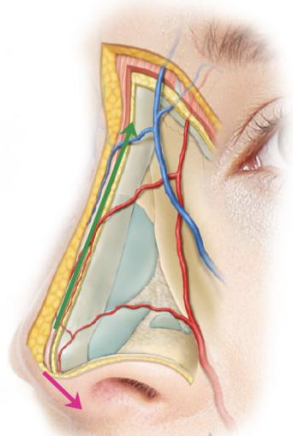
End point : Nasal dorsum_Glabella, **Columella**_Anterior nasal spine

Layer : Nasal dorsum_Supraperiosteal layer,
Columella_Intercrural space

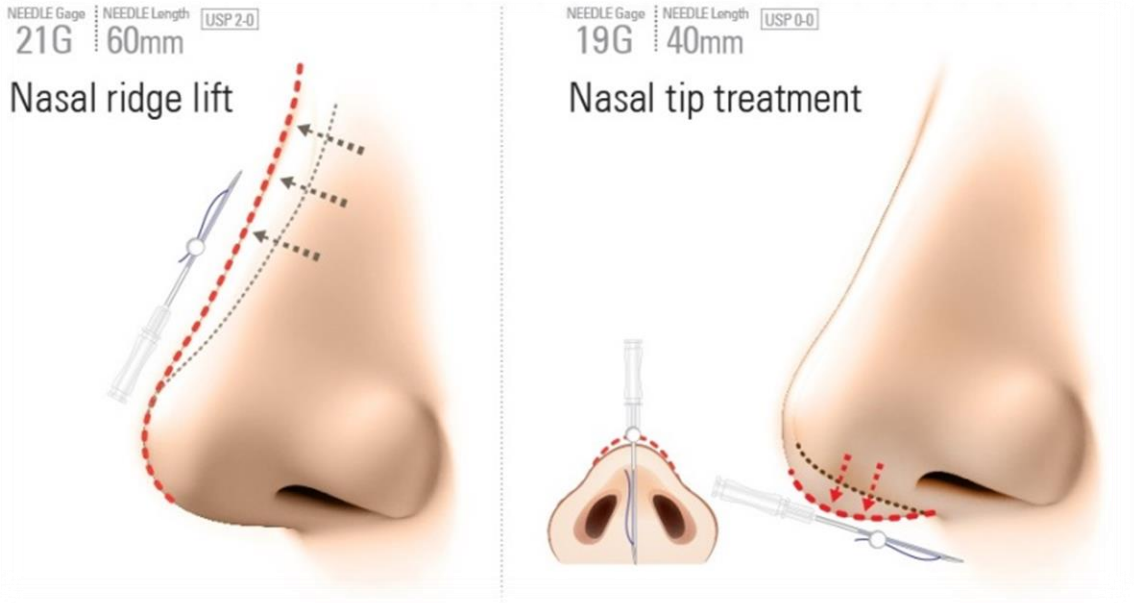
Y-Ko 21GX60 mm

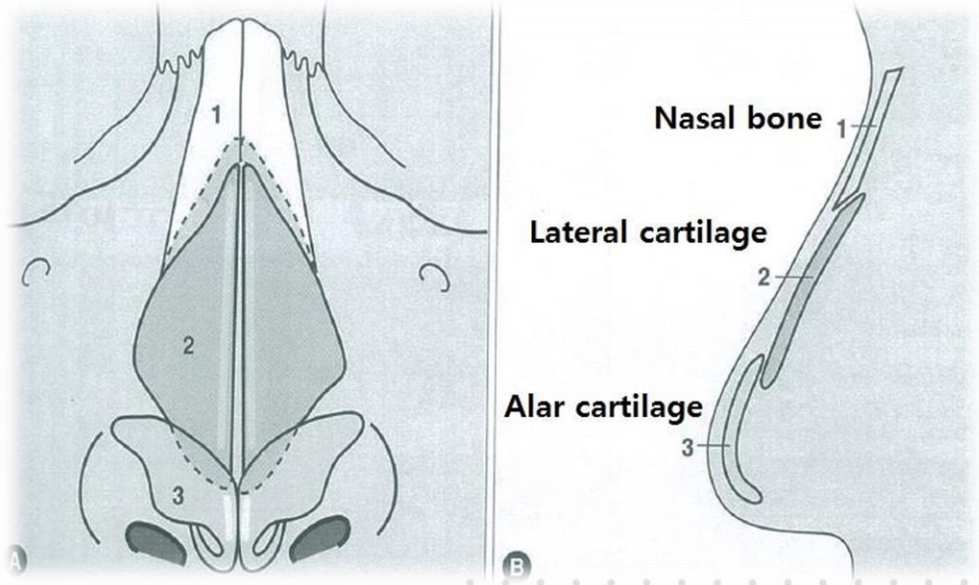
Y-Ko 19GX40 mm

When performing a nasal dorsum augmentation, insert Y-KO thread through the supraperi-osteal layer from 0.5 cm below the nasal tip. Withdraw the cannula once the tip of cannula touches the bone of the glabellar area. For nasal tip elevation and nostril reduction, insert Y-KO thread through the intercrural space of columella from 0.5 cm below the tip of he nose. Withdraw the cannula once the cannula tip touches the anterior nasal spine.



Procedures : Y-Ko

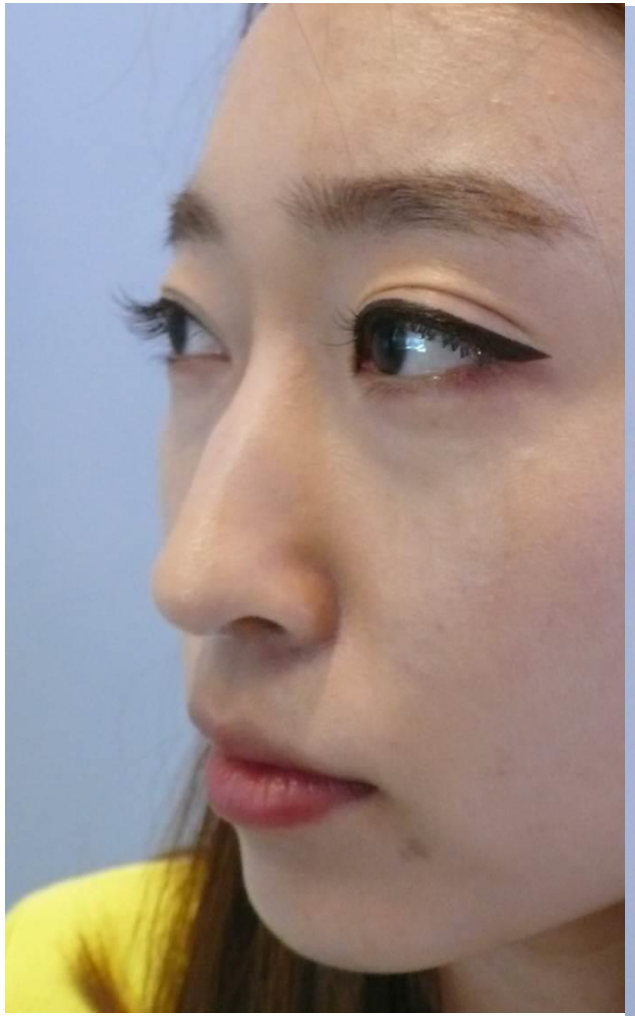


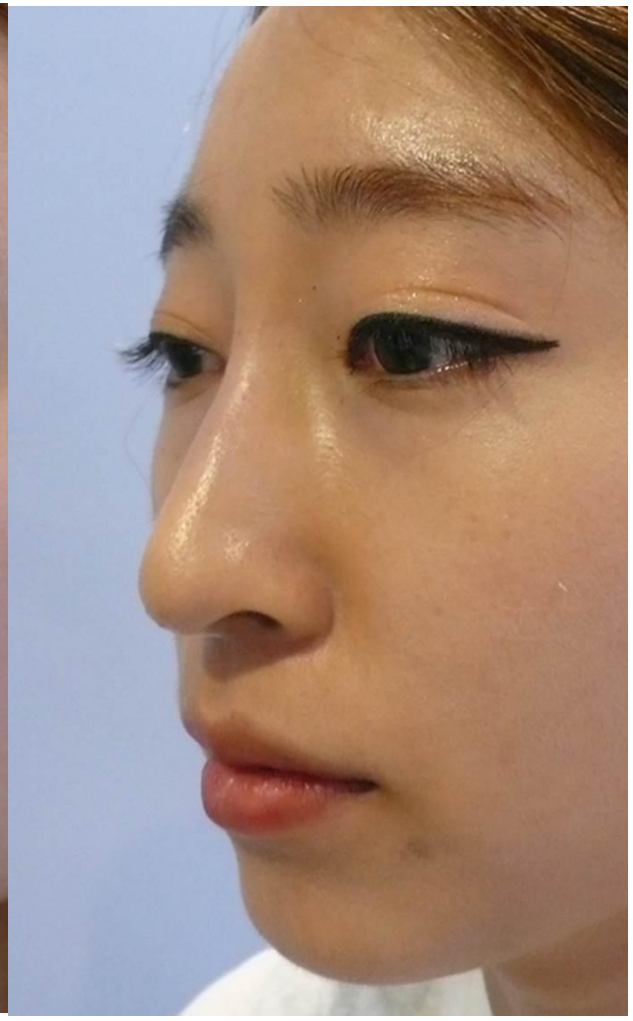


1. Nasal ridge insertion : Insert N-Cog Y-Ko 21G 60mm needle between 2 Alar cartilage, thought Lateral cartilage to Nasal bone. When you follow the bone, you will meet resistance force before Nasal bone. Upraise the needle for smooth insertion.
2. Nasal tip insertion : Insert N-Cog Y-Ko 19G 40mm Use the same insertion point with Nasal ridge insertion, Insert vertically thought the cloume of the nose till you meet the bone.

Procedures : Y-Ko

Procedures : Y-Ko

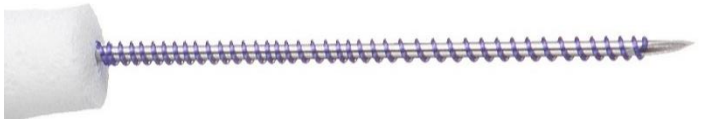




Procedures : Y-Ko

Procedures : Derma Spring

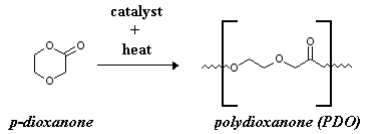
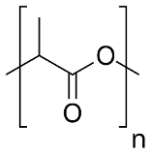
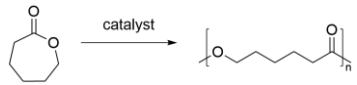
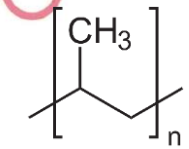
더마스프링 Derma Spring



Comparison: type of a thread

	Contour thread	Non-Contour thread
Material	Polypropylene, PDO, PLLA	PDO, PLLA, PCL
Example	Aptos, Silhouette	N-Cog Lift
Action Mechanism	Artificial Lifting Lift up the drooped tissue	Natural Lifting Fix and prevent the drooping of tissue Using thread tissue interaction
Type of thread	Bidirectional cog - cutting, molding, cone	Multiple bidirectional cog - cutting, molding, punching Braided, Weaving Monofilament Spring shape
Complications	Asymmetricity Migration and protrusion Early drooping	Edema Purpura

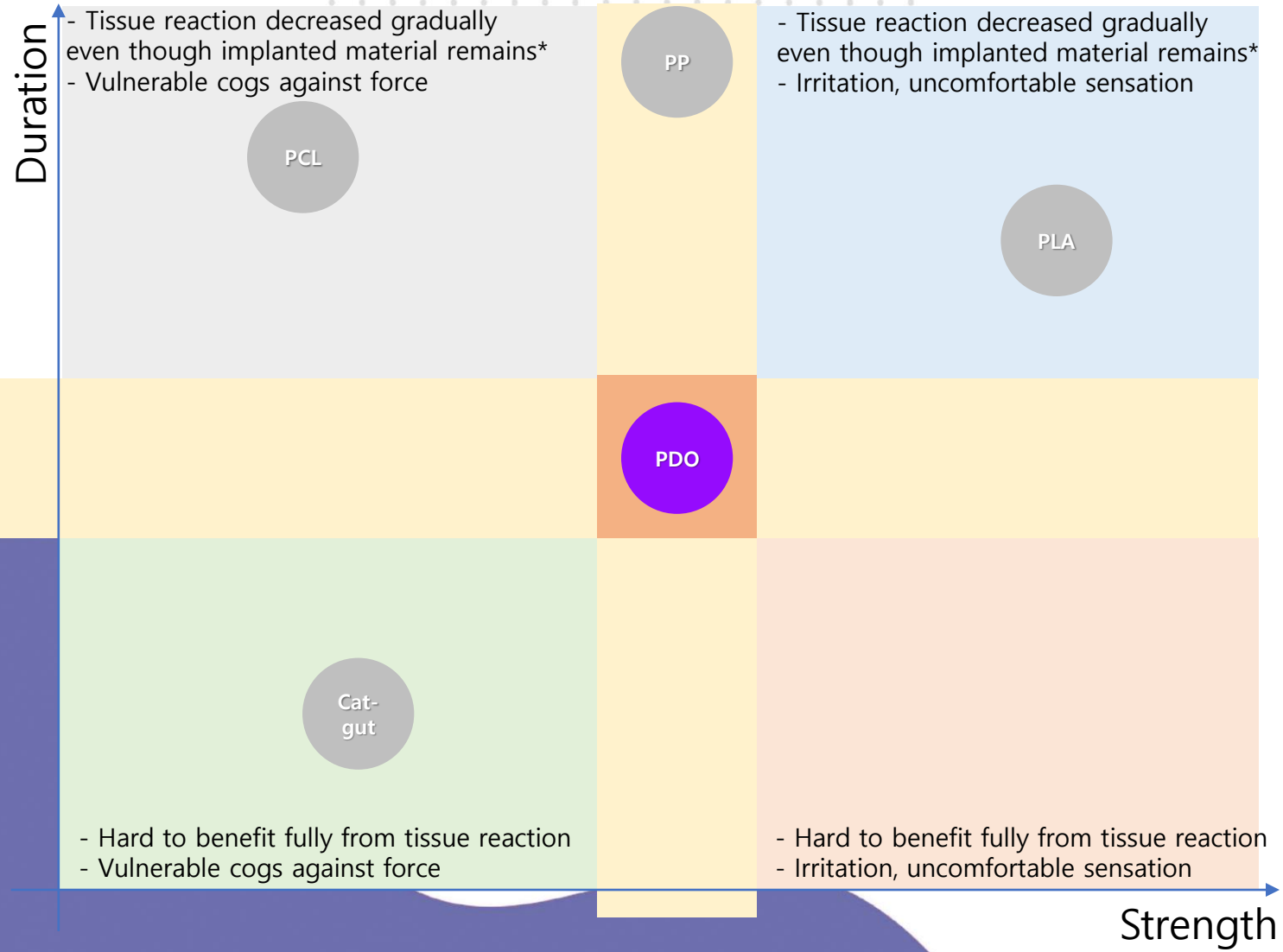
Comparison: Material of a thread

Material	Polydioxanone / PDO	Polylactide / PLA	Polycaprolactone/PCL	Polypropylene / PP
Molecular structure				
Absorption	Absorbable	Absorbable	Absorbable	Non-absorbable
Intermediate product	Glyoxylate	Lactic Acid+Hydroxy Acid Acidic substances may change microenvironment of tissue	**6-Hydroxycaproic Acid Acidic substances may change microenvironment of tissue	N/A
End product	CO_2+H_2O	CO_2+H_2O	CO_2+H_2O	Polypropylene
Duration after implantation	6-8 months	1 year	2 year	N/A
Tensile strength	48.3 MPa*	45-70 MPa	23 MPa	40 MPa
Elongation at break	500-600%	85%-105%	4700%	100%
Physical property	Easy to handle	Rigid and brittleness	Flexible	Swollen, after absorbing water
Color	Violet or colorless	Colorless	Colorless	Colorless
Main usage	Suture (Pediatric and Ophthalmic Surgery)	Hard implant (Bone screw)	Drug releasing implant (Contraceptive)	Suture, container (Hernia, Pelvic organ prolapse repair/Syringe)

* A.K. Sugih et al. / European Polymer Journal 45 (2009) 155–164, Experimental studies on the ring opening polymerization of p-dioxanone using an Al(OiPr)3-monosaccharide initiator system

** Aleksandra et al. / Polish Journal of Chemical Technology, 19(2017), 1, 120—126, Biodegradation of poly(ε-caprolactone) in natural water environments

Comparison: why PDO?

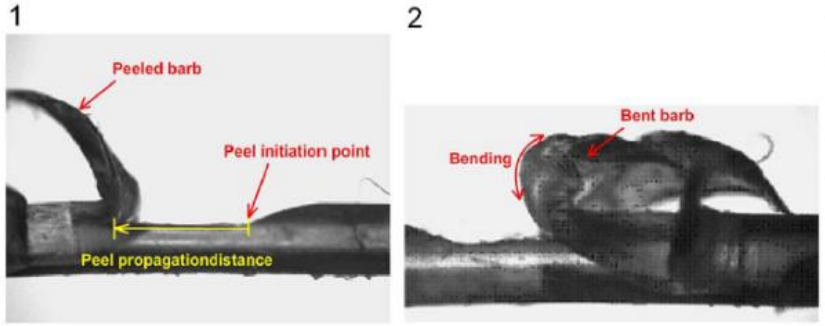


- Tissue reaction decreased gradually even though implanted material remains*

	Infiltration		Infiltration content		Angiomatosis		Degree of collagenization	
	AS	EV	AS	EV	AS	EV	AS	EV
14th day	D++	D++	L++ E+ Mp++	L++ E+ Mp++	IMGT ++	C+	CCB++ TCB	CCB+++ TCB
30th day	F++	F+	L+ E+ Mp+	L++ E+	C+	C+	CCB++ CoCB	CCB++ TCB
90th day	F+	—	L+	E+	AV+	AV+	CCB++ CoCB	CCB+ TCB

AV, arterioles and venules; C, capillaries; CCB, cellularity of collagen bundles; CoCB, coarse collagen bundles; D, diffuse; E, eosinophils; F, focal; IMGT, initial manifestations of granulation tissue; L, lymphocytes; Mp, macrophages; TCB, thin collagen bundles.

- Vulnerable cogs against force



* G. Sulamanidze et al. / Journal of Cosmetic Dermatology 17(2018) 731–735, Pathomorphological criteria of use efficiency of resorbable and permanent implant in aesthetic medicine and cosmetic dermatology.

Comparison: why PDO?

Physical lifting effects

- **Long Duration means good for lifting?**
- **PDO**< PLA<PCL<PP
- Long duration does not guarantee the best result.
- After some time passed from thread insertion, physical lifting effect will gone after 6~12 months for all type of the thread.
- PP is non-absorbable thread, looks have a good physical effect from a start, but it will droped down in the same time of PDO thread.
- Stay long and make long inflammantory response might interrupt general function of the subject tissues and might cause granuloma with harsh foreign body reactions.

Research

JAMA Facial Plastic Surgery | Original Investigation

Assessment of Scaffolding Properties for Chondrogenic Differentiation of Adipose-Derived Mesenchymal Stem Cells in Nasal Reconstruction

Serban San-Marina, MD, PhD; Ayushman Sharma, MD; Stephen G. Voss, MS; Jeffrey R. Janus, MD; Grant S. Hamilton III, MD

Supplemental content

IMPORTANCE Nasal reconstruction in patients who are missing a significant amount of structural nasal support remains a difficult challenge. One challenge is the deficiency of cartilage left within the nose as a consequence of rhinectomy or a midline destructive disease. Historically, the standard donor source for large quantities of native cartilage has been costal cartilage.

OBJECTIVE To enable the development of protocols for new mesenchymal stem cell technologies as alternative procedures with reduced donor site morbidity, risk of infection and extrusion.

DESIGN, SETTING, AND MATERIALS We examined 6 popular scaffold materials in current practice in terms of their biodegradability in tissue culture, effect on adipose-derived mesenchymal stem cell growth, and chondrogenic fate commitment. Various biomaterials of matching size, porosity, and fiber alignment were synthesized by electrospinning and overlaid with rabbit adipose-derived mesenchymal cells in media supplemented or not with chondrogenic factors. Experiments were performed in vitro using as end points biomarkers for cell growth and chondrogenic differentiation. Polydioxanone (PDO), poly-3-hydroxybutyrate-co-3-hydroxyvalerate (PHBV), PHBV-polycaprolactone, poly(L-lactide-co-caprolactone), poly(lactic-co-glycolic acid), and polystyrene scaffolds of 60% to 70% porosity and random fiber alignment were coated with poly(L)-lysine/laminin to promote cell adhesion and incubated for 28 days with 2.5 to 3.5 × 10^5 rabbit adipose mesenchymal cells.

MAIN OUTCOMES AND MEASURES Cell growth was measured by fluorometric DNA quantitation and chondrogenic differentiation of stem cells by spectrophotometric sulfated glycosaminoglycan (sGAG) assay. Microscopic visualization of cell growth and matrix deposition on formalin-fixed, paraffin-embedded tissue sections was performed, respectively, with nuclear fast red and Alcian blue.

RESULTS Of 6 scaffold materials tested using rabbit apidose mesenchymal cells, uncoated scaffolds promoted limited cell adhesion but coating with poly(L)-lysine/laminin enabled efficient cell saturation of scaffold surfaces, albeit with limited involvement of scaffold interiors. Similar growth rates were observed under these conditions, based on DNA content analysis. However, PDO and PHBV/PCL scaffolds supported chondrogenic fate commitment better than other materials, based on soluble sGAG analysis and microscopic observation of chondrogenic matrix deposition. The mean (SD) sGAG scaffold values expressed as fold increase over control were PDO, 2.26 (0.88), PHBV/PCL, 2.09 (0.83), PLCL, 1.36 (0.39), PLGA, 1.34 (0.77), PHBV, 1.07 (0.31), and PS, 0.38 (0.14).

CONCLUSIONS AND RELEVANCE These results establish materials, reagents, and protocols for tissue engineering for nasal reconstruction using single-layer, chondrogenically differentiated, adipose-derived mesenchymal stem cells. Stackable, scaffold-supported, multisheet bioengineered tissue may be generated using these protocols.

LEVEL OF EVIDENCE NA.

JAMA Facial Plast Surg. doi:10.1001/jamafacial.2016.1200
Published online October 13, 2016.

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Comparison: why PDO?

- **Which one makes more Collagen?**
- PLA < **PDO**
- As we do material experiment for PDO and PLA, PDO makes 7 times more collagen than PLA.

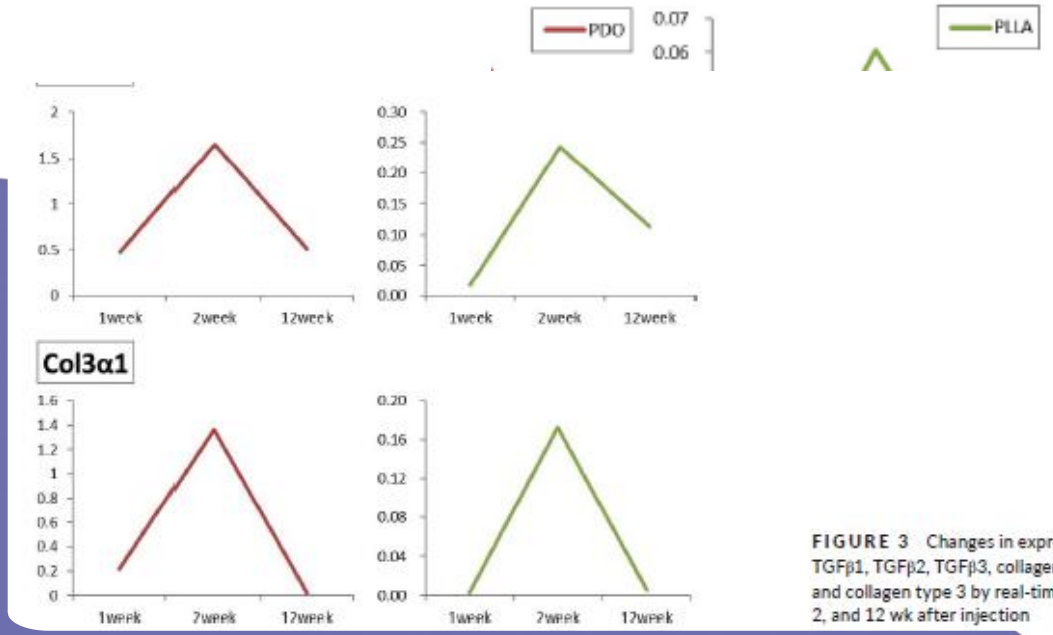


FIGURE 3 Changes in expression of TGFβ1, TGFβ2, TGFβ3, collagen type 1, and collagen type 3 by real-time PCR at 1, 2, and 12 wk after injection

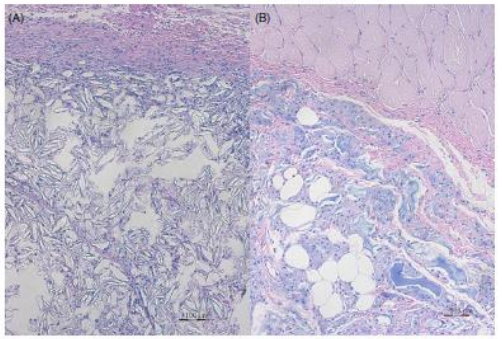


FIGURE 1 Histologic evaluation of polydioxanone (PDO). A, PDO is well noted in a 2-wk specimen. B, PDO is still noted with surrounding macrophages and histiocytes in a 12-wk specimen. PDO material is torn down into pieces by fibrous tissues. (A-B; hematoxylin and eosin ×100)

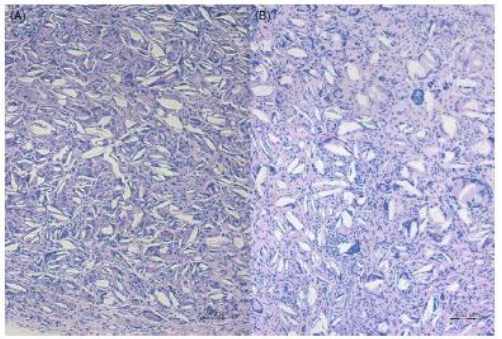


FIGURE 2 Histologic evaluation of poly-L-lactic acid (PLLA). A, PLLA is well noted in a 2-wk specimen. B, PLLA is still noted with a number of macrophages and multinucleated giant cells in a 12-wk specimen. (A-B; hematoxylin and eosin ×100)

3.3 | Tissue growth factor and collagen changes

Analysis of molecular changes revealed that Col1α1, Col3α1, TGF-β1, TGF-β2, and TGF-β3 showed increases 2 weeks after injection but showed decreases 12 weeks after injection with both PDO and PLLA. Difference value between 1 and 2 week increased more in PDO than PLLA in case of Col1α1, Col3α1, TGF-β2, and TGF-β3. However, TGF-β1 showed more increase in PLLA than PDO (Figure 3, Table 1).

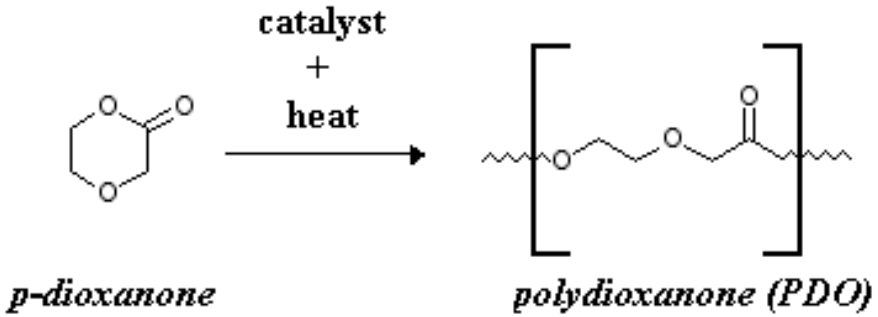
4 | DISCUSSION

Currently, fillers for facial volume augmentation are largely divided into two types, hyaluronic acid (HA) and biostimulatory fillers including CaHA, PCL, and PLLA. Because HA draws water, it has an instant volume-filling effect but a minimal biostimulatory effect; in contrast, PLLA has no instant filling effect but a continuous biostimulatory effect for at least 2 years.[8] Recently, one comparative study suggested that these biostimulatory dermal fillers, such as PCL, are more effective than HA filler for nasolabial fold treatment. Therefore, many high molecular weight polymer-containing fillers that have biostimulatory effects appear continuously today.[9]

Poly-L-lactic acid has biostimulatory effects through macrophages, (myo-)fibroblasts, and collagen that orchestrate capsule formation. The reaction starts with subclinical inflammation that continues to microparticle encapsulation and then to collagen production by the host.[10] PLLA itself degrades into carbon dioxide and water, and the surrounding collagen production continues even after

Comparison: why PDO?

- **Chemical feature Safty**
- PP < PCL < PLA < **PDO**
- PLA leaves lactic acid and hydroxy acid as a intermediate product during biodegradation.
- This might cause hardship to get the correct body test result such as CPR test of subject during thread remains.
- Meanwhile, PDO will completely absorbed and excreted mainly in urine.



N-FINDERS

Conclusion
: why PDO?

PDO is the most safe and effect material for lifting.

Remarks

- **High quality PDO**
- **100% biocompatible material**
- **Fast and painless procedures**
- **No General anesthetic needed**
- **Minimal invasive procedure with the most natural results**

Thank you

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