skin regeneration and lifting using threads is becoming increasingly popular. Threads can be broadly categorised as mesothreads or collagen stimulating threads and suspension or lifting threads used to mechanically lift the skin. There is a vast array of different brands, products, materials and configurations to choose from. In this article I will focus on PDO threads and in particular the RegenAllift PDO threads that I have been using almost exclusively over the last few years due to their excellent safety profile, long lasting results, and a great range of sizes and configurations satisfying the needs of my cautiously selected threadlift patients.

At this point I need to emphasise that a thread lift is not synonymous with a surgical face lift whereby excess skin is removed, the remaining undermined skin is redraped, and ptotic and atrophic deeper facial tissues are manipulated and tightened. No procedure is more closely associated with plastic surgery in the eyes of the public than facelifts, and perhaps rightly so. When performed with appropriate attention to detail in a properly selected patient the procedure provides consistently satisfactory results, creating a natural, unoperated appearance and leaving the patient looking like a crisper version of himself or herself. The facelift confers another benefit that is more difficult to define. Ageing results in jowls and a rectangular lower face. A facelift lifts the jowls back into the face, augmenting the upper face and narrowing the lower face, producing the “inverted cone of youth.” This change in overall facial shape from rectangular to heart shaped is a benefit that no other treatment modality can provide. When not properly performed, the procedure can be catastrophic, resulting in visible scars, distorted ears and hairlines, unnatural creases, and a disharmonious, obviously operated look.

Threadlifting, on the other hand, being much less invasive negating the telltale signs of the surgical lift can produce natural looking results in patients showing mild skin laxity and jowling. It can also address, less effectively though than a surgical facelift, the age-related ptosis of the malar tissues, deepening of the nasolabial folds and labiomental creases, downturn of the oral and loss of neck definition.

Threadlifting is not recommended for patients with heavy sagging facial tissues, significant volume loss or severely photodamaged atrophic skin.
PDO THREADS

Prior to the advent of PDO threads other more permanent materials had been used for collagen stimulation (e.g. Gold) and anti-ptosis (e.g. Polypropylene) with variable success. Over the last five years there has been a considerable shift towards the use of biodegradable polymers for the manufacturing of threads such as poly-l-lactic acid and polydioxanone (PDO) designed as either standalone monofilaments for intradermal placement (collagen stimulating threads) or configured with various anchoring systems such as bars or cogs for subcutaneous placement providing an instant mechanical lift.

Polydioxanone (PDO, PDS) or poly-p-dioxanone is a colourless, crystalline, biodegradable synthetic polymer whose biodegradation takes place by slow hydrolysis that can last up to eight months. PDO is not a small new product. It has been used in surgery for over twenty years as suturing and complications of conventional surgery. The RegenAlift – it has been described as a non-surgical face lift, that can restore the contours of a youthful face without the risk of nerve damage or infection.

Polydioxanone (PDO) stimulates fibroblasts to natural neocollagenesis. The scientific basis of the PDO induced collagen stimulation relies on the normal healing process of the human tissue and the principle of mechanotransduction on which I have both described in great detail in previous articles. Insertion of polydioxanone threads generates neocollagenesis in the skin by mild fibrosis (Type III collagen). The new bands of collagen strengthen the connective tissues of the skin and work like anti-ptosis mechanism.

Face lifting threads create traction to mechanically lift sagging tissue to a more youthful and desirable position – it has been described as a non-surgical face lift, that can restore the contours of a youthful face without the risk and complications of conventional surgery. The RegenAlift suspension threads come in different sizes and their main configuration consists of evenly distributed small sturdy cogs attached onto the core thread. They are inserted under the skin and above the SMAS layer via a thin cannula to grab and lift the tissue that has descended as a result of ageing.

The superficial musculoaponeurotic system (SMAS), the third layer of the face, is the most heterogeneous. It is fibrous, muscular, or fatty, depending on the location in the face. The muscles of facial expression are part of the SMAS layer (e.g., frontalis, orbicularis oculi, zygomaticus major and minor, and platysma). In the temporal region, this layer is not muscular but is fascial in quality and is represented by the superficial temporal fascia (or temporoparietal fascia).

What is important for the medical practitioner to remember is that in the midface the main trunk of the facial nerve and all its branches are under the SMAS layer and the parotidomasseteric fascia, a thin transparent fascia representing the 4th layer of the face. Therefore placement of the lifting threads above the SMAS and the use of cannulas instead of sharp needles can almost eliminate the risk of nerve damage or vascular puncture and subsequent haematoma formation (which is the most common complication seen in the surgical facelift).

THE TWO CATEGORIES OF REGENALIFT PDO THREADS

<table>
<thead>
<tr>
<th>Skin Regeneration</th>
<th>Lifting</th>
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</thead>
<tbody>
<tr>
<td>tightness - texture - colour - firmness</td>
<td>Correcting ptosis of loose sagging tissue</td>
</tr>
<tr>
<td>Intradermal via needle</td>
<td>Transdermal - SMAS layer via cannula</td>
</tr>
<tr>
<td>Threads are straight or coiled</td>
<td>Threads are thicker with cogs</td>
</tr>
<tr>
<td>Mono filament - straight - regular skin regeneration</td>
<td>The cogs anchor to the tissue to create a mechanical lift</td>
</tr>
<tr>
<td>Double Spirals - coiled - booster skin regeneration</td>
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Optimum results - after six weeks. Duration - 12 to 18 months. Instant results Lasts around 12-18 months.

TECHNIQUE

Stimulating threads

I like using an intradermal mesh pattern with the monos and the double spirals for an overall skin revitalisation or to create a fibrotic scaffold reinforcing, strengthening and tightening the skin for a later thread lift using the suspension threads in a two stage process.

The Double Spirals is a design where there are two strands of PDO threads coiled outside and around the > needle to increase the amount of thread that can be implanted into a small localised areas in the skin, maximising the contact with the skin. This acts as a super booster to proliferate the collagen and kick-start the skin regeneration process. This is an ideal way to create all over skin regeneration or to even out folds and wrinkles in small precise areas, in particular:

- Marionette
- Glabella
- Nasolabial
- Forehead tightening
- Smoker’s lines
- Crow’s feet
- Eye bags
- Neck
- Submental

Different patterns for the suspension threads

- Vector Linear Technique
- Sewing Technique
- Reinforcing Net Technique
- L Technique
- Fan technique
- V Technique
- Sandwich Technique
- W Technique

I also use the RegenAlift monos and double spirals into localised fatty tissue for lipolysis and intramuscularly to induce muscle relaxation.
**Suspension threads**

The first step is to choose the right candidates for a thread lift. Mildly ptotic facial tissues and men and women who have started “looking tired” are ideal candidates for a thread lift. A thorough consultation with the potential threadlift patient, explaining all the pros and cons of the treatment is of paramount importance with regards to any post procedure misunderstanding and complaints. My motto is “anything that is said before is an explanation; anything that is said after is an excuse”. Patients with very high expectations are excluded as this non-surgical treatment is unlikely to yield the drastic results they may have in their mind.

The second step is to decide on the direction of the vector(s) to lift, the type and size of threads, the pattern, and how many threads to use.

Depending on the practitioner’s preference, problematic areas of the face, desires of the patient, and type of the suspension thread to be used (cannula vs twin needles) a variety of patterns can be used.

The third step is to mark, prep and anaesthetise the skin – in this order. I use lignospan special that contains 2% lignocaine and adrenaline for my predetermined entry points if I am using straight cannulas as a means of placement of the cog threads; and exit points if I am using the twin needle.

For lifting threads to work well, the cogs need to be placed closed together. In addition, cogs need to be short and placed all around the thread (3D) – this evenly distributes the horizontal and vertical stress levels, giving stability to the lift, while lifting everything in its path. Finally, for medicolegal and insurance purposes CE marking and/or FDA approval must be sought.

The goal in every thread treatment is to restore the highly desired V shaped face whilst giving the skin a more youthful look and texture. Most of the time I tend to combine stimulating threads inside the skin with suspension threads as in this way I double the benefits of my treatment: instant mechanical lift and increased neocollagenesis. Occasionally I may use ancillary procedures concomitantly with my threadlifts such as facial volumisation with fat grafting. Fat grafting will restore upper and mid face concavities, a hallmark of facial ageing secondary to volume loss and shift. In addition, its adipose derived stem cells and growth factors will improve the quality of the facial soft tissues and prolong the thread lift results by reducing the inflammatory phase and enhancing the remodelling phase of the healing process.

Quite recently I have also started using the RegenAlift twin needle suspension threads. Twin needles are recommended for more advanced practitioners with better familiarization with the facial anatomy as the sharp needles at the two ends of the cog thread can damage vessels and nerves if the right plane of insertion is not maintained throughout. These threads will also require accurate marking of two exit points too; one of each of its two needles. The technique used with this type of threads will be the focus in one of my future articles.

**FUTURE DEVELOPMENTS**

Koreans have been using threads for a massive range of skin problems ranging from acne scarring to pigment disorders. New areas that I am looking into with regards to the effectiveness, safety and longevity of the treatment include the use of mesothreads into eye fat bags taking...
advantage of their lipolytic properties as described above, and skin scarring secondary to either trauma or acne. The results have been encouraging. As soon as I have gathered enough supporting evidence I will get my results published.

In summary PDO threads can produce:
- Instant lift – achieved mechanically
- Cell renewal – creates biostimulation and collagensis
- Improved blood flow to the skin
- Lipolysis – contracting and reducing fat cells
- Muscle relaxation – when inserted intramuscularly

CONCLUSION
Threadlifting is an exciting and indispensable anti-ageing tool that every practitioner in the field of Aesthetic Medicine should possess in their armamentarium. A thread lift is a type of procedure wherein temporary sutures (threads) are used to produce a subtle but visible lift in the skin.

Polydioxanone (PDO) has stood the test of time as a synthetic absorbable surgical suture with excellent properties such as minimal tissue reaction, superior tensile strength, and absorption by simple hydrolysis. The inherent flexibility of its polymer allows the polydioxanone suture to be fabricated into a monofilament fibre of various sizes which can then be intertwined to produce multi filaments or configured with small outward projections in the form of barbs, cogs, or cones that can act as an anchoring system when placed under the skin.

The favorable profile of the polymeric material PDO in conjunction with the multitude of arrangements threads made of PDO can be manufactured in (e.g. stimulating vs suspension threads) as well as the diversity of applications of PDO threads ranging from lifting the ageing face and tightening soft tissues to lipolysis to neocollagenesis to muscle relaxation make PDO thread lifts my favourite non-surgical treatment.

Training, sound anatomical knowledge, and getting experience with basic PDO threadlifting techniques are highly recommended before exploring the benefits of more advanced techniques (e.g. using the temporalis fascia as fixation point) and products (e.g Twin Needles).