Midface Lift: Our Current Approaches

Verjüngung des Mittelgesichts: Aktuelle Ansätze

Introduction

A wrong idea is spreading among plastic surgeons all over the world. Some researchers are suggesting that ageing changes are essentially related to fat atrophy and propose to treat every defect just with fat grafting or fillers. This is simply false. In fact ageing generally entails changes of skin texture (atrophy, elastosis, etc.), which give rise to its relaxation and "enlargement", as well as modifications of the inner tissues (fat and bone atrophy, fat ptosis, loss of muscular and fascial tone, etc.), with a consequent reduction of their volume and loss of projection and support to the overlying lower lid. This gap between the container and the content is one of the most important reasons of the ageing-related aesthetic problems. Any experienced surgeon knows that in the vast majority of cases it is impossible to obtain natural and long-lasting results without removing skin excess. This is the main reason why the so-called thread-based treatments (insertion in the fat of barbed sutures, which are supposed to lift the soft tissues without any skin...
removal) fail to correct ageing problems in the face. The same unnatural and ineffective outcomes can be often observed after the injection of overabundant quantities of various substances (fat, hyaluronic acid, etc.) in the attempt not only to integrate the soft and hard tissue atrophy, but also to fill soft tissues. Quite often though, lax soft tissue reposition alone is sufficient to allow great and stable results. That is a “pure” midface lift.

We have to face 2 main problems, skin “expansion” and fat/bone atrophy, and consequently, in order to obtain the best outcomes we should try to solve or, at least, to improve both of them. All these considerations are particularly valid for the midface area, where quite often the simple “filling”, that nowadays seems to be the overwhelming fashion, gives a funny appearance or, in the worst cases, a monstrous look to the unlucky patient. Only in those cases where inner atrophy is prevalent, one should try to resort to “filling” only. Fat grafting, implants, hyaluronic acid injections alone can be really effective when dealing just with a well delimited local defect, like a deep tear trough or lack of cheek bone projection, but if relevant skin excess is detected, the surgeon should take into consideration also a midface lift procedure, to be performed in the same time with augmentation or alone (Fig. 1).

In the last 30 years a palette of new treatments has been proposed to improve the midface area. Some of them attracted at the beginning a lot of enthusiasm but, unfortunately, with time their use and overuse entailed terrible complications. Among them, for example, are the so-called “permanent” fillers. At the beginning they have been proposed and used by eminent plastic surgeons (in Italy, our country, they were supported by almost all plastic surgery school directors), but quite shortly they gave rise to very bad problems, often almost impossible to solve completely, as we all know. In the 1990s the removal of Bichat’s fat bag through an intra-oral approach was introduced as the best option to enhance cheekbone projection and was carried out by the most “advanced” surgeons. 10–15 years later many of those poor patients had to come back to the operating room in order fill emptied cheeks with fat grafting. Extended lower blepharoplasties with sub-orbicularis dissection and muscular suspension seemed to be the best solution for malar festoons, but in many cases they provoked very annoying complications (scleral show, ectropion, etc.), until a better comprehension of the lid suspension system was reached. Nowadays, the new fashion is to treat midface defects just with fat grafting, following some debatable pathophysiological findings, which would have been demonstrating that no sagging and downwards shifting of soft tissues really takes place. We completely disagree and are deeply convinced that in order to correctly solve the ageing-related aesthetic defects of the midface area with natural and harmonious results, a more comprehensive and complete approach should be considered. First, an “unconditioned” diagnosis should be carried out and then the consequent logical treatment should be performed. Only in a few patients should midface defects be corrected by fat grafting or midface lift alone, while in the majority of cases both procedures in variable degrees should be used (Fig. 2).

History

In the 1980s plastic surgeons were already able to consistently improve ageing-related defects in the lower part of the face and in the neck, but could not yet obtain any concrete improvement of midface problems. In fact at that time it was quite common to find in scientific publications post-operative pictures with disharmonious outcomes: well treated lower face, neck and even forehead and undertreated infra-palpebral and malar areas. Realizing that midface enhancement techniques were actually lacking, a few surgeons around the world tried to engage a fight against malar bags, tear troughs, “flatness under the eyes”, etc.; in other words to act against midface defects.

My personal war began in the late 1980s. Disappointed with the outcomes of many inferior blepharoplasties performed to treat lower lid and extraorbital defects, following De La Plaza,
Hinderer and Faivre, first I tried extending the usual palpebral undermining downwards outside the orbital rim, in order to lift that specific area. That widened dissection was performed between the fat pad behind the orbicularis muscle (the so-called “SOOF”) and the periosteum, at a level that many years later B. Mendelson called the “pre-zygomatic space”. Sometimes this wide deep dissection and sagging soft tissue reposition allowed us to obtain quite good results, but in the majority of cases they were not long-lasting and a few of them were followed by complications such as ectropion and scleral show. The main problem was the instability of the fixation. Actually, even if any incidental hypotone was corrected by deep and superficial canthopexy, sometimes the lower lid border still had a tendency to move downwards. Moreover, that technique did not allow us to fill any deep palpebro-jugal groove with a thick layer of soft tissue as it would have been often necessary. But in selected cases it proved to be an effective operation, for example, to treat festoons due mainly to skin and/or muscle laxity. When both festoons and deep tear troughs were present, I used to couple this extended blepharoplasty (superficial midface lift) with dermal-fatty grafts or with the Flowers’s implants placed over the orbital rim. When instead the problem was represented just by deep tear troughs without any skin-muscle sagging, my favorite treatment was fat grafting only with no undermining, that in the many cases allowed us to obtain good results, even if not always predictable. At that time, exactly as nowadays, the major drawback of this approach rested indeed in its uncertainty (Fig. 3, 4). In the late 1990’s I started to carry out the midface lift with a sub-periosteal dissection, as was proposed by Tessier and Krastinova and popularized by Psillakis, Little, Ramirez, Besins et al. and I immediately realized that that kind of operation had much more potential advantages if compared to the midface lift with more superficial undermining. The sub-periosteal dissection, followed by the release of the flap and its fixation to solid anchoring points, assures a more secure and stable reposition of the sagging midface soft tissues. In fact the periosteum underneath the flap strongly sticks in the new position to the local non-dissected periosteum. Furthermore a thicker layer of soft tissues can be lifted and used to fill deep palpebro-jugal grooves. In the left image, the downwards extension of sub-periosteal dissection is illustrated, together with the lower section of the periosteum, that will allow one to lift the flap. In the right image, the soft tissues have been moved upward, thus filling the nasojugal groove, correcting any festoon that may be present and adding volume to the cheek bone area. Among the most common auxiliary procedures I couple to midface lift are obviously fat grafting and canthopexy (Fig. 5).
The Main Midface Problems

The majority of midface defects are age-related, even if sometimes we have to deal with congenital problems, like negative vector (when the eyes are more prominent than the malar soft tissues) or deep tear troughs. Actually these last particular kind of deformities can be congenital or acquired, but in both cases generally a midface lift can help to improve the situation. Further defects of this area are festoons, too high and/or sunken lower lids, too evident lid-cheek transition area, wrinkles, discoloration and some midface-related problems in the lids, like scleral show and ectropion. For what concerns these last defects, the skin gathered in the lid, lifting the midface, is generally quite helpful to substitute the lacking one, even if in these cases also adjunctive procedures should often be taken into consideration.

Basic Techniques for Midface Lifting

Sub-periosteal dissection is relatively easy to perform, is almost bloodless, allows us to avoid any injury to the facial nerve branches and guarantees much longer-lasting results than the supra-periosteal one. In order to carry out a complete sub-periosteal undermining of the midface area, the easiest and most comfortable access to the deep plane is undoubtedly a para-canthal stab incision, prolonged with a sub-ciliar extension when it is evident that it will be also necessary to remove a strip of excessive skin from the lower lid. Another useful approach is represented by a trans-oral incision, carried out perpendicularly to the vestibular fornix. One could pass through a temporal scalp incision as well, or even through the usual pre-auricular facelift approach, deepening the dissection at the lateral border of the malar bone. Resorting to 2 concomitant approaches enables sometimes a more precise undermining and an easier and faster operation. The dissection should be carried out both in the malar and maxillary sub-palpebral areas and should be extended above and below the infra-orbital bundle. It is important to completely release the periorbital, which is rigid and inextensible, at the periphery of the dissected zone: at the base of the malar area, along the oral upper fornix and at the level of the orbital rim. This will allow us to easily move the midface flap upwards. In this area soft tissues can be lifted along different vectors, the main ones being supero-lateral and supero-medial. These 2 pulling directions give rise to different effects. A supero-lateral vector of pull allows us to better correct malar soft tissue mounding and festoons. Furthermore an improved cheek bone projection can be obtained thanks to a deep periosteal plication. A supero-medial vector of pull is more effective when the main issue is the correction of a deep tear trough. The midface flap can be fixed to the periorbita of the periorbital rim or, better, directly to the bone at the same level through drill holes. Another solid anchoring tissue is the deep temporal fascia (the muscular aponeurosis), but this can be reached only by means of long “suspender” sutures.

Analyzing Different Operations to Treat Midface Aesthetic Defects

As already mentioned, several operations have been proposed to correct midface problems. The 2 main procedures are based on different levels of dissection: a more superficial and a deeper one. The technique based on superficial dissection usually starts with a sub-ciliar incision, followed by a subcutaneous dissection and by the incision of the orbicularis muscle below the lower orbital margin. Then a palpebral myocutaneous flap is lifted reaching the lower orbital rim. At this point the undermining is extended caudally passing between the SOOF (sub-orbicularis-oculi-fat) and the periosteum and then further downwards behind the lower extension of the orbicularis muscle and the anterior cheek fat pad, but in front of the lip elevator muscles. This dissection can reach medially the naso-labial fold, but should be interrupted laterally half way to the malar bone, in order to avoid severing a branch of the facial nerve directed to the orbicular m., which runs above the zygomaticus major muscle. The flap thus obtained is lifted and fixed with a few sutures to the periosteum of the lower orbital rim. When necessary, i.e., in case of lower lid hypotone, deep and/or superficial canthopexy is also carried out. Finally skin excess is removed and the wound is sutured. The deep (sub-periosteal) dissection is used in 3 main different procedures. 2 are based on a supero-lateral vector of pull, 1 on a supero-medial vector of pull. The first type of midface lift with sub-periosteal dissection is a “closed approach” procedure, actually performed through only 3 small stab incisions. The first is in the scalp of the temporal area, about 1.5 cm behind the hairline. Through this approach a tunnel is created between the superficial and the deep temporal fascia. This dissection is extended sub-periosteally in the forehead and both the insertions of the frontal periosteum and of the superficial temporal fascia along the supero-lateral orbital rim are disrupted and completely released. The second incision is traced lateral to the lateral canthus (as the usual extension of the lower blepharoplasty incision). Through it, the sub-periosteal undermining of the malar and maxillary areas is performed. Care should be taken to avoid any damage to the infra-orbital bundle, even if the dissection should be extended below and above it in order to move soft tissues from the midface area to the lid. The zygomaticus-facial bundle instead is usually sectioned without any relevant change in local sensitivity. A third incision is carried out in the mouth, perpendicular to the vestibular fornix. This last incision will allow us to complete and verify the midface dissection and to insert a Reverdin needle, used to anchor the wide flap. The needle is passed through the buccal incision and the dissected midface area and exits from the para-canthal incision. Then a thread is mounted on its eye, the needle pierces the flap and exits again from the para-canthal incision. Now the suture is withdrawn from the needle and its 2 extremities are passed through the temporal tunnel, pulled and fixed to the deep temporal fascia (muscular aponeurosis) under appropriate tension. A second similar fixation, with a suture pulled along a slightly different vector, is often carried out. The operation is completed with a couple of sutures between the superficial and deep temporal fasciae with the aim of lifting the para-canthal soft tissues and the eyebrow tail. The second operation based on a sub-periosteal dissection is substantially similar to the first one, but in this case the para-canthal incision is extended underneath the lashes till the medial canthus and through this approach the anchorage is easily executed with no need of any supplementary oral incision. So after the scalp incision and temporal undermining are carried out, this sub-ciliar incision is performed and through it the malar/maxillary undermining. Then through this same incision the midface flap is directly anchored (with no need of any Reverdin needle) with a long “suspender” suture, that is fixed to the

deep temporal fascia. The upper margin of the orbicularis muscle flap is also fixed to the periosteum of the supero-lateral orbital rim through the para-canthal tunnel. The most important difference between the first and the second type of midface lift with sub-periosteal dissection is that this last one allows the removal of potential excessive skin at the level of the sub-ciliary incision. If the lower lid suspension system (canthal tendon-canthal ligament-orbicularis muscle) is not adequately strong and tight, then a "deep" canthopexy must also be performed. In that case the surgeon should take care of anchoring the orbicularis muscle outside the orbital rim and the canthal ligament and/or tendon inside, in order to avoid any detachment of the lower lid from the eye globe (Fig. 6).

The third operation based on a sub-periosteal dissection has a different vector of traction. While the first 2 procedures rely on a superior-lateral pull, this last one entails a superior-medial vector. With this technique there is no need of buccal, or temporal incisions because it is completely performed through the lids. The operation starts with a small incision in the lateral part of the upper lid groove extended for a few mm externally to the orbital rim or instead, when needed, with the usual upper blepharoplasty skin removal. Then a para-canthal incision with a sub-ciliar extension (as in any lower blepharoplasty) is carried out. Sub-periosteal dissection is performed in the malar/maxillary area as with the other techniques, but in this case is extended to the inner side of the inferior and supero-lateral orbital rim. Then 2–3 drill holes are created in the bone along the inferior orbital margin and one on its supero-lateral part. The midface flap is grasped with a suture under direct vision about 1 cm inferiorly and laterally to each drill hole and then the same suture is passed through the respective hole. By tying the sutures the midface flap is lifted and fixed in its new position. An orbicularis flap is sculptured in the sub-canthal portion of the muscle (Adamson's flap) and is passed through the para-canthal...
tunnel and anchored to the upper drill hole. In the majority of the cases a canthopexy is also carried out, taking care of passing its retaining suture from inside to outside the orbital rim. This last maneuver can be facilitated if also along the supero-lateral orbital rim 2 drill holes are created. Frequently large quantities of skin can be removed at the end of this operation but, as in any procedure involving lower lid dissection, care should be taken in leaving at least 3 mm of apparently excessive skin in order to prevent lid margin displacement due to inner scar retraction. The usual suture completes surgery. We prefer soft 5.0 silk single stitches in order to avoid that the thread extremities inadvertently scratch the cornea in the post-operative period (Fig. 7).
enrichment, etc.), but even in the best hands the fat taking rate so far is still unpredictable. We noticed that fat has the tendency to survive more in some areas than in other ones and fortunately the midface is pretty favorable. Perhaps the use of cannulas with small holes for harvesting and injecting fat helps to get more stable results but, even following any advanced rule, fat can still partially diminish or completely disappear, and the patient should be warned about it.

Hyaluronic acid has a granted “complication”: its reabsorption. The midface is relatively immobile and here hyaluronic acid perhaps lasts a bit more than in other more mobile areas. Nevertheless, it should be imprudent to guarantee that the correction obtained would last for more than one year. Another possible complication is the so-called Tyndall effect, which is a bluish discoloration due to localized swelling when hyaluronic acid is injected at the level of the tear trough. In order to solve this particular problem, hyaluronidase should be infiltrated in the affected area. For what concerns facial implant complications, we should mention dislocation, that is pretty rare if the pocket is...
Fat and fillers can be injected superficially, while implants should be fixed at the bone, eventually through the same drill holes of midface lift, otherwise the wide recipient pocket would allow unwanted movements. We prefer to carry out the midface lift with a sub-periosteal dissection because it allows us to obtain more long-lasting outcomes. Our clinical observations have allowed us to state that the durability of the results is not due to a re-adherence of periosteum to bone in the new uplifted position, but instead to the fact that non-extensible dissected periosteum sticks to non-undermined unchanged one. Midface lift allows us to truly recreate the youthful characteristics lost with ageing, giving back to soft tissues their original position, created with upmost precision or if the prosthesis is anchored to the bone (Fig. 12, 13).

**Conclusion**

Midface lift consists in repositioning malar and maxillary (infra-palpebral) sagging soft tissues. It is indicated when the prevalent defect of this area is soft tissue laxity. If the main problem is atrophy, instead, it is better to resort to some kind of “filling”. In many cases it is convenient to reposition soft tissues with a midface lift and correct their atrophy with fat grafting, filler or implants along the same operation. Fat and fillers can be injected superficially, while implants should be fixed at the bone, eventually through the same drill holes of midface lift, otherwise the wide recipient pocket would allow unwanted movements. We prefer to carry out the midface lift with a sub-periosteal dissection because it allows us to obtain more long-lasting outcomes. Our clinical observations have allowed us to state that the durability of the results is not due to a re-adherence of periosteum to bone in the new uplifted position, but instead to the fact that non-extensible dissected periosteum sticks to non-undermined unchanged one. Midface lift allows us to truly recreate the youthful characteristics lost with ageing, giving back to soft tissues their original position,
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