

Facial Lifting with APTOS Threads

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ABSTRACT

The aging face has sagging tissues that have previously been treated with surgical facelift, brow lift, and neck lift. The use of APTOS threads, polypropylene or metallic with unidirectional cogs or sharp edges, allows the gathering of the soft tissues, creating lift and volume contouring. The technique is simple, with insertion of the threads in the desired positions with a long injection needle as a guide. The results of the lifting are excellent and long-lasting.

INTRODUCTION

AN AGING FACE is characterized by uneven, focal ptosis of the soft tissues of the infra-orbital, zygomatic, buccal, mental, and submental areas.⁽¹⁻³⁾ Fat tissue in the zygomatic area is closely connected to the skin and the arch of the zygomatic bone by solid intersection with the subcutaneous muscular aponeurotic system (SMAS) and rarely sags⁽²⁾ (Fig 1). Subcutaneous fat of the adjacent areas (infra-orbital, buccal, malar, and partially mandible) is suspended from under the soft tissues of the zygomatic areas. While the contour of the skin of the young is smooth and even, changes occur from the effects of age, degree of development of the subcutaneous fat, its structural pattern, as well as the relationship to the SMAS, and the work of the mimic and masticatory muscles. In places where the connections are weak or the influence is more intensive, gravitational sagging of these areas occurs, with the appearance of lachrymal grooves, deepening of the nasolabial folds, and wrinkling (rhytids)⁽³⁾ (Fig. 2).

Involitional alterations in the suborbicular areas has been ascribed to the gradual sliding down of such tissues as the suborbicular ocular fat (SOOF).⁽⁴⁾ In the lower portions of the face, sagging of the subcutaneous fat is prevented by the neurovascular bundle originating from the mental foramen as well as by a more or less solid adhesion of soft tissues along the lower jaw. The overhanging tissues appear as wrinkles of "mourning."⁽⁵⁾

These involitional alterations have previously been considered to be due the aging process of the integument. The solution consisted of lifting and excising the excess skin. Since 1974, such operations have been complemented by lifting the soft tissues under the SMAS.⁽⁶⁾ Some surgeons have postulated a role of the facial skeleton in the aging process and have devised supraperiosteal and subperiosteal SMAS lifts especially with endoscopic equipment.^(4,7,8) Facial and neck rejuvenation now includes skin peeling, contour injection of a variety of gels, and skin reinforcement with 24-karat golden threads.^(9,10) Filling in folds and wrinkles with injectable materials can re-

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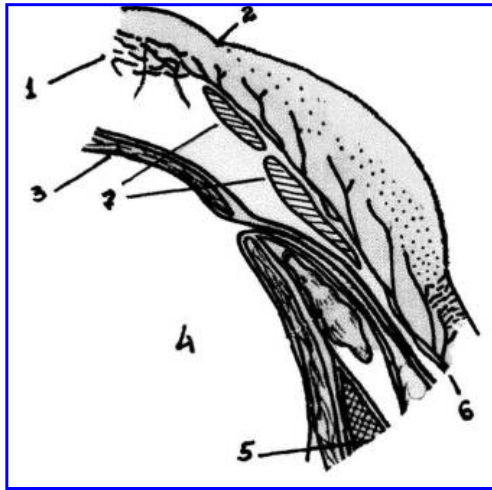


FIG. 1. Diagram of a horizontal dissection through the subzygomatic and buccal areas. 1. Circular muscle of a mouth; 2. Nasolabial pleat; 3. Buccal muscle; 4. Oral cavity; 5. Masseter; 6. Superficial musculoaponeurotic system (SMAS); 7. Large and small jugal muscles.

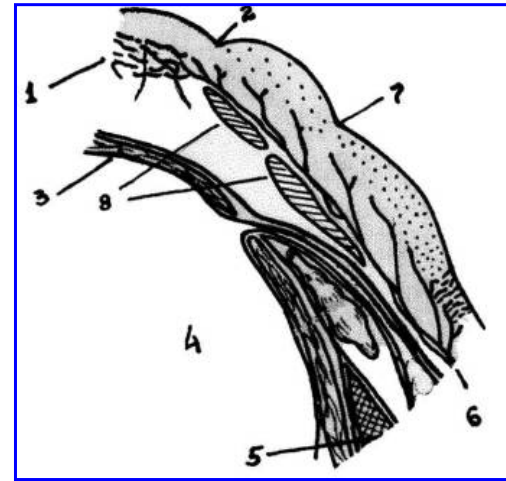


FIG. 2. Same diagram, with involutions alterations. 1. Circular muscle of a mouth; 2. Nasolabial pleat; 3. Buccal muscle; 4. Oral cavity; 5. Masseter; 6. Superficial musculoaponeurotic system (SMAS); 7. Tear trough; 8. Large and small jugal muscles.

sult in a pasty-appearing, puffy face with unnatural contours. Skin peeling results in skin tightening but does not lift tissues or form a new contour.

Usually a combination of procedures is utilized to solve a single problem. Major surgical operations are characterized by a difficult rehabilitation period fraught with possible complications; the outcome may be worse than expected. Good results appear to be obtained by individual outstanding and experienced surgeons, but not necessarily in all their cases.

The authors have devised a simple surgical method, with specially designed suture material, to relieve facial soft tissue ptosis and decrease the duration and problems of the post-operative period.

MATERIALS AND METHODS

APTOS ("antiptosis," APTOS, Moscow, Russia) threads have been used since 1999. One hundred patients were treated, ranging in age from 22 to 77 years. Women consisted of 94.4% of the patients. Independent intervention with the threads was performed on 130 patients and 27 patients had additional procedures at the same time.

The technique of lifting sagging tissues of

the aging face is performed with the new suture material "APTOS"⁽¹¹⁾, made of a bio-compatible metal, polymeric, or biological material. The smooth thread is manufactured with dents (cogs) that create slanting edges with sharp ends (Fig. 3). The cogs provide unidirectional traveling of the thread through soft tissues that prevents movement in the opposite direction to the insertion. This provides a uniform and even gathering of the soft tissues, creating lift and volume contour. The thread is provided with convergent cogs (variously directed) that fix the lifted tissues in the required position and provide support and fixation of the new contour (Fig. 4). Thread is inserted with a long injection needle as a guide.

SURGICAL TECHNIQUE

Usually local infiltration is used with a thin-gauged needle: 1% lidocaine solution in the

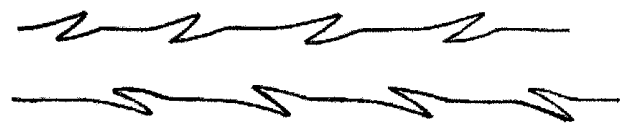


FIG. 3. Diagram of the longitudinal section of the APTOS thread with unilaterally directed cogs.

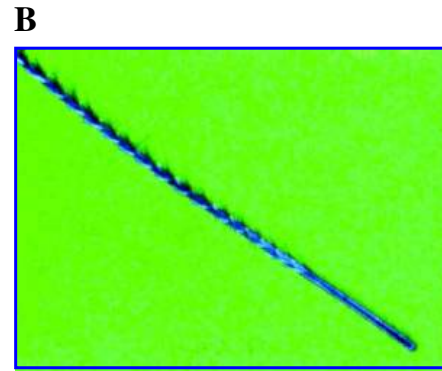


FIG. 4. A. Diagram of the longitudinal section of the APTOS thread with bilateral (converging) direction of the cogs. B. Actual thread with converging cogs.

area of entry and exit of the guide and along the passage in the fat. Average use is 0.5–0.7 cc for one thread.

The guide needle is placed through the skin, along the preliminarily marked contour at the required depth, and brought out at the exit point. The thread is threaded through the needle with the converging cogs and the needle removed. This fixes the thread in the desired position in the tissues. The ends of the thread may then be pulled up so that each cog engages the soft tissue. This allows shifting and grouping of the soft tissues within the zone of the thread's action. The ends of the thread are cut below the skin surface.

Separate portions of the ptotic tissues require special markings for lifting (Fig. 5). Lifting the buccozygomatic area requires three threads to be passed under the skin from both sides, one long (8.5 cm) and two short (5.0 cm). The long one must be passed sufficiently deep within the fat tissue, like a bow-string, that, when stretched, provides the effect of lifting the flabby buccal tissues and gives a round contour to the skin. The inferior short thread passed parallel to the long one is needed to maintain the effect created by the long thread and to provide a more convex contour to the skin. The superior short thread is passed subcutaneously along a steep arch from the zygomatic area towards the cheek. This lifts the overhanging skin above the nasolabial fold upward and laterally, removing the lachrymal groove.

Mental overhang is treated with two long threads on each side at a depth of 1–2 mm (Fig.

5). Two long threads implanted in the submental area improve the contour of the soft tissues of the subzygomatic region (Fig. 5).

RESULTS

The immediate postoperative period was usually uneventful. In four cases (2.5% of patients) the threads became disrupted due to unilateral weakness of the edges and threads emerging through the skin surface. These required removal and secondary reimplantation.

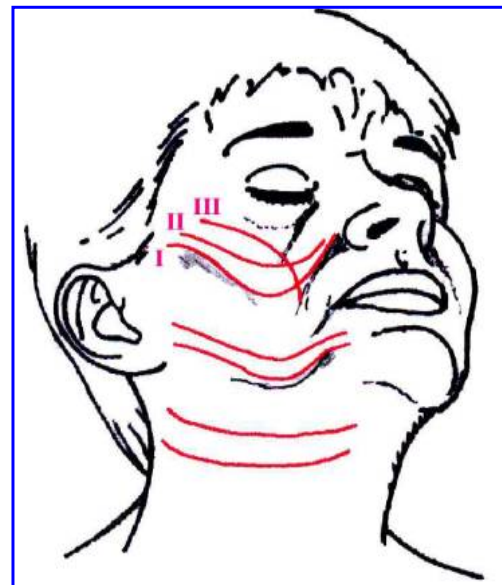


FIG. 5. Diagram of marking soft tissues of the face and neck in lifting with the APTOS thread. I. The long thread is passed in a bow-string shape that lift tissues when stretched. II. Short thread is passed parallel to the long one to provide a more convex contour of the skin. III. Second short thread is passed subcutaneously along a steep arch from the zygomatic area toward the cheek.



FIG. 6. **A.** Preoperative patient with ptotic bucco-zygomatic areas. **B.** Postoperative view immediately following surgery.

Overcorrection occurred in 9.5% of patients, and 9.5% of patients developed linear ecchymoses along the passage of the threads. Skin inversion at the entrance or exit of the threads occurred in 14.6% of patients and these corrected spontaneously or with manual intervention.

Twelve cases (8.9%) required unilateral or bilateral implantation of additional threads. Most

cases showed excellent improvement in the ptotic tissues (Figs. 6–11).

DISCUSSION

The operation with APTOS threads is easy and quickly performed. Rehabilitation is short term, although mimic and chewing movements

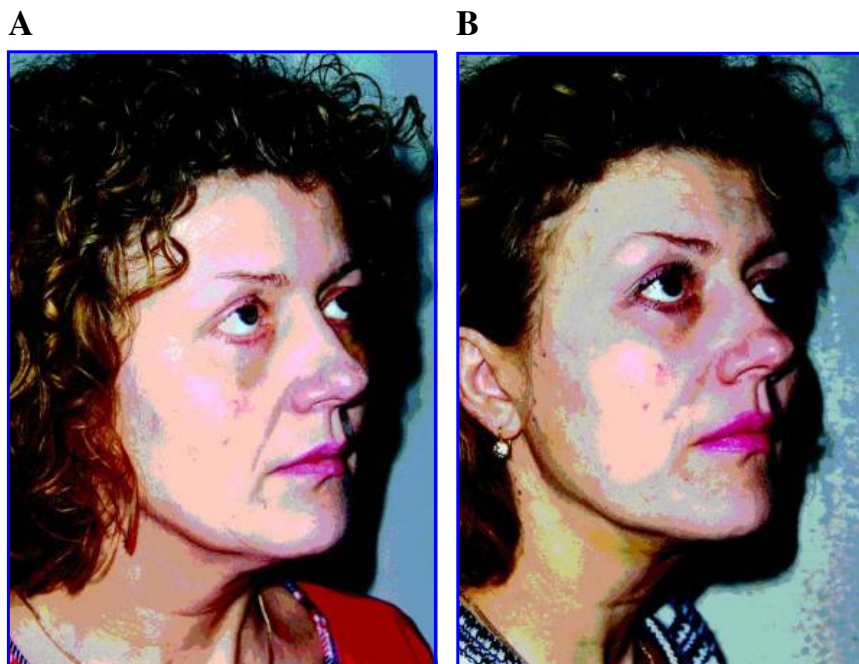


FIG. 7. **A.** Preoperative patient with ptotic bucco-zygomatic regions. **B.** Two weeks postoperatively after insertion of threads and blepharoplasty.



FIG. 8. A. Preoperative patient with ptotic areas of the face including bucco-zygomatic and jawline. B. Three months postoperatively following lifting of the whole face with threads.



FIG. 9. A. Preoperative patient with ptotic bucco-zygomatic area. B. Four months postoperatively following thread lifting of the bucco-zygomatic area, blepharoplasty, and liposuction of the neck.

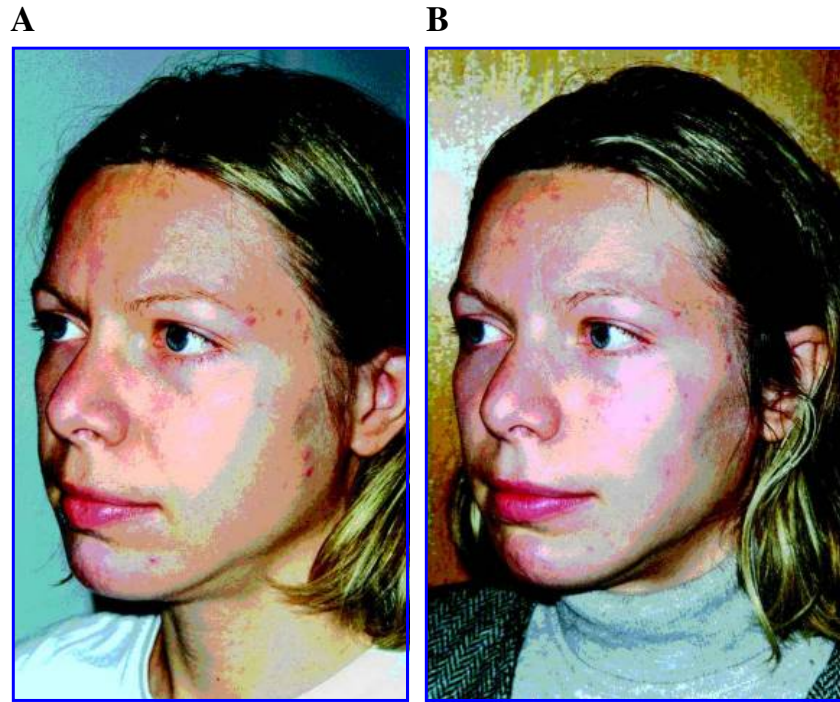


FIG. 10. A. Preoperative view of patient with ptotic bucco-zygomatic areas. B. Six months postoperatively after lifting of the bucco-zygomatic regions.

should be avoided for 2–3 weeks. The final outcome can be visualized on the operating table at the conclusion of the procedure. Indications for use of the thread include any problem causing ptosis of the tissues of the face and neck with flabby, flat face, and poor aesthetic contours. Most often ptotic buccozygomatic areas were treated (62% of patients), since patients seemed to be mainly concerned about this area.

CONCLUSIONS

The use of APTOS threads for lifting ptotic tissues of the face and neck is a simple, conservative procedure that leaves no visible scars. This procedure can be used as an alternative to the classic techniques of facial cosmetic surgery for ptotic tissues and contouring.



FIG. 11. A. Preoperative patient with ptotic areas of the face. B. Eighteen months postoperatively after thread lifting of multiple facial areas.

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