

Surgical thread for cosmetic operations

Technical field

The invention belongs to medicine, to methods and techniques of carrying out surgical and plastic operations. In particular, the invention involves medical materials used in plastic surgery during cosmetic operations.

Background

Surgical threads for cosmetic operations have long been known (Ya. Zoltan, "Surgical technique and conditions for optimal wound healing", "Meditsina", Budapest, 1977).

Threads are made of various materials: metallic, polymeric, biological. The basic characteristics of threads are as follows: strength, smooth surface, density, biological inertness. Threads must be well tied into knots, and should not loosen up.

Depending on the type of the operation, various surgical threads are used (International Conference "Present-day approaches to development of effective dressing and suturing materials and polymeric implants", Moscow, 1995, Institute of Surgery named after A.V. Vishnevskii). These are the threads made of tantalum, golden, silver, nickel and other wires. Non-metallic threads are usually made of Dacron, nylon, kapron, polypropylene, vicryl, polysorb, etc. Monolithic, plaited, twisted threads are used.

Basic characteristics of threads: strength, smooth surface, density, biologically inert nature. Also used are threads with angled protrusions providing unidirectional penetrability through tissues (patent DE 1810800 dated June 4th, 1970 A614 17/00). They are used for suturing of wounds and various viscera in order to accelerate the manipulation, to decrease the operational wound, and to obtain a barely visible scar.

Correction of facial wrinkles with decreased and lost skin elasticity, soft-tissue ptosis (sagging) remains one of the main problems of cosmetic and aesthetic surgery. Using the above-mentioned surgical threads does not allow of obtaining the desired aesthetic effect. Their disadvantage is in that they can fix soft tissues in the existing position, however providing no lifting effect, therefore their use is inefficient for flabby and sagging soft tissues.

The closest by the essence of the claimed invention are the surgical thread (patent DE 1810800 A61L 17/00, 4.06.1970), surgical thread (patent WO 98/52473, A61B 17/04, 26.11.98) used for closure of open wounds in surgical operations, and surgical thread for cosmetic operations on the application PCT/RU99/00263.

These threads bear barbs of their surface, with the barbs aimed at providing the purpose of these threads.

Along with it, the unidirectional positioning of the barbed protrusions on the surface of these threads does not allow of carrying out the manipulation of lifting, and, accordingly, cannot provide lifting and reliable fixation of soft tissues in a new position, which is especially important for obtaining stable and long-lasting results. It is also impossible to use for these purposes the barbed-protrusion threads with the opposite position thereof from the middle of the thread, since they are fixed to needles from one or both sides, and the thread can be pulled within tissues only to the middle of the thread.

Disclosure of the invention

The mission assigned could only be accomplished by the fact that the surgical thread for cosmetic operation should be made of a metallic (other than steel), polymeric, or biological material, to contain sequentially positioned along its length inclined protruding dents which, according to the invention, are made in the form of conical barbs with pointed, flexibly elastic ends; with the barbs being positioned on one or several sides of the thread's section (e.g., in a staggered order) with successive alternation of the barbs' inclination. This thread is fixed to a surgical needle, and is inserted into soft tissues through the orifice of the latter.

The direction and position of the protruding dents provides, on inserting the thread into soft tissues, due fixation of the thread, and, respectively, soft tissues.

It is advisable to make the protrusions so that the ends of the protruding dents above the thread be not less than the thread's diameter, with the interval between the protrusions amounting to not more than two diameters of the thread.

As a variant, the thread may be manufactured as having the barbs on its opposite sides, with the directions of their inclination being opposite, as well.

Another variant is a thread bearing protruding dents on both sides with alternating directions of their inclination.

A third variant is a thread on which the barbs made from one or several sides are directed oppositely to each other from the thread's middle.

Yet another variant is a thread on which the protruding dents are made in the form of needles with muffs fixed on the thread with the alternating direction of the needles' inclination.

Brief description of figures

Hereinafter, the proposed invention is explained by specific examples of its practical application, and the respective drawings showing the following:

Fig. 1 shows a variant of a surgical thread with alternating protruding dents made on the four sides along its section.

Fig. 2 shows a variant of a surgical thread with inclined protruding dents made on two sides of the thread.

Fig. 3 depicts a variant of surgical thread with an alternating inclination of the protruding dents made on two opposite sides.

Fig. 4 shows a variant of a surgical thread with alternating inclined protrusions made as needles with muffs.

Fig. 5 shows a variant of surgical thread having dents made on two sides and directed oppositely to each other from the middle of the thread.

Fig. 6 illustrates a method of subcutaneous insertion of the thread with the help of an aspiration needle.

Fig. 7 shows the position of the surgical thread when the facial soft tissues are lifted.

Fig. 8 shows a lateral cut of tissues and surgical-thread-mediated fixation thereof.

Basic variant of implementing the invention

Surgical thread (1) for cosmetic operations with sequentially arranged along its length inclined protruding dents (2) in the form of barbs (3) with pointed flexible-and-elastic ends (4).

On Figure 1, the barbs are positioned on the four sides of the thread in a staggered order with successively alternating barbs' inclination (3; 5).

Elevation (6) of the ends (4) of the barbs above the thread should be not less than its diameter, and the interval (7) should be not less than two thread's diameters. When performing the protruding incisions (3; 5) shown in Figures 1, 2, 3 and 5, it is preferable to make the size of the base (8) of the dent equal to $1/3$ of the thread's diameter.

On Fig. 4, the inclined protruding incisions of the thread are made in the form of needles (9) with muffs (10) for their fixation on the thread. All the mentioned parameters of the protruding incisions and their execution are dictated by the necessity of preserving the rupture strength of the thread and providing due flexibility/elasticity of the protrusions' ends for good engagement and fixation of subcutaneous tissues.

Fig. 6 shows a scheme of pulling the thread under flabby baggy region of soft tissues of an ageing face for the purpose of its lifting. An aspiration needle (11) is used to pierce the skin of the temporal portion, then it is moved subcutaneously over the previously marked contour, and is brought to the surface in the region of the nasolabial fold. Through the needle's orifice, the barbed thread is inserted, to impart the skin and soft tissues a lifted position.

Fig. 7 shows a scheme wherein the needle is withdrawn, while the thread is left, maintaining a lifted position of the tissues, since the dents prevent from their slipping down, the ends of the thread (12) extend beyond the surface of the skin.

Then, the thread's ends are cut off from the both sides near the skin surface, and submerged subcutaneously. In this case the whole region of the ptosed soft tissues is uniformly lifted, thus smoothing out the wrinkles and skin folds.

Fig. 8 shows a longitudinal cut of a soft-tissue region – that of skin (13) and subcutaneous fat (14), wherein the thread is fixed.

Several such threads pulled subcutaneously through the necessary regions of the ageing face, do make a rejuvenating effect. When the threads with a lifting effect are used, there is no need in carrying out surgically severe operations such as rhytidoplasty, or liposuction.

Manipulations using such threads are simple and bloodless, with no scars left. They can be carried out in outpatient conditions under local anaesthesia, and a short rehabilitation period.

Practical applicability

The invention can widely be used, as indicated, in various cosmetic operations. Besides, it may also be used in other surgical operations.

References

1. Patent DE 18108-00, A61L 17/00 publication 4.06.1970 (prototype)
2. Patent WO 98/52473, A61B 17/04 publication 26.11.98.
3. Patent DE 4302895 C2 A61L 17/00 publication 04.08.94.
4. Ya. Zoltan "Operational technique and conditions of optimal wound healing"
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8. EP 0428253 A1, 22.05.91.
9. US 5222976 A 29.06.93.
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11. Application PCT/RU 99/00263. 2907.99.
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development of effective bandaging, suturing materials and polymeric
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Formula of the invention

1. Cosmetic-purpose surgical thread (1) made of a metallic, polymeric, or biological material, containing sequentially arranged along its length inclined protruding incisions, differing in that the protruding dents (2) are made in the form of conical barbs (3) with pointed flexible and elastic ends (4), with the barbs (3; 5) being positioned from one or several sides of the thread (e.g., in a staggered order) with a successively alternating inclination thereof.
2. A surgical thread (1) for cosmetic operations, according to item 1, differing in that the elevation (6) of the ends (4) of the protruding incisions (2) above the thread amounts to not less than its diameter, with the interval (7) between the protrusions being less than 2 diameters of the thread involved.
3. A surgical thread (1) for cosmetic operations according to item 1, differing in that the protruding incisions (2) of the thread are made on two opposite sides, with the direction of their inclination being opposite, as well.
4. A surgical thread (1) for plastic operations according to item 1, differing in that the protruding incisions are made on two sides with an alternating direction of their inclination.
5. A surgical thread (1) for cosmetic operations according to item 1, differing in that the protruding incisions made on two sides of are directed oppositely to each other from the middle of the thread.
6. A surgical thread (1) for cosmetic operations according to item 1, differing in that the protruding incisions of the thread are made in the form of needles (9) with muffs (10) in order to fix them on the thread with alternating directions of the needles' inclination.