Methods of Retaining the Suture in a Sub-Cuticular Stitch Using Non Absorbable Suture – Innovations and Diversity of Techniques

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Abstract Subcuticular sutures have been extensively used for closure of wounds, particularly when good cosmesis is required. Both absorbable and nonabsorbable sutures are used in subcuticular sutures. Nonabsorbable sutures have some distinct advantages over absorbable sutures from cosmetic point of view, when used in subcuticular sutures. The challenge remains in keeping the nonabsorbable suture secure and in situ. We present six different methods of securing the suture in position while closing the wound with a nonabsorbable suture (2-0/3-0 polypropylene, polyamide, or polyethylene).

Keywords Subcuticular sutures · Nonabsorbable · Suture securing

Introduction

Subcuticular sutures have been extensively used for closure of wounds, particularly when good cosmesis is required. This elegant, totally intradermal running suture, first described by Halsted, leaves behind practically no suture mark on the skin. Both absorbable and nonabsorbable sutures are used in subcuticular sutures. But nonabsorbable sutures have some distinct advantages from cosmetic point of view, as compared to its absorbable counterpart. There is significant reduction in scar stretching and decreased scar

width [1]. But the challenge remains in keeping the nonabsorbable suture secure and in situ.

We present six different methods of securing the suture in position while closing the wound with a nonabsorbable suture (2-0/3-0 polypropylene, polyamide, or polyethylene). In case of subcuticular technique with absorbable suture, the whole suture remains buried under the skin [2], but when nonabsorbable suture is used, two issues have to be kept in mind: the skin should remain apposed properly despite external tension and disrupting factors, and it should be possible to remove the suture easily from the wound after 5–7 days with minimum disruption of the thread or the wound.

The procedures described here are very simple, safe, and easy to follow, and the result after 4 weeks is excellent from the point of cosmesis.

Materials and Methods of Suture Fixation

We present six different methods of retaining the external thread in subcuticular stitch with a nonabsorbable material.

Method 1: Free Side Knot Method (Fig. 1)

In this method, the two ends of the thread are brought out of the wound from two extreme ends. Two knots are made on the two extreme ends, which are not buried under the skin or attached to the skin. The patient may apply local dressings himself on a daily basis as this suture is very easy to handle

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Fig. 1 Free side knot method

and very supportive if multiple knots are applied at the side knot.

The two side knots must be strong enough to hold the thread under all disrupting factors and should not slip under any circumstances. The outcome is excellent.

Method 2: Tube Fixation Method (Fig. 2)

In this method, first a stretch of a plastic tube is taken slightly shorter in length than that of the wound. It is divided into two equal halves.

After the two ends of the thread are brought outside by the extreme ends, each end is inserted in the divided plastic tube and brought out through the other ends of those tubes. Then the two free ends are tied together over the midpoint of the original wound so that the thread remains under adequate tension. The advantage

of this method is that there is no need of any occlusive dressing and the patient can himself apply antibiotic ointments on the wound for 5–7 days till the sutures are removed.

Method 3: “W” Method (Fig. 3)

In this method, there is no need of a knot to hold the stitch in position. The two ends of the thread are brought outside the wound by the usual procedures. Two bites are taken in the adjacent skin one after another in the same axis, and the free ends are cut flush to the skin. The tensile strength of these two bites taken in the adjacent skin is sufficient to hold the thread in position.

While removing the suture after 5–7 days, first the mid-point of the “W” is taken out with one blade of a non-tooth forceps and then the total thread is taken out.

Fig. 2 Tube fixation method

Ends are buried
under skin

No Need Of Knot

W - Method

Fig. 3 “W” method

Fig. 4 Ring method

Ring Method

Pad Cover Method

Fig. 5 Pad cover method

Fig. 6 Free side tube fixation method

Free side tube fixation method

In this procedure, the local dressing should be done by medical personnel as the patient may inadvertently take out the ends of “W” by excessive pull while dressing the wound.

Method 4: Ring Method (Fig. 4)

In this method also, there is no need of a knot. After bringing the two ends of the suture out of the wound through the two extreme edges, two rings are made and the two free ends of the ring are buried under the adjacent skin. The tensile strength of the ring is sufficient to hold the stitch in position and no knot is required.

Local dressing should be done by medical personnel as there is a chance of displacement of the ring due to absence of a stay knot.

Method 5: Pad Cover Method (Fig. 5)

In this method, the two ends of the suture are brought out through the two extreme ends of the wound. The main wound is covered by a sterile pad or cover strip after application of antiseptic ointment over the wound, and the two free ends are tied with each other over the cover strip. The cover strip acts as a barrier between the wound and the external suture. After 2 days the padding is removed, local dressing is applied, and the wound is covered again or left open.

The daily dressing has to be done by medical personnel as the patient may tear the fine external thread while pulling out the dressing from beneath the suture.

Method 6: Free Side Tube Fixation Method (Fig. 6)

This method is similar to the first method. But after bringing the two ends of the suture out of the two extreme edges of the wound, each end is tied to a small piece of tube. The tubes are placed at the two extreme ends of the wound so that proper tension and apposition is maintained.

This is the safest method as there is no chance of loosening of the thread or displacement of the apposed skin margins despite mishandling. The wound can be left open and self care by the patient is possible.

Conclusion

Thus, we have presented six different methods of retaining the nonabsorbable suture in position during subcuticular suturing. The final choice of method and its performance lies upon expertise and personal preference of the surgeon.

References

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