A Modified Surgeon's Knot: Useful for Colo-Rectal, Upper GI and Pelvic Operations

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Abstract There are several techniques and variations described for tying a Surgeon's knot, all with the intention of getting a secured and square knot. A new, safe, quick and scientific approach to making a Surgeon's knot is presented here. Three basic techniques have been described in the literature for tying a Surgeon's knot: using the instrument, one-handed technique and two-handed technique. A two-handed technique for putting the initial double throw in a Surgeon's knot is described here. The number of throws can be increased as the situation demands. The basic idea is similar to the knotting steps described using an instrument, usually the needle holder. Two fingers of one hand are used in a similar fashion as the tip of needle holder in making the knot. This technique is simple, rapid and secure in making the initial double throw, and the subsequent knotting can be done as described in the literature. The advantage of this technique is that the number of throws can be increased using the same steps. This method is simpler and less time consuming compared to the existing methods.

Keywords Surgeon's knot · Double throw · Friction knot · Double handed · Secure knot

Background and Aim

A Surgeon's knot is a modified reef (square) knot. The initial double throw of a Surgeon's knot adds more friction and

makes it more secure. There are many techniques and variations described in the literature, all with the intention of achieving a secure and square knot [1, 2]. The author describes a new, safe, quick and scientific approach to making a Surgeon's knot

Methods

Three basic techniques have been described in the literature for surgical knot tying: (1) with instrument, (2) one-handed technique and (3) two-handed technique. A two-handed technique for putting the initial double throw in a Surgeon's knot is described here.

The initial double throw is completed by a single manoeuvre so that a Surgeon's knot can be achieved in a quicker, safer and easier way. The rest of the Surgeon's knot is completed as normal. The number of throws can be increased as the situation demands.

The basic idea is similar to the knotting steps described using an instrument, usually the needle holder. Two fingers of the right hand (middle and ring fingers) are used in a similar fashion as the tip of the needle holder in making the knot. The author is describing the method for a right-handed surgeon. Contrary to the usual way of a right-handed surgeon using the left hand for knotting, the author recommends that the right hand be used as the knotting hand in this method for ergonomic reasons. The reader should compare this method to the instrument tie and assume that the right hand is used instead of the instrument. Those who are more comfortable with the left hand can adjust accordingly.

The author divides the manoeuvre into three discrete steps.

Step 1: (Formation of the double loop)

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Fig. 1 Initial double throw around the ring and middle finger (held partially separated) after the proximal end is held between the thumb and the index finger

The short/proximal end (white) is grasped between the right thumb and the index finger. The long/distal (red) is held by the left hand and wound twice (to complete the double throw) around the extended right middle and ring fingers, which are held partially separated (Fig. 1). The extended right middle and ring fingers will act as the jaws of the needle holder, as used in instrument tying.

Step 2: (Passing the proximal short end (white) through the double throw loop)

Flex the distal interphalangeal joint of the right middle finger to change the grasp of the short (white) loop from the original, right thumb and index finger to between the right middle and ring fingers (Fig. 2) so that it can be loosely pulled through the double throw loop, thus completing the first double throw of the Surgeon's knot (Fig. 3).

Step 3: (Completion of Surgeon's knot).

The Surgeon's knot is completed in the normal way, although additional knots may be required to secure it.

Fig. 2 For passing the proximal end through the double loop, it is being transferred from between the thumb and the index finger to between the middle and ring finger

Fig. 3 First double throw of the Surgeon's knot is done by passing the proximal end loosely through the double loop, and the Surgeon's knot can be completed in the usual way

Result

The technique as described is simple, rapid and secure in making a double throw, and the subsequent knotting can be done as described in the literature. The advantage of this technique is that the number of throws can be increased using the same steps. With practice, as with any other acquired skills, the technique will begin to seem automatic and easy to perform.

Conclusions

The purpose of the Surgeon's knot is to increase the friction on the suture material with an initial double throw and to decrease the risk of slipping until a secure square knot is completed. It is used in tying vital structures like blood vessels and also when using monofilament sutures.

This novel method of a Surgeon's knot is simpler and less time consuming compared to existing methods. The throws can be increased to any number as required without compromising time and simplicity, thus “making assurance doubly sure”!!

Conflict of Interest None.

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References

1. Arias J, Aller MA, Arias J (2000) A new technique for tying the surgeon's knot. *Eur J Surg* 166(7):577–8, PMID: 10965839
2. Troeng T (2001) A new technique for tying the surgeon's knot. *Eur J Surg* 167(2):158, PMID: 11266261