

Surgical Technique – Tying Sutures for Atraumatic Removal

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1. Abstract

We present a technique for tying sutures which results in a knot which can be undone and suture removed with minimal trauma. This technique can be used when absorbable sutures are contra-indicated or unavailable, but when suture removal would otherwise require anaesthetic or cause distress to the patient. This is more likely to be of use in children and young patients, but may be useful in adults as well.

2. Article

The art of suturing is unequivocally important in wound management & scar outcome. The use of sutures in children, especially young children, can be challenging, possibly requiring a general anaesthetic if the use of local anaesthetic cannot be tolerated to place the sutures. Removal of sutures can also be distressing and painful for children, and adults, if the knot becomes buried for any reason. Finer sutures can be more challenging to remove, and in some instances may require general anaesthetic for removal.

The use of dissolvable sutures can offset this issue; however dissolvable sutures may not be appropriate for use in every case. As such, we propose a technique for tying sutures to allow a less traumatic removal at the appropriate time.

Our technique begins by applying a simple interrupted suture. The knot tying begins in much the same way, with two throws around the needle holder. At this stage, when tying conventionally, the surgeon would grasp the “short end” of the suture, and pull all the way through. In our proposition, we advise grasping the “short end”, but closer to the wound, and pulling through only enough to create a small loop before tightening, and then tying further throws of the suture onto the loop. At this stage the “long end” of the suture (with needle attached) can be cut short. Simple wound closure strips can be applied to prevent accidental self-removal.

Once the sutures are ready to be removed, all one need do is simply pull on the remaining “short end”, to unravel the knot, with no need to cut the stitch.

This technique is illustrated in the supplementary images & demonstrated in the supplementary video. A video of a conventional, simple interrupted suture is attached for comparison.

The use of absorbable sutures can bypass the issues encountered in suture removal. However, absorbable sutures may not always be available, or appropriate, for example in the case of an infected wound, or known allergic reactivity to absorbable sutures.

We hope this technique will be useful for others in treatment of all patients, including children.

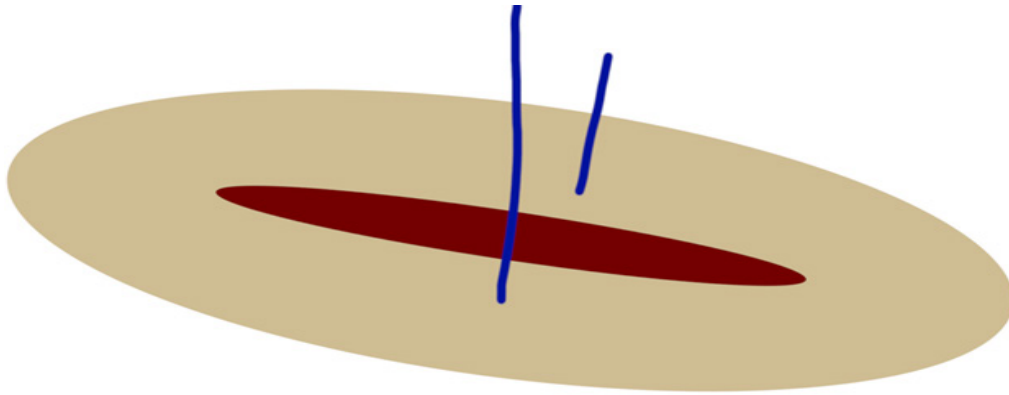


Figure 1

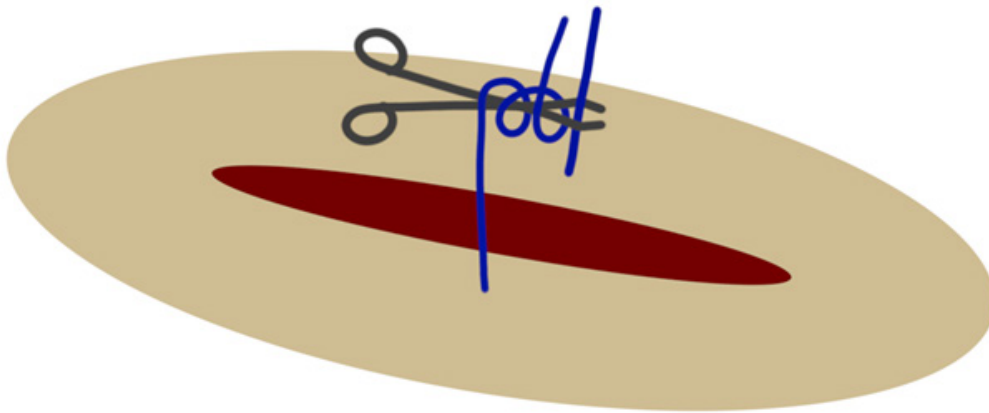


Figure 2

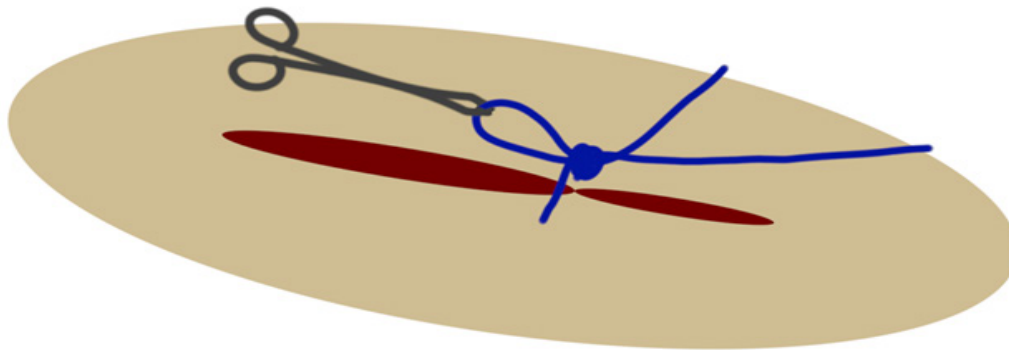


Figure 3

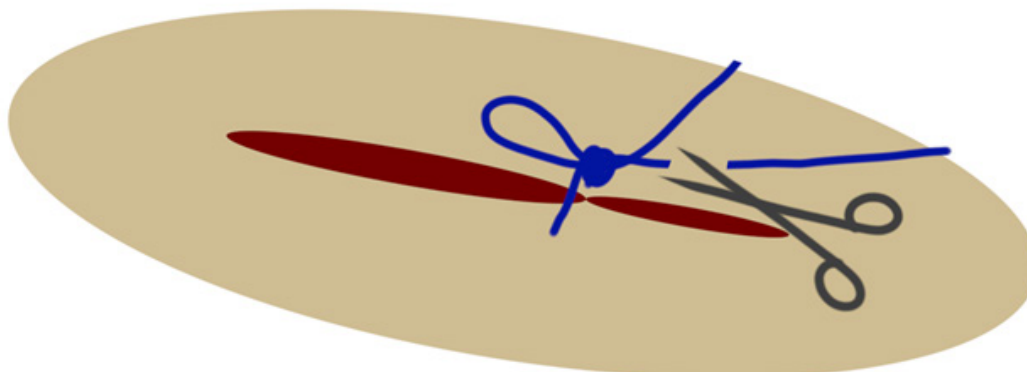


Figure 4

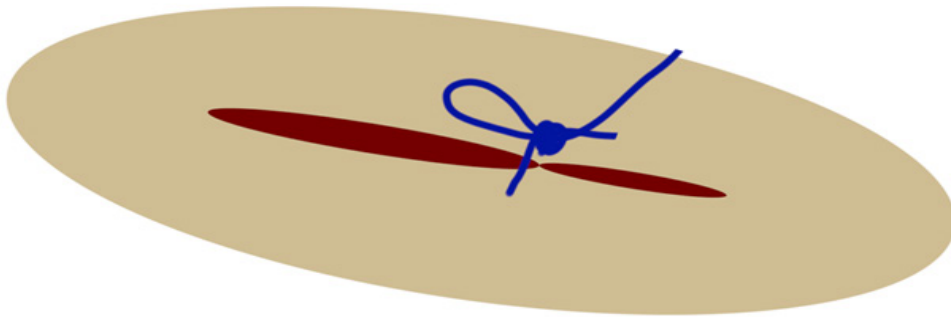


Figure 5

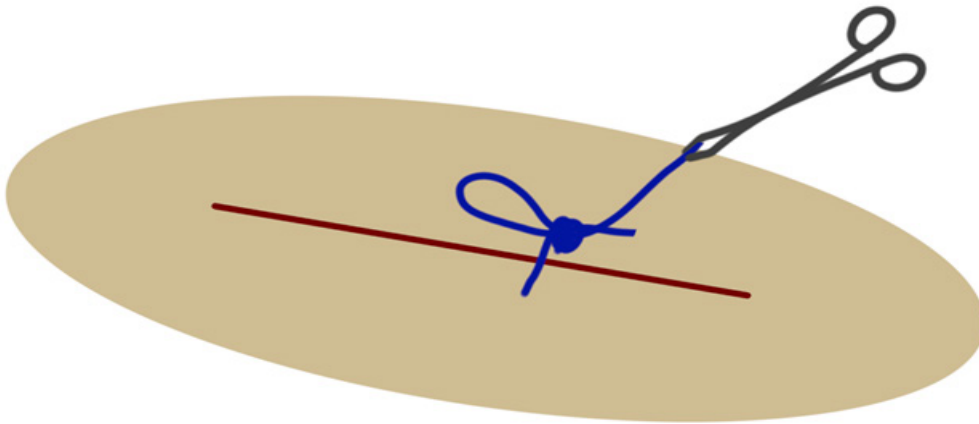


Figure 6

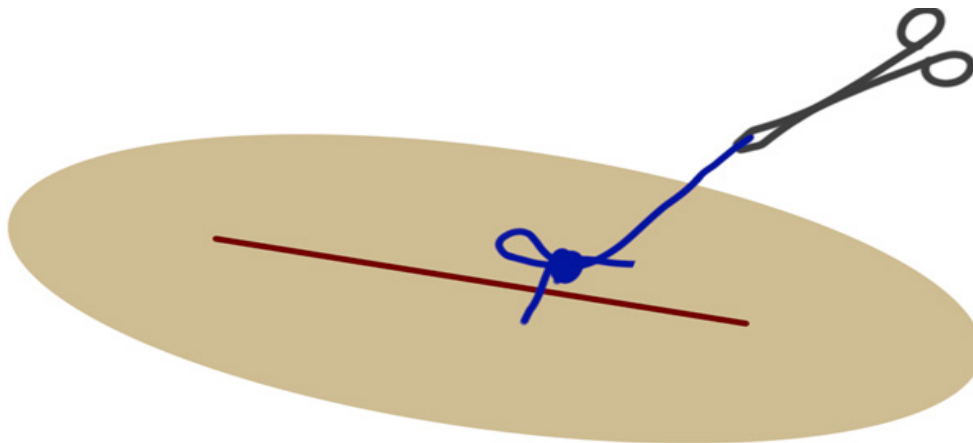


Figure 7

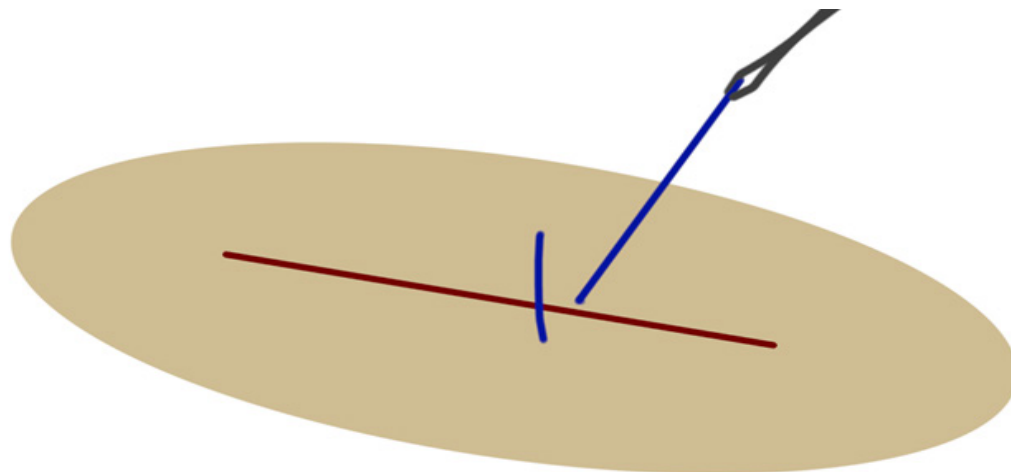


Figure 8