



Technical Notes

Colored ligature: Trivial but innovative modification

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ABSTRACT

Background: Vascular ligation and its detachment remain a necessary skill for a surgeon. We often use two threads of the same color to ligate a vessel. However, some problems (grasping the mixed-up threads and/or difficulty in releasing the entanglement) may occur while using same colored ligatures. To solve these problems, we devised to use ligatures of different colors, and here, we present this ingenious idea.

Methods: When a vessel is encountered that needs to be cut, we pass two different colored threads behind it.

Results: We can grasp the two threads without mixing them up. In addition, in case of entanglement, unwinding of the entangled threads is quicker. We then finally tie a knot with these threads and cut the vessel visible between them.

Conclusion: Using different colored ligatures enhance surgical convenience in the operating room.

Keywords: Colored ligature, Surgical comfortability, Surgical skill, Vascular ligation

INTRODUCTION

Vascular ligation and division forms a fundamental surgical skill for a surgeon, since inadequate ligation of vasculature during surgical procedure could lead to clinically serious intra- or postoperative hemorrhagic complications.^[3] The procedure can be divided into some basic steps: (1) the surgeon and assistant grasp the ligature passing behind the vessel. (2) The surgeon and the assistant tie a knot with the grasped threads. (3) The vessel between the knots is divided using scissors. While performing an operative procedure, the following problems may arise when two threads of ligature of the same color are used. First, the surgeon and the assistant may get confused which ligature to grasp and may sometimes hold the wrong thread. Second, even if they held the correct ligature, on entanglement, it would take longer to unwind the threads.

To the best of our knowledge, the use of different colored threads for ligation of vasculature and reducing the complexities and time taken for such procedures has not been described elsewhere. Very few studies have focused on ways to improve the visibility of surgical materials such as surgical threads or needles.^[1,2,4] The purpose of this technical note is to introduce an ingenious idea; colored ligature, to identify and grasp the correct thread easily and to quickly unwind threads in case of disentanglement.

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ILLUSTRATIVE CASE

A 75-year-old man diagnosed with a symptomatic internal carotid artery stenosis underwent carotid endarterectomy to prevent recurrent stroke in our hospital. During the procedure, we identified several facial veins that crossed the surgical field. We dissected around the facial vein and passed two threads of different colors (white and black) behind the vein with a *Peang mosquito* [Figure 1a].

The white and black ligatures were grasped by the surgeon and the assistant respectively without mixing them up. Even if the grasped threads got entangled midway [Figure 1b], the different colors of the thread allow the surgeon to instantly understand the action of unraveling the entangled thread. After ligation, the vessel was cut between the knots.

DISCUSSION

This small ingenuity of using different colored ligatures is advantageous. The surgeon and the assistant can instantly determine which thread should be grasped [Figure 1a].

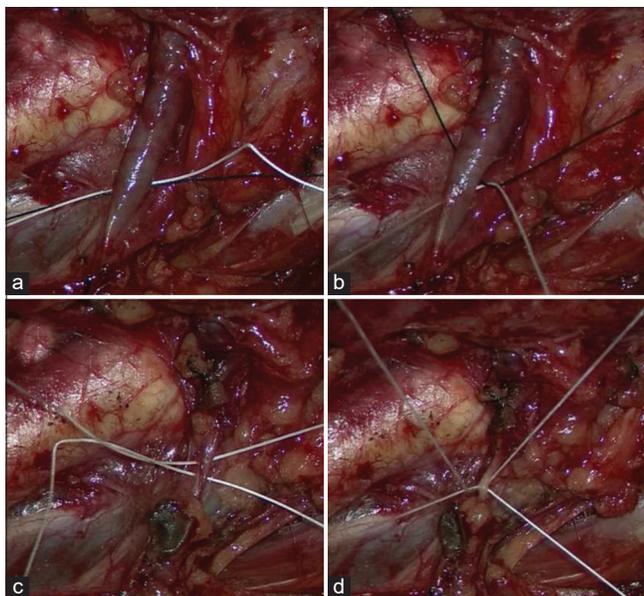


Figure 1: Intraoperative photographs of the illustrated case. (a) A photograph showing different colored ligatures passing behind the facial vein. We can instantly identify which ligature should be picked up. (b) A photograph showing the grasped ligatures in an entangled position. We can figure out the direction to follow to unwind the ligature. (c) A photograph showing same colored ligature passing behind the vessel. We could not identify which ligature should be picked up. (d) A photograph showing that the grasped ligatures entangled midway. We could not appreciate the direction to following order to unwind the ligature.

In contrast, on using same colored ligature, it took time to decide which ligature end should be grasped and often the wrong one was held [Figure 1c]. We could easily unwind the ligatures when they got entangled [Figure 1b].

On the other hand, using the same colored ligature, we could not determine in which direction to move so as to unwind the entangled ligature. This often would make matters worse by causing more entanglement [Figure 1d].

Of course, in practice, the surgical time saved by this ingenuity is trivial. However, such trivial ingenuities are necessary for a surgeon to proceed without getting irritated.

CONCLUSION

Using different colored threads improve surgeon comfort during surgery.

Ethical approval

The publication of this case report was approved by the Ethics Committee of Saiseikai Shiga Hospital (Permission number: 402).

Declaration of patient consent

Institutional Review Board permission obtained for the study.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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