

A groundbreaking new suturing device

The Excalibur

Abstract

Background: Laparoscopic knot tying can be stressful. We reported two simple techniques, known as the Thumbs up! knot and the Tornado knot. We have further refined these procedures with the development of a new needle holder, called the Excalibur suturing needle holder.

Materials: This forceps differ from most conventional forceps in that the hinge is designed to stick out. The large hinge is stored out of the way when the forceps are closed, to prevent the thread accidentally catching.

Results: The thread is hooked on the projected hinge, which resembles the heel of a high-heel shoe. By using this forceps, the laparoscopic knot tying becomes easier for not only well experienced but also less experienced surgeons.

Conclusions: The Excalibur, with its high heel, can complete knots with simple straight-line motion, making knot tying easier. This forceps will help reduce the stresses associated with intra-corporeal knot tying.

Key words: Knot tying — Suturing — SAGES

Laparoscopic knot tying can be stressful [1]. To mitigate this stress, many knot-tying methods and devices have been developed [2]. We previously reported two simple techniques known as the “thumbs up! knot” and the “tornado knot” [3]. We have further refined these procedures with the development of a new needleholder called the Excalibur suturing needleholder.

The Excalibur suturing needleholder differs from most conventional forceps in that the hinge is designed to stick out. The suture is hooked on the projected hinge, which resembles the heel of a high-heel shoe. The large hinge is stored out of the way when the forceps is closed to prevent the suture from catching accidentally (Fig. 1).

The method of laparoscopic knot tying by the Excalibur is quite simple, and needs no complicated depth perception.



Fig. 1. The Excalibur differs from most conventional forceps in that the hinge is designed to stick out.

- *Step 1: The heel is projected out by opening the jaw of the Excalibur. It is then crossed on the long tail. The long tail is hooked and drawn in by the heel.
- *Step 2: The Excalibur then is rotated counterclockwise without the thread being caught by the opening jaw. The long tail is raised by the partner forceps and hooked with the high-heel hinge of the Excalibur.
- *Step 3: The Excalibur next is rotated clockwise to hook the thread by the side of the opened jaw. At this time, the suture is completely hooked and controlled with the projected hinge.
- *Step 4: The Excalibur is rotated until the proper loop is formed. The long tail of the thread is moved with the left forceps under the tip of the Excalibur. Now, the single loop is coiled around the Excalibur. The heel is stored by closing the jaws of the Excalibur to prevent tangles of the thread.
- *Step 5 The knot is completed by picking up the short tail and drawing it through the loop.

The Excalibur offers the best control of the suture. The motion of knot tying with this forceps is very simple and easier than with other forceps. The Excalibur accomplishes it by hooking the thread with its heel. Laparoscopic knot tying will become a still more familiar technique by the use of this new instrument, the Excalibur suturing needleholder.

References

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