Leyla loop: a time-saving suture technique for robotic atrial closure

Leyla Kılıç, Şahin Şenay, A. Ümit Güllü and Cem Alhan

School of Medicine, Department of Cardiovascular Surgery, Acibadem University, Istanbul, Turkey

* Corresponding author. Acibadem Maslak Hospital, Buyukdere Cad. 40, 34457 Maslak, Istanbul, Turkey. Tel: +90-505-5013844; e-mail: aumitgullu@yahoo.com

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Abstract

The longer durations of cardiopulmonary bypass and aortic cross-clamp times remain the disadvantages of robotic or minimally invasive cardiac surgery. For this reason, every small contribution to speeding up these procedures is of the utmost importance. Here, we present a practical, easy and time-saving suture technique for atrial closure. It consists of a hand-made loop at one end of the suture and saves the time otherwise consumed by knotting. It may also be used during conventional or minimally invasive cardiac surgery.

Keywords: Robotics surgery • Minimally invasive surgery • Atrium

Recognition of the significant advantages of minimizing surgical trauma by reducing the incision size has resulted in a substantial increase in the number of minimally invasive cardiac surgical procedures. These advantages include less pain, shorter hospital stays, faster return to normal activities and improved cosmetics. However, one of the major limitations of minimally invasive cardiac surgical procedures is the long cardiopulmonary bypass and cross-clamp times. For this reason, every small contribution to speeding up these procedures is of the utmost importance.

Usually, polytetrafluoroethylene (PTFE) sutures are preferred for atrial closure during robotic surgery thanks to their greater breaking strength. However, knot security is accomplished with at least six-seven throws depending on the knot type [1]. As two separate sutures are used for both ends of the atriotomy, a total of 12–14 knots is necessary, which is quite time-consuming, particularly during the learning period [2].

Here, we present a simple suture technique, which may be applied not only during minimally invasive procedures, but also during conventional cardiac surgery.

TECHNIQUE

A PTFE suture is cut on its midpoint, and a loop is made on the needleless end of both pieces by an assistant or scrub nurse at the operating table (Fig. 1 and Supplementary Video 1). The loop is made with at least six throws, the last three being in reverse order.
to secure the knot. Finally, the loop is checked for stability by pulling the two ends of the suture. At the atrial closure stage of the operation, the needle is initially passed from outside to inside at one side of the atrial tissue and then inside to outside at the other side. The needle is then passed through the loop of the suture (Fig. 2). The suture is then pulled by the patient-side surgeon and secured in place. The atriotomy is then begun to be closed in the usual manner. The other piece of the suture is used at the other end of the atriotomy. Following continuous over-and-over sutures, both ends of the sutures are tied in the usual fashion. This suture technique can be used for both left and right atrial closure.

We also use the same loop technique with a polypropylene suture during minimally invasive atrial closure. It may also be used during conventional surgery. So far, this technique has been used in 35 atriotomies without any complications. Robotic or minimally invasive surgery is advancing towards perfection, not only with technological improvements, but also with small steps taken by each group devoted to this work.

SUPPLEMENTARY MATERIAL

Supplementary material is available at ICVTS online.

Conflict of interest: none declared.

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REFERENCES
