



Custom-made incision protector for thoracoscopic surgery

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Abstract: During video-assisted thoracic surgery, incision protectors protect the operating incision, improve the view of the operation, facilitate specimen removal, and reduce the risk of incision infection. Commercialized disposable incision protectors offer many benefits, but are often associated with a high purchase price. Therefore, in the present study, we introduce a custom-made incision protector for thoracoscopic surgery which is more convenient and inexpensive.

Keywords: Video-assisted thoracic surgery; incision protector; inexpensive

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Introduction

With the development of advanced surgical techniques and instruments, video-assisted thoracic surgery has been broadly applied. During video-assisted thoracic surgery, commercialized disposable incision protectors are widely used. Incision protectors protect the operating incision, improve visibility for the operation, facilitate specimen removal, and reduce the risk of incision infection (1,2). Although commercialized disposable incision protectors offers many benefits, commercialized disposable incision protectors are often associated with high unit cost of about USD 160. Therefore, in the present study, we introduce a custom-made incision protector for thoracoscopic surgery that is more convenient in its utilization and inexpensive.

Technique

Our custom-made incision protector for thoracoscopic surgery comprises two stainless steel wire rings (a keyring can be purchased online as cheaply as USD 0.15, or the ring can be made from vein puncture guide wire) and surgical gloves (*Figure 1A*). First a surgical glove was cut to form a tube. The end of tube with the rubber band was passed through a stainless steel wire ring (30 cm in circumference)

and turned inside-out (*Figure 1B*). The other end of the tube was advanced into another stainless steel ring (26 cm in circumference) and turned inside-out (*Figure 1C*). Thus, a custom incision protector for thoracoscopic surgery was made (*Figure 1D*). Only 3 to 5 minutes were spent on making the protector. When the custom-made incision protector was used, the 30-cm ring was placed intrapleural and the 26 cm in circumference was placed extrapleural (*Figure 2*).

Herein, we also introduce a technique to facilitate shortening the custom incision protector to an appropriate length using four scalp clips (*Figure 3A,B*). Attached to the outside of the incision protector, the four scalp clips can be rolled to shorten the protector to an appropriate length. In addition, condoms can be used instead of gloves to make the custom incision protector (*Figure 3C*).

From 34 cases, there were no reports of incision infections, incision disunions, and tumor implantation at 8 months of follow-up.

Comment

Although commercialized disposable incision protector offer many benefits, they are often associated with high purchase cost. We have also experienced poor elasticity

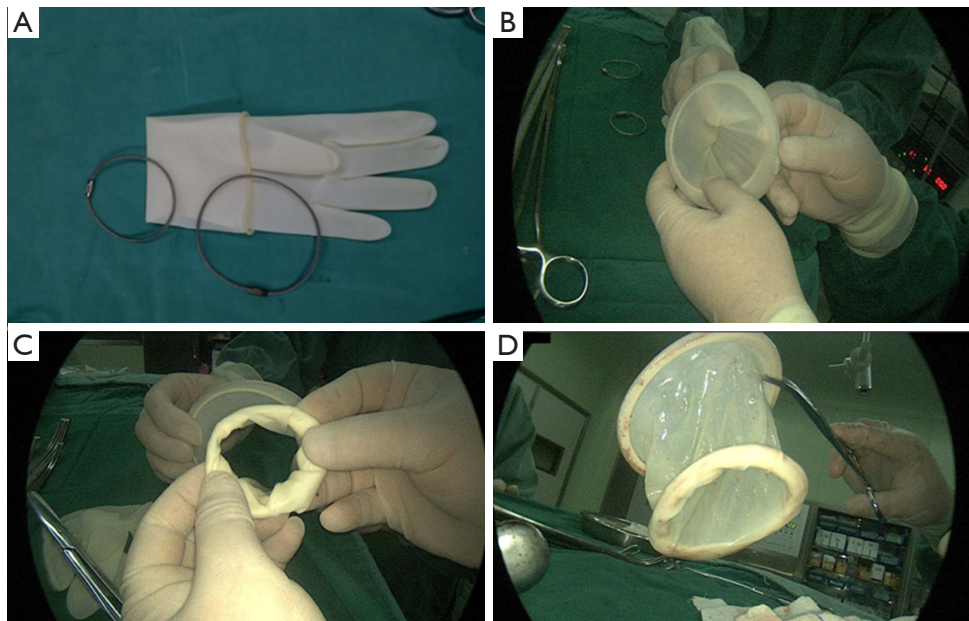


Figure 1 Procedure for making a custom incision protector for thoracoscopic surgery. (A) The incision protector is made from two stainless steel wire rings and surgical gloves; (B) the rubber band end of the surgical glove was passed through a 30-cm stainless steel ring and turned inside-out; (C) the other end was passed through a 26-cm stainless steel ring and turned inside-out once more; (D) the shape of custom-made incision protector.

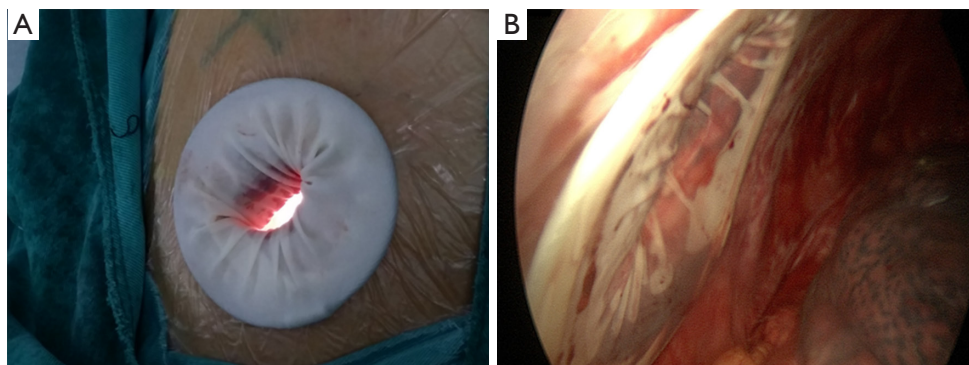


Figure 2 Custom-made incision protector in use. (A) The end with a 30-cm stainless steel ring was placed intrapleural; (B) the end with a 26-cm stainless steel ring was placed extrapleural.

in the two flexible rings of currently used commercialized disposable incision protectors. This made it difficult to place in the intercostal space, particularly in those patients with small intercostal spaces. Therefore, in the present study, we made an incision protector for thoracoscopic surgery that is much more convenient in its utilization and inexpensive.

The custom-made incision protector made from two stainless steel rings and a surgical glove. Assembly is

simple and the stainless steel rings and surgical gloves can be acquired at a low price. Our custom-made incision protector can be made and immediately used in the operating room as long as there are surgical gloves and stainless steel wire available. In addition, the stainless steel wire can be repeatedly disinfected and reused. Thus, the consumption of materials is reduced. Custom-made incision protectors can be widely applied because they are easy to use and inexpensive. The current price of a commercialized

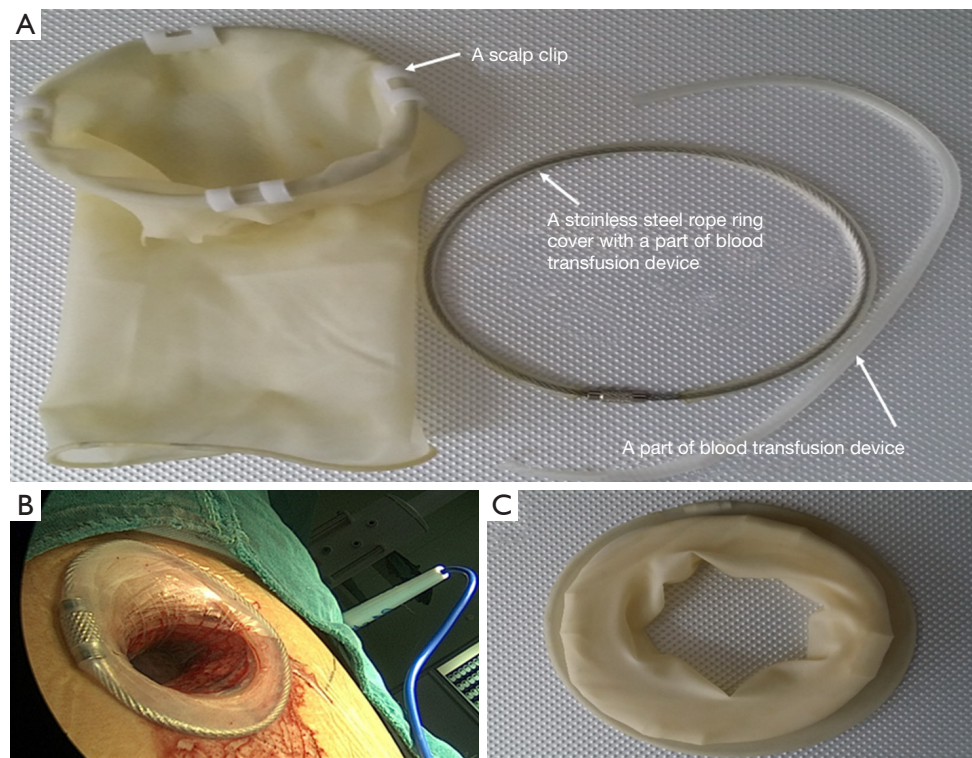


Figure 3 Techniques to facilitate making the custom incision protector. (A) Four scalp clips are attached to the outside of the incision protector; (B) the custom-made incision protector is shortened to an appropriate length; (C) condoms can be used instead of surgical gloves.

disposable incision protector is about USD 160 whereas our custom-made incision protector is approximately USD 1. There is a potential concern that stainless steel wire rings easily detach from the rubber. On the contrary, with our custom-made incision protector we found this does not happen easily. Compared with commercialized disposable incision protectors, our custom-made incision protector provides similar effectiveness at a lower price and with better usability.

Conclusions

Our custom-made incision protector is as effective as commercialized disposable incision protectors but inexpensive and easier to use.

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Footnote

Conflicts of Interest: Both authors have completed the ICMJE uniform disclosure form (available at <http://dx.doi.org/10.21037/vats.2017.03.11>). The authors have no conflicts of interest to declare.

Ethical Statement: The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved. All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee(s) and with the Helsinki Declaration (as revised in 2013). Written informed consent was obtained from the patient for publication of this manuscript and any accompanying images.

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