

VENÖZ KANÜL HATTI KULLANILARAK MEDYAN STERNOTOMİNİN MEKANİK KOMPLİKASYONLARININ ENGELLENMESİ

STERNOTOMİNİN MEKANİK KOMPLİKASYONLARININ ENGELLENMESİ

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ÖZET

Sternal dehisens, kırık, mediastinit gibi medyan sternotominin yol açabileceđi mekanik komplikasyonlar kardiyak cerrahi hastalarında önemli derecede morbidite ve mortaliteye sebep olabilirler. Pek çok farklı ve yeni teknikler veya cihazlar ve korseler sternum stabilizasyonunu desteklemek için kullanılırlar. Bu teknikler operasyonun sonunda veya postoperatif dönemde kullanılır; ama bizim basit yöntemimizin amacı sternumu operasyon süresince koruyarak komplikasyon görülme oranlarını azaltmaktır.

Anahtar sözcükler: medyan sternotomi, cerrahi, komplikasyon, sternum

PREVENTING MECHANICAL COMPLICATIONS OF MEDIAN STERNOTOMY USING VENOUS CANNULA LINE

PREVENTING MECHANICAL COMPLICATIONS OF STERNOTOMY

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ABSTRACT

Mechanical complications of median sternotomy such as sternal dehiscence, fractures and mediastinitis, may cause significant morbidity and mortality in cardiac surgical patients. Many different and novel techniques or devices and corsets are utilized to reinforce the sternum stabilization. These techniques are used at end of the surgery or during postoperative period; but the aim of our simple method is the protection of the sternum during surgery in order to reduce complication rates.

Key words: median sternotomy, surgery, complication, sternum

PREVENTING MECHANIC COMPLICATIONS OF MEDIAN STERNOTOMY USING VENOUS CANNULA LINE

Mechanical complications of median sternotomy such as sternal dehiscence, fractures and mediastinitis, may cause significant morbidity and mortality in cardiac surgical patients. These complications can lead to prolonged hospitalization and sometimes require surgical sternum revision [1]. In high risk patients such as those with chronic obstructive lung disease, morbid obesity (BMI>30), chronic renal failure, diabetes mellitus, chronic steroid use, re-operative surgery, older age, off mid-line sternotomy and osteoporosis, complications of sternotomy may occur more frequently. Although stainless-steel wire closure remains the standard technique for stabilizing the sternum after sternotomy, many different and novel techniques or devices and corsets are utilized to reinforce the sternum stabilization [1-6]. All of these techniques are used at end of the surgery or during postoperative period; but the aim of our simple method is the protection of the sternum during surgery in order to reduce complication rates.

Technique

After median sternotomy, first the sternal bone is examined to assess whether sternotomy is in the midline or off-midline. The structure of the bone is also evaluated for the presence of fragility or inadvertent fractures. A piece of large venous cannula line of sufficient length is taken and it is divided into two equal pieces. Each part is cut longitudinally to form two elastic and soft covers to fit free sternal edges (Fig 1A, B). Initially, the free edges of sternum are covered by sterile clothes or gauze, and after that the pieces of previously prepared venous cannula line are placed on the clothes (Fig 2). Finally, sternum retractor is placed to open the mediastenium and the pieces of venous cannula line remain between the retractor and sternal edges (Fig 3).

Discussion

Postoperative sternal dehiscence with or without mediastinitis is a serious complication of cardiac surgery which may lead to considerable disability. New tools or corsets usually try to prevent sternal separation after surgery; but they can not prevent sternal fracture, smash, damage or costochondral fractures during surgery which may be created by sternal retractor. By using these cannula lines, we consider that the pressure on the free edges of sternum applied by retractor may be distributed along the whole edge of sternum equally.

Thus, when the mediastinum is opened, separation of sternum becomes easier and safer and the fractures that may occur are minimized. Moreover, the technique also increases the success rate of sternal reconstruction using stainless-steel wires or other new tools because of decreased sternal damage during surgery. This may also decrease the use of newly developed sternal constructing tools which in turn decrease the cost. Indeed, one of the main advantages of this technique is very low cost without need of extra tools. The venous cannula lines of the cardiopulmonary bypass tube system are available in all open cardiac surgeries and an appropriate length of the line can be easily cut out. This line is large, soft, elastic and is also thick enough to form a protective cushion between sternum and the retractor. It easily molds around sternal edge due to the initial tubal structure and this makes it a perfect fit for sternal edge. We believe that this technique is a very simple, cheap and effective way of protecting sternal bone during cardiac surgery, especially in those patients with risk factors for sternal complications such as old age, osteoporosis, fragile bones and fractures occurred during sternotomy or removal of sternal wires from previous cardiac operations.

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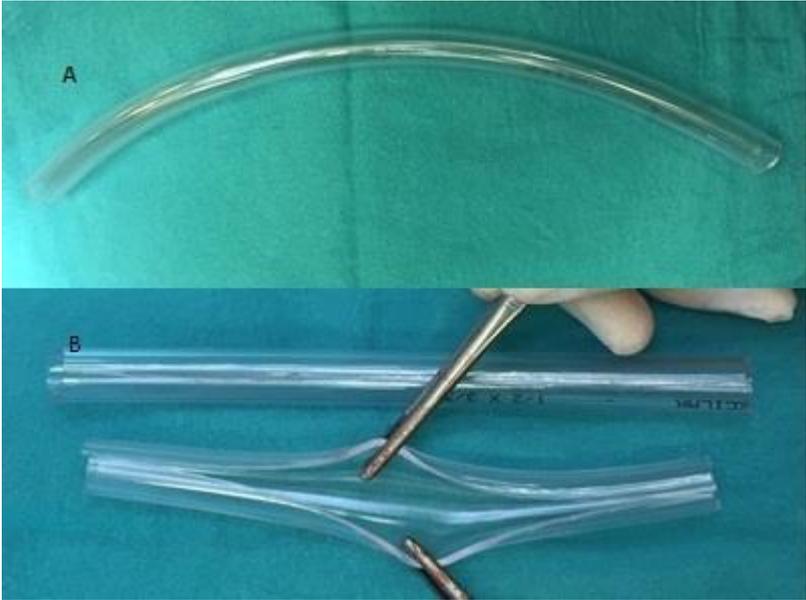


Figure 1. A. Venous cannula line. **B.** Two equal venous cannula line which are longitudinally cut.



Figure 2. The prepared venous cannula lines are placed on the cloths

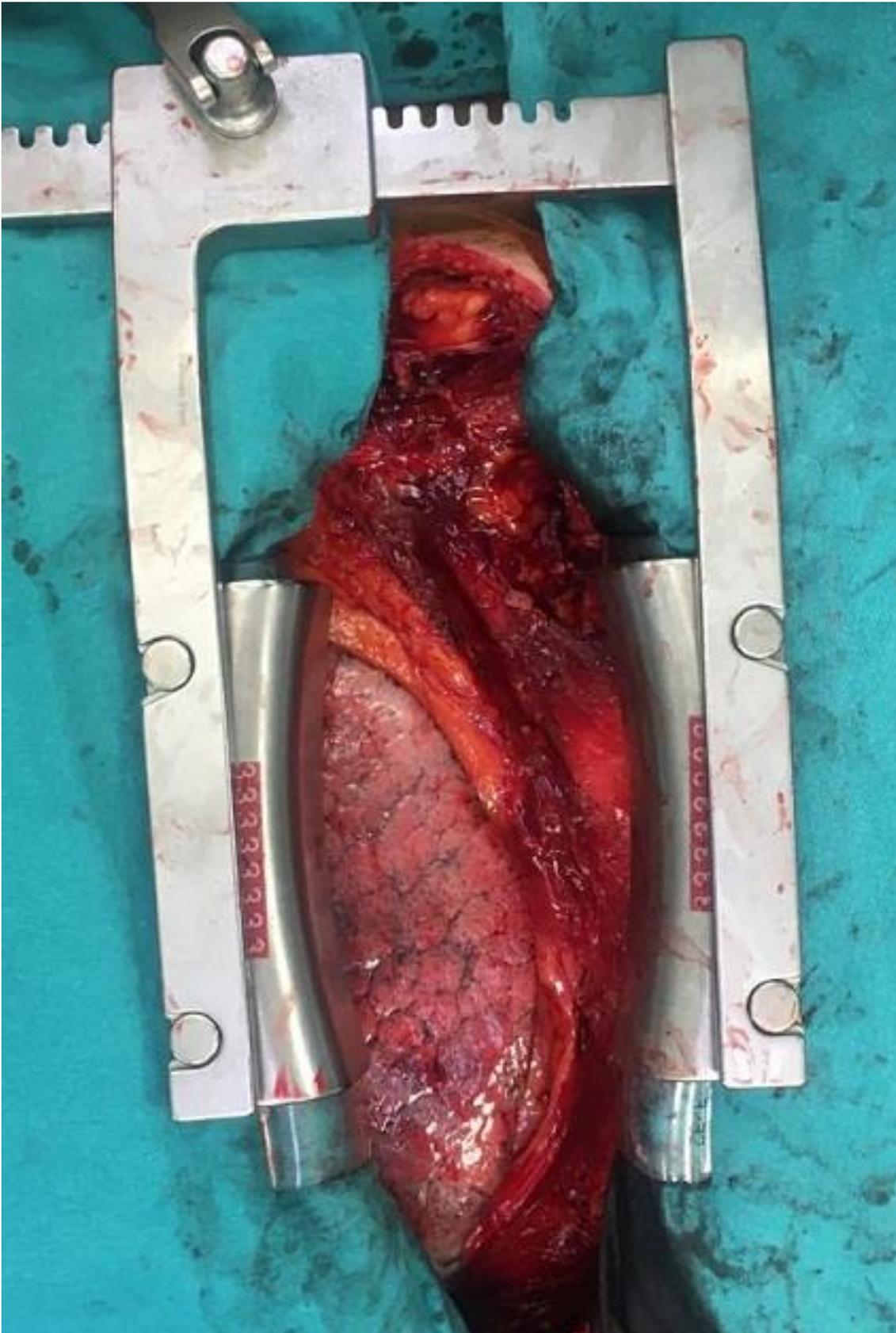


Figure 3. The venous cannula lines are between the sternum retractor and free edges of sternum.