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Bonanno's catheter: A less invasive and cost-effective alternative for drainage of pleural effusion

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Pleural effusion is a common condition in both medical and surgical specialties. Pleural drainage is a method used to remove a collection of air, fluid, pus, or blood from the pleural space to restore normal lung expansion and function. In this context, although tube thoracostomy remains the gold standard, it is quite invasive, requiring significant blunt dissection, and therefore resulting in a great deal of patient discomfort. We suggest Bonanno's catheter as a less traumatic but equally effective alternative. Bonanno's catheter was first designed for suprapubic bladder drainage¹ and has been an important tool for the urologist because of its efficacy, simplicity, and wide range of applications. Its design is therefore well suited for drainage of other serous fluid collection, including pleural effusion. However, it is not suitable for frank hemothorax.

Technique

The patient is preferably positioned at 45° or sitting up, leaning slightly forward. The entry site can be clinically identified by means of percussion of the chest to elicit an area of stony dullness around the midaxillary line. After the skin has been prepared and the chest draped, local anesthetic is infiltrated up to the parietal pleura. The presence of effusion should be confirmed by aspiration with the same syringe as a guide. Bonanno's catheter is assembled as per the instruction kit, and a syringe is attached to one end

Figure 1. Bonanno's catheter and syringe.

(Figure 1). A 3- to 4-mm incision is made in the skin to avoid damage to the catheter tip, and the catheter is inserted gradually while applying constant suction on the syringe. As soon as serous fluid is aspirated, the trocar is held in a static position while advancing the cannula into the pleural cavity. The trocar is removed, and serous fluid should flow freely from the catheter, which can now be attached with the rubber tubing to a conventional underwater drainage system. The catheter is sutured to the skin, and a chest radiograph will confirm the position of the catheter (Figures 2 and 3).

Conclusion

Apart from standard tube thoracostomy, which can be quite invasive and painful,² patients with pleural effusion could also undergo

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Figure 2. Chest x-ray film showing position.

ultrasound-guided pigtail catheter insertion.³ However, the approximate cost associated with insertion of a pigtail catheter under ultrasound control is approximately £106.75, whereas the cost of Bonanno's catheter is £25.74. Pleurocentesis can be achieved with needle aspiration; however, this method does not permit complete drainage and is associated with a high incidence of pneumothorax.³ Bonnano's catheter seems to avoid this problem and enables complete drainage. Our early subjective observation reveals that insertion of this catheter does not cause much pain to the patient during insertion. Therefore insertion of Bonnano's catheter can be safely performed by junior medical or surgical staff without the need for the extensive dissection that is inevitably required during standard thoracostomy.

The principle behind Bonanno's catheter insertion is similar to intravenous cannulation and therefore can be easily taught to junior physicians without the need for radiologic guidance. It offers reliable drainage of simple pleural effusion⁴ and provides a safe, less invasive, and more comfortable alternative to the standard tube thoracostomy.⁵ Importantly, removal of Bonanno's cath-

Figure 3. Chest x-ray film showing position.

eter does not require any purse-string sutures and therefore can be removed by a single nursing staff member without the need for additional assistance. We therefore recommend this novel technique. Prospective studies are warranted to compare its added benefits with those of conventional chest drains.

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