



KEYWORDS: THORACIC SURGERY | CLOTSTOP DRAINS



PD Dr. med. habil. R. Scheubel

Specialist in cardiac and thoracic surgery

Facility

Clinic for Thoracic Surgery, Wangen Specialist Clinics, Waldburg-Zeil Clinics

1 INTRODUCTION

At the Clinic for Thoracic Surgery at the Wangen Specialist Clinics, the use of 30 ClotStop catheters, provided by Medela, was tested in the period from 16.09.2021 to 13.10.2021 as part of an application observational study. The Clinic for Thoracic Surgery at the Wangen Specialist Clinics is certified as a center of competence of the German Society of Thoracic Surgery and as a lung cancer center of the German Cancer Society. The surgical spectrum covers the entire field of thoracic surgery except lung transplantation.

2. PROCEDURE

The ClotStop catheter, size 28 Charrière, was routinely inserted into the pleural space at the end of each operation instead of the 28 Charrière chest drains commonly used in our clinic. The catheters commonly used in our clinic are made of transparent, heat-sensitive PVC. This catheter has numerical depth markings in 2 cm increments for easy and precise positioning. The angled connector can be cut to connect to a funnel connector from a chest drainage system.

In most cases, the operations were performed using the minimally invasive procedure (VATS). A smaller proportion of the operations were performed in the open procedure via anterolateral thoracotomy. A single drain was predominantly created by an intercostal stab incision (N = 17); in five cases, two chest drains were placed. The ClotStop catheters were prepared in a sterile water bath for two minutes before insertion into the thorax in order to activate the anti-adhesive hydrogel polymer coating.

The surgical spectrum at the end of which the ClotStop catheter was inserted into the pleural space ranged from **anatomical resections in bronchial carcinoma to atypical resections, including pleural empyema operations and talc pleurodeses**. Especially in pleural empyema and talc pleurodesis, the risk of drainage clogging due to intraluminal coagulum is increased.

Drainage system:	Thopaz+
Catheter:	28 Fr ClotStop® coated catheters straight and curved
Tube handling:	milking and wiping off in case of blockage

3. RESULTS

Unlike the PVC catheters we usually use, the ClotStop catheter is made of silicone and therefore has a softer consistency. The coating makes it feel more slippery during implantation. Since the ClotStop catheter has a slanted connection connector similar to the one we usually use, the overall handling when implanting the ClotStop catheter was comparable to that of the catheters we usually use. Because the ClotStop catheter is made of softer silicone, care should be taken when securing the catheter to the suture to prevent stenosis by overtightening the fixation thread on the ClotStop catheter.

Subjectively, the ClotStop catheter seemed **less pain provoking than** the harder PVC catheter due to the softer material. Despite the flexibility of the ClotStop catheter, we have not observed any kinking during use.


During the postoperative process, the thoracic drainage system is routinely checked for functionality at appropriate intervals by both nursing staff and medical colleagues. The quality of the pleural secretions and the presence of air fistulas are documented. If coagulation of the pleural secretion occurs in the drainage system, the lumen of the tube is made continuous again by manual milking or rolling out.

This procedure did not lead to clogging of any of the ClotStop catheters used. The duration of use of the ClotStop catheters was between 24 hours and five days.

The ClotStop catheters were removed as usual. Some colleagues complained about the limited lubricity of the catheter compared to the catheter we usually use.

As the ClotStop catheter does not have a numerical depth marking, it was difficult to withdraw the ClotStop catheter because the distance between the skin level and the lateral eyes on the ClotStop catheter cannot be estimated. According to information from Medela, the ClotStop catheters now available on the market have depth markings in 1 cm increments.

Criteria for catheter removal:

 **Fluid amount:** < 300 - 500 ml per day

 **Air leak:** none

3 days minimum for talc pleurodesis and pneumothorax operations

4. DISCUSSION AND CONCLUSION

Overall, however, it can be stated that the ClotStop catheter is a simple chest drain comparable to established products. **Because of the softer consistency, nerve irritation at the site appears to be less severe.** Whether the non-stick coating of the ClotStop catheter reduces the formation of thrombi in the catheter tube must be clarified in a controlled comparative study with the usual PVC catheters.



PD Dr. med. habil. Robert Scheubel

Chief Physician Clinic for Thoracic Surgery, Wangen Specialist Clinics

Am Vogelherd 14

D-88239 Wangen im Allgäu

robert.scheubel@wz-kliniken.de