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Foley Catheter with Non-Deflating Balloon

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Case Report

History

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ABSTRACT

There are many complications of using a Foley catheter. One of these complications is the inability to remove the catheter because the balloon cannot be deflated. A 75-year-old male patient was admitted to the Intensive Care Unit. It was planned to replace the foley catheter with the due to signs of infection. The Foley catheter could not be removed because the balloon of the Foley catheter could not be deflation. The liquid in the balloon was discharged with the help of an injector by entering the balloon valve channel from different places, and the procedure was successful. In intensive care units where the Foley catheter needs to be used for a long time to ensure easy balloon drainage, it should be preferred to inflate it with distilled water instead of saline. It should be kept in mind that there are many invasive and non-invasive solutions to be used in case of failure of balloon deflation in the Foley catheter, and each of these solutions has different complications. We recommend that non-invasive applications that put patients at the least risk and have a low risk of complications should be patiently tried according to invasive applications.

Keywords: Balloon Occlusion, Foley catheter, Urinary non-deflating, Catheterization

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Introduction

Foley catheters are commonly used for urinary drainage and urine output monitoring in patients hospitalized in intensive care units (Hui et al., 2004). The catheter usually has two channels. While one of these channels provides urinary drainage, the other one is used to inflate the balloon, which is used to fix the catheter in the bladder. In the case of long-term use of the catheter, complications such as urinary tract infection, urethral injury, bleeding, catheter leakage, occlusion of the catheter, and bladder spasm may be observed frequently (Khan et al., 1991; Rahul et al., 2017). A rare complication of using a Foley catheter is the failure to remove the catheter due to the failure in balloon deflation.

In this article, Foley catheterization removal technique was discussed based on the catheter case that could not be removed from the bladder due to the failure to deflate the Foley catheter balloon.

Case Report

A 75-year-old male patient diagnosed with Parkinson's disease, chronic kidney disease, coronary artery disease, and previous cerebrovascular disease was admitted to the anesthesia intensive care unit with complaints of cough and shortness of breath. The patient had been followed up and treated for 11 months with a central venous catheter and a Foley catheter on a mechanical ventilator. The patient had a latex-containing Foley catheter, which had been inserted for 43 days. It was planned to replace the foley catheter with the due to signs of infection. The removal of the old Foley catheter for could not be performed due to the failure to deflate the balloon. The valve of the balloon part of the catheter was cut by the urology consultant, and it was attempted to unblock the occluded channel with a stylet, but success was not achieved (Figure 1). Since it was not known exactly at which point the channel was occluded, it was attempted to deflate the balloon by entering it from different parts with the help of an injector, it was not successful. Then, It was planned to deflate the balloon of the Foley catheter by piercing through supra pubic. But, patient's family did not give approval for the invasive procedure. However, in order to avoid invasive procedures, insertion was persistently continued by advancing the needle multiple times from the most proximal point of the catheter. This procedure was repeatedly applied at different levels of the catheter (Figure 2), and finally the catheter was removed by draining the fluid in the balloon (Figure 3).

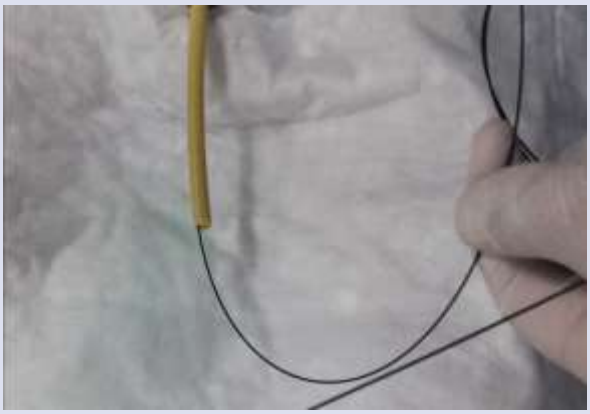

Figure 1. Cutting and Attempting to Remove the Foley Catheter with Guide

Figure 2. Draining the fluid by entering the inflation channel of the foley catheter with the injector

Figure 3. Foley catheter removed

Discussion

In our case, the foley catheter, which was inflated with saline and whose balloon could not be unloaded, was removed by non invasive way without any complications. The failure to remove the Foley catheter due to the failure in balloon deflation is a rare complication (Daneshmand et al 2002; Gregori et al., 2005). A faulty valve mechanism, the malfunction of the inflation channel, or the failure to discharge the liquid due to crystallization of the liquid in the balloon can be mentioned among the reasons for the failure in balloon deflation (Gonzalgo and Walsh, 2003). In our case, the Foley catheter balloon was inflated with saline. While some studies do not recommend inflating the Foley catheter balloon with saline (Daneshmand et al., 2002; Rahul et al., 2017), an invitro study has stated that there is no difference between saline and distilled water (Hui et al., 2004). Long-term use of the Foley catheter and use of saline for inflation caused the channel to be blocked. Many methods have been developed to remove Foley catheters with non-deflating balloons. These methods include non-invasive and invasive practices, such as passive aspiration from the balloon port, cutting the catheter, passing a wire through the balloon port, over-inflation of the balloon, injection of ether or chloroform through the inflation channel, puncture or deflation of the balloon using a urethral catheter stylet or other similar wires, and extraluminal balloon puncture transvaginally, transurethrally, or suprapubically. In the study carried out by Hollingsworth et al. (2004) on Foley catheter balloon deflation practices, while it was observed that the balloon was deflated successfully by passive aspiration with a syringe in 23% of patients, by cutting the catheter with or without aspiration in 31% of them, and by a wire passed through the balloon port in 15% of them, it was reported that more invasive maneuvers such as extraluminal balloon puncture transvaginally, transurethrally, or suprapubically were required in 31% of patients (Hollingsworth et al., 2004). Bladder rupture and bleeding may be observed in the method of puncturing the catheter balloon by hyperinflation, which is one of the non-invasive practices. Cystitis, pain, and discomfort may be observed in the method of puncturing the balloon with chemical substance or oil injection. In the method of unblocking the occluded channel with a needle or guide, complications such as injury to peripheral tissues and urethral pain may occur as a result of the puncture of the inflation channel in the urethra. In the method of puncturing catheter balloons transvaginally, which is one of the invasive practices, there is a risk of contamination of the urinary bladder by vaginal microorganisms. In the methods in which suprapubic or transvaginal routes are used, the catheter balloon usually bursts and forms free fragments. Nevertheless, the presence of free fragments in the bladder may lead to urinary infection and stone formation (Gülmez et al, 1997). In our case, the liquid in the balloon was discharged by entering with the help of an injector the balloon valve channel from different places, which might lead to fewer complications, and the procedure was successful. Giovannopoulou and Chondros (2017) proposed that a technique similar to our practice should be used only in women (Giovannopoulou and Chondros, 2017). The technique proposed by Giovannopoulou and Chondros (2017) for women does not fully comply with our technique since it suggests advancing with a needle in the cannula through the

urethra and puncturing the balloon. In our technique, since it is aimed to discharge the liquid without puncturing the balloon, there is no possibility of balloon particles remaining in the bladder and complications that may occur due to this situation. In our literature review, it was observed that Chowdhury (2012) applied a method which is very similar to our technique. Chowdhury (2012) made the liquid inside the balloon gush out by piercing the balloon inflation path of the non-removable Foley catheter in multiple places and then discharged the remaining liquid with a syringe. In our technique, the liquid is aspirated by advancing the needle in the channel. From this aspect, Chowdhury's (2012) technique is very similar to our technique. However, it is not the same as our technique (Chowdhury, 2012). In addition, while the technique of Chowdhury may cause environmental contamination by the spraying of the liquid, the risk of environmental contamination is much less in our technique as the liquid is drawn with an injector (Figure 2). Chowdhury (2012) proposed his technique as a simple technique that can be used in emergency situations. The use of this technique by Chowdhury (2012) in a male patient is similar to our case. No complications were observed in our case after the removal of the catheter.

Conclusion

In intensive care units where the Foley catheter needs to be used for a long time to ensure easy balloon drainage, it should be preferred to inflate it with distilled water instead of saline. It should be kept in mind that there are many invasive and non-invasive solutions to be used in case of failure of balloon deflation in the Foley catheter, and each of these solutions has different complications. We recommend that non-invasive applications that put patients at the least risk and have a low risk of complications should be patiently tried according to invasive applications.

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