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Case Report / Olgu Sunumu

Removal of foreign body in right atrium with percutaneous snare technique: a fractured, totally implantable venous access port

Perkütan snare teknik ile sağ atriyumdan yabancı cismin çıkarılması: Kırılmış, tamamen implante edilebilir venöz erişim portu

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ABSTRACT

Totally implantable venous access ports for providing major vascular access are widely used instruments in the care of critically-ill patients. They offer important advantages for both patients and healthcare personnel. These instruments rarely cause injuries. Their insertion is simple in the hand of experienced teams. Herein, we present a case in whom a fractured, totally implantable venous access port catheter was distally migrated in the right atrium. Intracardiac fragment was successfully removed from the right atrium by percutaneous snare technique without any complications. In conclusion, removal of intracardiac foreign bodies or medical devices with percutaneous snare technique is the most reliable and comfortable method, when performed by an experienced team consisting of interventional cardiologists.

Keywords: Fractured port catheter; intracardiac foreign body; percutaneous; removal; snare technique.

ÖZ

Tamamen implante edilebilir venöz erişim portları, kritik hastaların bakımında majör damar erişimini sağlamak amacıyla sıklıkla kullanılan araçlardır. Hem hastalar hem de sağlık çalışanları için önemli avantajları vardır. Bu araçlar, nadiren hasara neden olur. Deneyimli ekiplerin elinde kullanımları kolaydır. Bu yazıda, kırılmış, tamamen implante edilebilir venöz erişim port kateteri sağ atriyumun distaline doğru kaymış olan bir olgu sunuldu. Kalp içindeki kısım, herhangi bir komplikasyon olmaksızın, sağ atriyumdan perkütan snare tekniği ile başarılı bir şekilde çıkarıldı. Sonuç olarak, kalp içindeki yabancı cisimlerin veya tıbbi cihazların perkütan snare tekniği ile çıkarılması, deneyimli girişimsel kardiyoloji uzmanlarından oluşan bir ekip tarafından yapıldığında, en güvenli ve rahat yöntemdir.

Anahtar sözcükler: Kırılmış port kateter; intrakardiyak yabancı cisim; perkütan, çıkarma; snare tekniği.

The insertion of totally implantable venous access ports (TIVAPs) for providing major vascular access is a common procedure. It is indicated in the conditions such as administration of chemotherapy and long-term antibiotic treatment, and easy administration of transfusion or analgesic treatment.[1,2] These instruments also facilitate treatment and adaptation of patients to social life. The insertion procedure is simple, when performed by experienced physicians. The most common complications are infection, arrhythmia, vein thrombosis and embolization.[3] Disruption of a TIVAP is a very rare complication. In this article, we present a case in whom a fractured TIPAV catheter was distally migrated in the right atrium and intracardiac fragment was successfully removed from the right atrium by percutaneous snare technique without any complications.

CASE REPORT

A 51-year-old female patient who underwent TIVAP insertion in another center two years prior was admitted to our clinic due to catheter malfunction and disruption in the middle of catheter. The instrument was inserted to the patient intraoperatively and during

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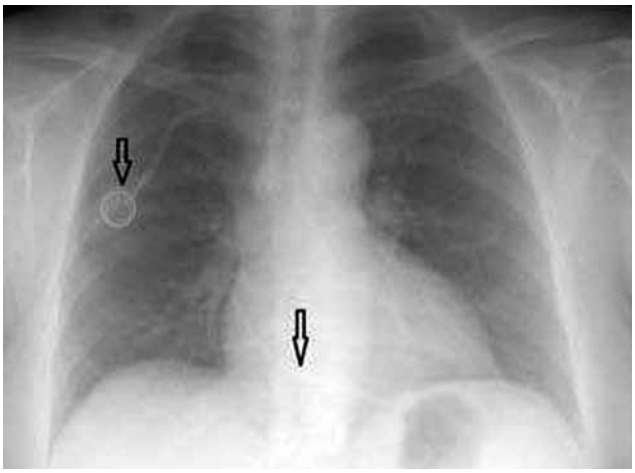

Figure 1. A chest X-ray view showing part of diaphragm and intracardiac fragment of fractured totally implantable venous access port with arrows.

colostomy creation due to colon cancer. Then, she received 12 cycles of chemotherapy in total. She experienced no complication during treatment period. She was referred to our clinic due to the presence of a completely disrupted part of the catheter in the right atrium on thoracic computed tomography (CT) during follow-up. Her previous chest radiographies showed a fractured catheter right after the insertion (Figure 1), and it remained undiagnosed by the treating clinician. The non-damaged part of the catheter was in the subclavian vein and there was no problem throughout treatment period. Subcutaneous part of the TIVAP was removed under local anesthesia after counseling with department of cardiology due to its potential risks. The disrupted part of the catheter in right atrium was, then, safely removed with percutaneous snare technique by intervention from the right femoral vein approach under the guidance of angiography (Amplatz GooseNeck® Snare Kit. 35 mm Loop Snare. 6.0 Fr Snare Catheter) (Figures 2 and 3). No complication was observed after the procedure, and the patient was uneventfully discharged on Day 1.

DISCUSSION

The insertion of TIVAPs provides major advantages to patients and healthcare personnel, particularly when frequent drug injections and transfusions are needed. The main advantages of this procedure for patients include being more invisible and more acceptable by patients. As these instruments do not interfere with daily activities, patients can return to their social life more in a short time period. In addition, TIVAPs have less risk of catheter-related infection and thrombosis, compared to central catheters.[3]

These instruments rarely cause injuries. Their insertion is quite easy for experienced teams. Fractures mostly occur during the surgical procedure, and the

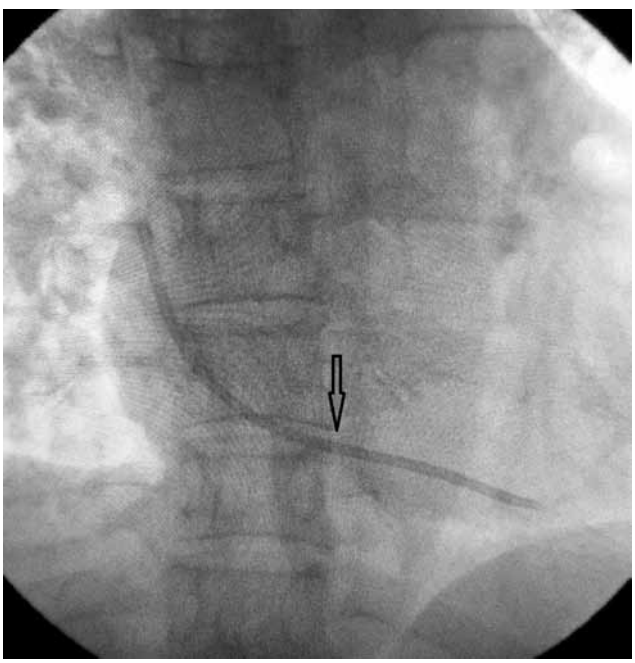

Figure 2. A cine coronary angiography view showing intracardiac fragment of fractured totally implantable venous access port with arrow.

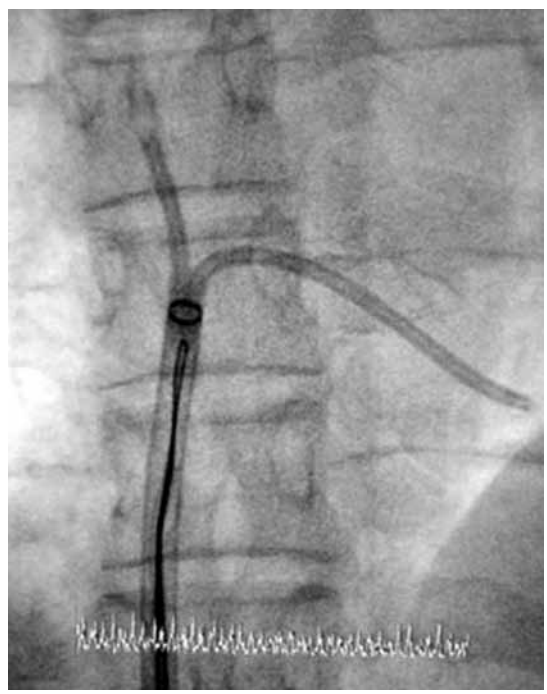

Figure 3. A cine coronary angiography view. Removal of intracardiac part of catheter using the snare.

onset of the symptoms is usually rapid. The rate of complications including catheter malfunction, local or systemic infections, drug extravasation, hematoma and seroma, port-pocket infections, port rotation, and port membrane leakage related to the catheter varies between 1.8 and 14.4% in the literature.[3] In addition, catheter damage or complete ruptures may occur due to compression between the first rib and clavicle, which is known as a pinch-off sign. The incidence of such complications has been reported as 1.4 to 4.1%.[4,5]

The major problem in complete catheter rupture cases is embolic process of the ruptured part.[6,7] The ruptured part of the traumatized catheter may migrate toward right cardiac cavity and pulmonary artery. They may cause infection, arrhythmia, valve dysfunction, and even death according to their placement. Therefore, these embolic processes must be immediately removed once detected.[8] The removal of these parts may be accomplished by complex surgical technique such as cardiopulmonary bypass or easily by interventions performed toward percutaneous transvenous way, which is simpler and cost-effective.[7-11]

Our case completed treatment uneventfully and no complication was observed during this period. However, catheter damage in the early period was observed on previous chest radiographies, when the patient file was retrospectively evaluated. However, she was able to complete treatment uneventfully, as a part of the catheter was still located in the subclavian vein. The removal of the broken catheter was decided after consultation with cardiologists. First, the subcutaneous port and related part of the catheter were excised. Then, the part of the broken catheter in the right atrium was removed with percutaneous snare technique without any complication. The patient was discharged one day later.

Review of the literature reveal interventional techniques for the removal of foreign bodies including a snare, basket catheter, pigtail catheter, ablation catheter, or snare and suture.[9] In the study of Pande et al.,[7] an intracardiac foreign body was removed using a flexible biopsy forceps. However, the authors reported that this technique had some limitations, and was unable to be utilized in larger foreign bodies due to the lack of free space to grab the foreign body with this tool. In addition, its rigid properties might cause traumatic complications. Therefore, we decided to use percutaneous snare technique in our case. In the study of Cheng et al.,[12] the success rate of the removal of foreign bodies with loop-snare technique was found to be 97.8%. As Chosky et al.[8] and Calvagna et al.[10] also reported, percutaneous snare technique is a safe and effective procedure.

In our case, catheter damage was unnoticed by treating clinician. However, it was visible in all chest radiographies obtained during two years, and 12 cycles of chemotherapy were able to be administered, despite the presence of a broken catheter. Therefore, evaluation of catheter integrity with all chest radiographies obtained immediately following the catheter insertion and during regular follow-up visits is of utmost importance. Considering necessity of administration with calculated doses and infusion rates in most drugs administered on port catheter with narrow therapeutic ranges, the importance of being sure on the optimal catheter functionality can be understood.

In conclusion, regular follow-up of the port catheters which offer important advantages for the evaluation of their functionality and physical integrity is essential. In case of broken, totally implantable venous access ports, surgical interventions always carry risks for complications. Therefore, being aware of this risk by early diagnosis and treatment plays a key role to minimize morbidities by using latest techniques such as percutaneous snare technique. In addition, the removal of intracardiac foreign bodies or medical devices with percutaneous snare technique is the most reliable and comfortable method, when performed by an experienced team of interventional cardiologists and cardiovascular surgeons.

Declaration of conflicting interests

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