



Percutaneous Transvenous Removal of an Entire Detached Port Catheter by Using a Snare-Loop Catheter in a 13-Month-Old Child

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When prolonged intravenous therapy is necessary in children, it is better to insert central venous catheters. Fragmentation or detachment with embolization of these catheters is infrequent, but can cause serious complications. Therefore, in such cases prompt extraction of the misplaced endovascular or intracardiac fragment(s) is mandatory. Percutaneous retrieval is a safe and reliable technique and should be considered as the treatment of choice. We reported successful retrieval of a totally detached port catheter from the pulmonary artery of a 13-month-old patient with acute myeloblastic leukemia.

Key Words: Port Catheter; Percutaneous Retrieval; Child; Snare-Loop Catheter.

Onüç Aylık Bir Çocukta Tam Olarak Kopmuş Port Kateterin, Transvenöz Olarak Snare Kateter ile Çıkarılması

Çocuk hastalarda uzun süreli intravenöz tedavi gerektiren durumlarda santral venöz kateter ve port uygulanmaktadır. Yerleştirilmiş olan santral kateter ve parçalarının dolaşım sistemine embolizasyonu nadir, ancak ciddi bir komplikasyondur. Bu gibi durumlarda da kateter ve ilgili parçaların dolaşım sisteminden çıkarılması şarttır. Perkutan transvenöz yol ile, embolize parçaların çıkarılması güvenilir bir tekniktir. Akut myeloblastik lösemi tanısı ile izlenen 13 aylık bir hastada, pulmoner arter içine embolize olmuş kateter parçasının, başarılı bir şekilde transvenöz yol ile geri çıkarılmasını sunduk.

Anahtar Kelimeler: Port Kateter; Perkutan Geri Alma; Çocuk; Snare-Loop Kateter.

Introduction

Since children have limited venous access possibilities, when long-term transvenous therapy is required for certain diseases such as malignancy and gastrointestinal malfunction, central venous catheters provide a convenient route.

The port catheter is less exposed to the risk of infection and permits a near-normal life. Displacement or fragmentation of the catheter is a rare complication, but when it occurs, mortality from arrhythmia related cardiac arrest, septic and thromboembolic complications in addition to the risk of cardiac perforation, prompt extraction of the embolized foreign body is necessary. We reported a case of entirely detached catheter from the connection of the port and migrated to both left and right pulmonary arteries. The catheter was removed transvenously using a snare-loop catheter (Amplatz GooseNeck™ snare) without complication.

Case

A 13-month-old boy was referred to pediatric cardiology department because of inability to find the entire port catheter during the surgical removal. He was receiving treatment for eight months for acute myeloblastic leukemia. A port catheter was placed in the right external jugular vein six months ago.

Three months later, the port ceased to function. Surgical exploration was planned, but had to be postponed because of neutropenia. During the surgical removal, The catheter was found to be detached from the connection to the port. Subsequent x-ray revealed the catheter with its one end placed in right ventricular outflow tract, entering in the main pulmonary artery, forming a loop in the left pulmonary artery and its other end lying in the right pulmonary artery (Fig 1). Twenty-four hours after the diagnosis, percutaneous entry of the femoral vein for insertion of a vascular sheath using the Seldinger technique was performed. A 5 french right Judkins catheter was inserted through the sheath and advanced under fluoroscopic guidance to the right pulmonary artery. Then the tip of the port

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catheter was caught with a snare-loop catheter (Amplatz GooseNeck™ snare) which was advanced through the 5 F Judkins catheter and was retrieved from the femoral venous sheath without complication (Fig 2,3). A control echocardiographic examination performed a few days later was completely normal.

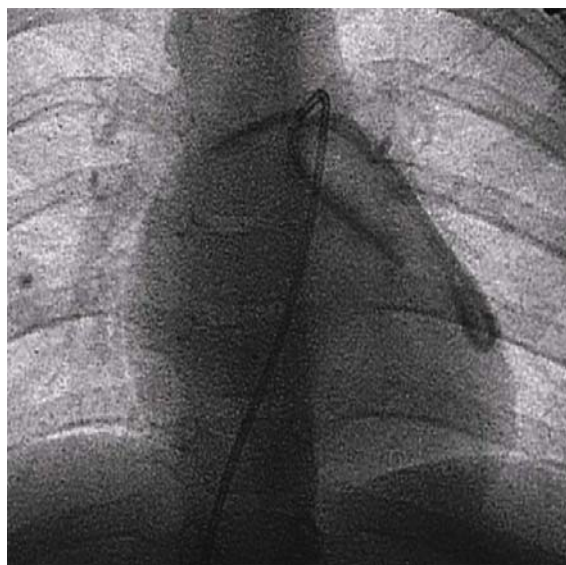


Figure 1. The catheter with its one end placed in right ventricular outflow tract, forming a loop in the left pulmonary artery and its other end lying in the right pulmonary artery.

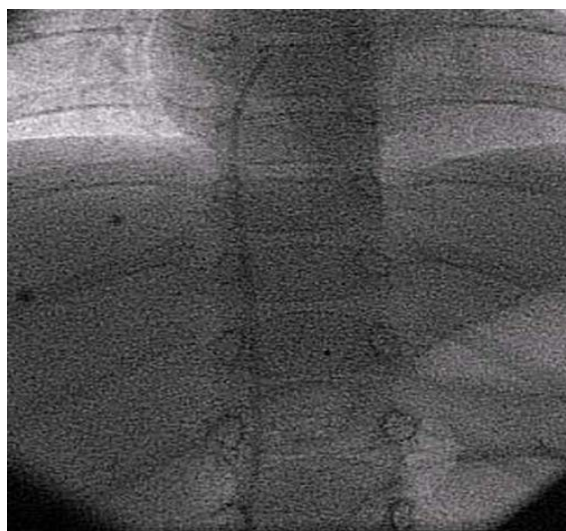


Figure 2. Port catheter was caught with a snare-loop catheter.

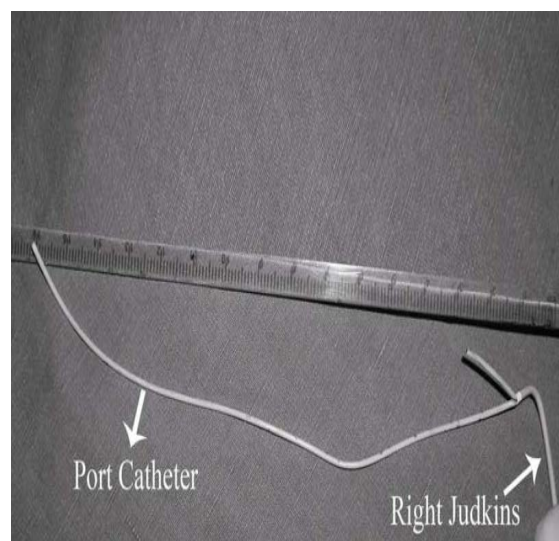


Figure 3. Port catheter was retrieved from the femoral venous sheath without complication.

Discussion

Centrally-placed venous catheters play an indispensable role in the care of pediatric patients who require prolonged intravenous treatment. The implantable port-catheter system carries a lower risk of infection and permits a near-normal life^{1,2} Fragmentation or detachment of these centrally positioned catheters is uncommon, but may lead to potentially serious complications like thromboembolic events, fatal arrhythmia and infection.³⁻⁵ The estimated rate of incidence of catheter embolization is 0.1% of all insertions.^{1,3,6} Death or serious complications due to fragmentation is reported to be between 21% and 71%.^{3,7}

According to Wolf et al., in 37% of cases, the foreign object is stated to be a port catheter fragment and in 19% of patients, the object found in pulmonary arteries like our case.⁷

The etiology of the migration of the parts of catheters is thought to be venous flow and negative inspiratory pressure in the thoracic cavity.¹

The causes of breakage include manufacturing defects, mechanical trauma or angulation and distortion of the catheter during insertion, material degradation caused by fluids and medications passing through the catheter lumen, stress resulting from the motion within the central venous circulation, resistance to removal caused by different factors and finally the use of excessive hydrostatic pressure when flushing an obstructed catheter.^{3,8} In our patient, no cause for the separation of the catheter from the port could be determined.

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The foreign objects in the cardiovascular system should be removed as soon as possible.^{7,9,10} Before the percutaneous technique, surgical removal was used as the only method.¹ Since 1960s, many techniques for the endovascular retrieval of misplaced foreign objects have been determined.⁷ The snare-loop catheter is the most often used device for this purpose.^{1,7}

Complete removal of the foreign object by percutaneous technique was reported to be 87%. Also minor complications stated to be as rare as 5%.⁷

Since percutaneous retrieval of misplaced endovascular and intracardiac objects is a safe and reliable technique which enables to avoid of open surgical methods that may require cardiopulmonary bypass, should be considered as the treatment of choice.

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