

Successful Percutaneous Retrieval of a Dislodged Chemo-port Catheter Using Snare Technique in a Three Year Old Child: A Case Report

Manish Ruhela^{1*}, Rajeev Bagarhatta¹, Sanjeev Patni², Mishal Shah²

¹Department of Cardiology, SMS Medical College and Hospital, Jaipur, Rajasthan, India

²Department of Oncology, Bhagwan Mahaveer Cancer Hospital and Research Institute, Jaipur, Rajasthan, India

*Corresponding author: dr.manishruhela@gmail.com

Received August 05, 2014; Revised October 15, 2014; Accepted October 20, 2014

Abstract Chemoport, a central venous infusion system is commonly used in cancer patients for administration of chemotherapy. Dislodgement with subsequent migration of chemoport catheter in to the heart is rare but potentially catastrophic complication. The treatment of choice is immediate retrieval of dislodged part of catheter by either surgery or percutaneous approach. Percutaneous removal is safer and less invasive making it the standard treatment modality. We herein report the case of a 3 year old child who was referred to us for the management of a dislodged chemoport catheter. In this article we discuss the treatment approach in this particular case as well as review the existing literature.

Keywords: *chemoport catheter, dislodgement, percutaneous retrieval*

Cite This Article: Manish Ruhela, Rajeev Bagarhatta, Sanjeev Patni, and Mishal Shah, "Successful Percutaneous Retrieval of a Dislodged Chemo-port Catheter Using Snare Technique in a Three Year Old Child: A Case Report." *American Journal of Medical Case Reports*, vol. 2, no. 10 (2014): 218-221. doi: 10.12691/ajmcr-2-10-5.

1. Introduction

Chemoport is a totally implantable device, placed in the central venous system mainly for infusion of chemotherapeutic drugs in oncologic diseases. Patients with malignancy are at increased risk for superficial thrombophlebitis due to frequent injections of aggressive chemotherapy courses. In such patients, placement of a chemoport has been advocated and reported to be safe. The subclavian vein, jugular vein, or superior vena cava are accessible central veins for chemoport catheter insertion. Several complications associated with chemoport implantations include venous thrombosis, infection, catheter extravasation and dislodgement. The incidence of port catheter dislodgement with subsequent migration to heart is low with an estimate rate upto 4.1% [1]. In many patients it is detected incidentally when patients undergo routine chest radiographs. The treatment of choice for port dislodgement is immediate retrieval of the distal migrated part, and percutaneous transvenous retrieval is regarded as the standard method because it is generally easy, safe and least invasive with high success rate [2]. In this case report we describe a successful percutaneous retrieval of a migrated chemoport catheter in a three year old male child suffering from Hodgkins lymphoma.

2. Case Report

A three year old male child was diagnosed as having Hodgkins lymphoma during evaluation of cervical

lymphadenopathy and weight loss. Child was planned for chemotherapy in the form of ABVD (Adriamycin, bleomycin, Vinblastine, dacarbazine) regimen. A chemoport catheter was placed in the right internal jugular vein for chemotherapy. The chemoport catheter insertion procedure was uneventful. After the procedure, a chest x ray revealed good placement of the chemoport. Then the child underwent six cycles of chemotherapy in next six months through this port without any difficulty in infusing the drugs and had a very good response in form of subsidence of lymphadenopathy, weight gain and improvement in general wellbeing. After six months of therapy patient was planned for port removal. On examination it was found that the port was in situ but the catheter was not palpable in the subcutaneous tissue of the neck as the normal assessment during last visit (fifteen days back). There was no history of any chest trauma, cough, excessive straining, fever and any infection at port insertion site. A chest radiograph was performed due to suspicion of catheter migration secondary to spontaneous breakage of chemoport catheter. It showed that chemoport catheter had migrated from its original location to right ventricle, travelling across the right atrium (Figure 1). The symptoms related with catheter migration which include palpitations, dyspnea, cough and chest discomfort were absent in this child and there were no electrocardiographic (ECG) changes in form of ventricular premature complexes and ventricular tachycardia as well. Patient was then referred to our cardiology department for a possible percutaneous retrieval of the migrated catheter. As the patient was asymptomatic and stable, the procedure was planned for the next day.

Under general anesthesia in cardiac catheterization lab, the catheter was retrieved with fluoroscopic guidance. The right femoral vein was punctured and a six French (6Fr) sheath was inserted. Percutaneous retrieval of migrated catheter was performed with a six Fr snare. One of the floating end of the migrated catheter was snared and pulled down via inferior vena cava towards right femoral vein under fluoroscopic guidance and removed (Figure 2A,B,C). Finally the port catheter fragmentation along with retrieval set

were removed through right femoral vein. The length of the migrated piece was 15 cm, and no thrombus was observed at the tip (Figure 3). The total procedure time was eight minutes, with a fluoroscopic time of two minutes. No major complication occurred during and after the procedure and the patient was discharged on the next day. This successful percutaneous retrieval procedure is a dramatically rewarding experience for us.

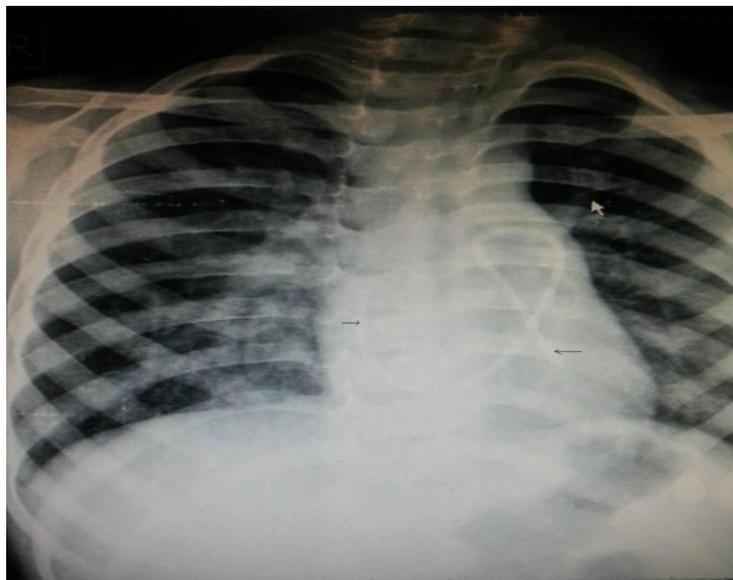


Figure 1. Chest X-ray postero-anterior view showed the migrated catheter. The distal end of catheter tip was located at right ventricle traversed through right atrium

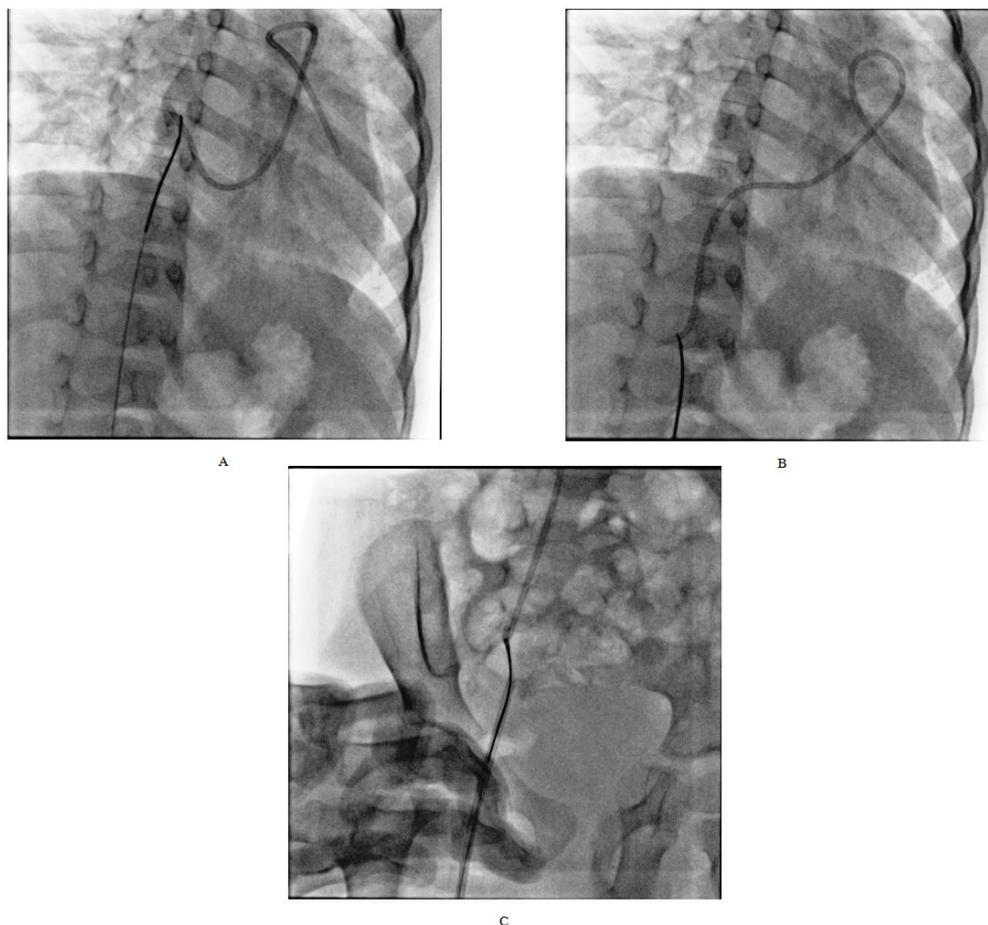


Figure 2. Various stages during the percutaneous transvenous retrieval procedure using snare fig 2(A)and (B) migrated part of chemoport catheter was caught with goose neck snare,fig2(C)The captured chemoport catheter was pulled down into the right femoral vein and removed under fluoroscopic guidance

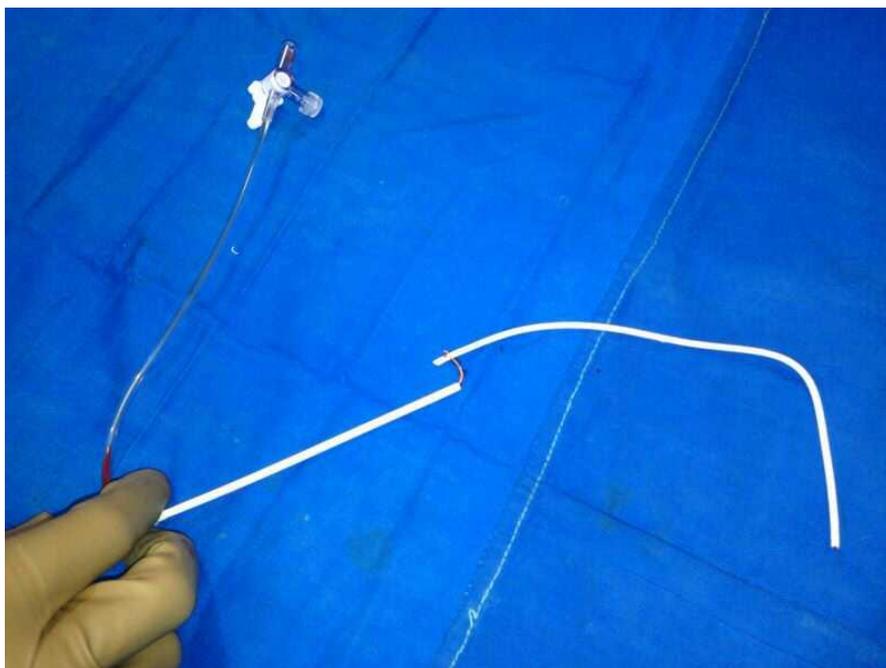


Figure 3. Successfully removed fragment of dislodged chemoport catheter

3. Discussion

Despite being very useful, chemoport catheters are associated with inherent risk and complications. In this case report, we describe a rare, yet potentially catastrophic, complication in which catheter was dislodged and migrated to heart. To date the complication rate for dislodged catheter of a chemoport has remained low with prevalence of 0.4%- 4% [2]. Since the first reported by Turner et. al [3] in 1954, port catheter dislodgement has been reported occasionally. The mechanism of catheter dislodgement and migration is not clear. Suggested mechanisms include improper connection between the catheter and port, distortion or angulation of the anastomosis site, use of incorrect equipment, malposition of the catheter, and pinch-off syndrome secondary to compression between the clavicle and first rib [1,2]. High intrathoracic pressure induced by coughing and straining could cause migration of the port [4]. In the index case, catheter migration was spontaneous as no plausible cause can be asserted. Dislodgement of chemoport catheter have a variety of clinical presentations. Most patients presents with catheter dysfunction suggested by increased resistance to infusion. Other presentations include chest discomfort, cough, dyspnea and palpitations [2]. Of the 92 cases observed by Cheng et al. [2], 36% were asymptomatic and diagnosed incidentally by routine chest radiographs. In this case also patient was asymptomatic. Therefore, patient must be checked regularly by taking chest radiographs at least every six months after chemoport implantation regardless of symptoms. The location of the migrated catheter within the cardiovascular system depends on the route of entry, gravity, the length and stiffness of the catheter, the flow pattern of the vessel or cardiac chamber and position of the patient at time of dislodgement of catheter [2]. In this case, distal end of the catheter fragment was located in right ventricle traversing through right atrium. Mortality and morbidity differ depending on

the location of the catheter fragments. Mortality and morbidity are highest when the fragments are in right heart followed by vena cava; mortality and morbidity are lowest when the catheter is in the pulmonary artery [5]. No matter how, when dislodged fragment is found on chest x ray, early removal as soon as possible is necessary because of two reasons, one is to prevent its distal embolization, which make retrieval more difficult and another reason is that foreign bodies can cause septicemia, lung abscess, multiple pulmonary emboli, arrhythmias, cardiac wall necrosis leading to perforation and sudden cardiac death [5]. Since percutaneous retrieval of a broken guidewire was first introduced by Thomas et. al [6] in 1964, percutaneous endovascular retrieval has become a standard technique for foreign body removal. Now it is a preferred method with a high success rate of 71% to 100% [7]. Such a high success rate depends upon the expertise and available hardware in cathetrization lab. Many types of equipment have been used to retrieve intravascular foreign bodies, including snares, baskets, grasping forceps, tip deflecting wires, and balloon catheters. As reported in the literature, the loop snare is the most popular device despite its main disadvantage of poor torque control. There are several causes of retrieval failure such as absence of free ends to be snared, the catheter end is dislodged far into peripherally localized vessel, the foreign bodies are non opaque and finally the catheter is manufactured of friable material. When no free end is accessible, a pigtail catheter can be used to reposition the dislodged fragment by pigtail catheter to the optimal site first and then grasp by loop snare[2]. Chuang et al. [1] reported that the concurrent use of pigtail and loop snare is a feasible and easy method for percutaneous retrieval of a dislodged catheter. Previously the mortality following catheter remobilization was 28 - 57% between 1950 and 1980. Now in this era the mortality rate has been markedly reduced to 0- 1.8% due to the higher success rate of percutaneous retrieval [2]. In this case, snare were used in the retrieval procedure to remove the dislodged catheter. The most common complications of percutaneous

intravascular retrieval procedures are cardiac arrhythmias followed by vascular or cardiac perforation [8]. In our patient cardiac arrhythmias were not documented. Through a percutaneous, transvenous approach, we successfully retrieved the migrated catheter of chemoport from the right chambers of heart.

4. Conclusion

Dislodgement and subsequent migration of the catheter of a chemoport infusion system is rare but can lead to serious complications that requires immediate diagnosis and treatment, even if the patient is asymptomatic. Percutaneous transvenous retrieval of migrated catheter by snare technique should be attempted in these cases before embarking upon surgery. Every catheterization lab must develop the required expertise for such type of procedures because it is safe, technically feasible and could be successfully performed.

Statement of Competing Interests

Authors have no competing interests.

References

- [1] Chung MT, Wu DK, Chang CA, et al. Concurrent use of pigtail and loop snare catheters for percutaneous retrieval of dislodged central venous port catheter. *Kaohsiung J Med Sci* 2011; 27: 514-519.
- [2] Cheng CC, Tsai TN, Yang CC, Han CL. Percutaneous retrieval of dislodged totally implantable central venous access system in 92 cases: experience in a single hospital. *Eur J Radiol* 2009; 69: 346-35.
- [3] Turner DD, Sommers SC. Accidental passage of a polyethylene catheter from cubital vein to right atrium; report of a fatal case. *N Eng J Med* 1954; 251: 744-745.
- [4] Wu PY, Yeh YC, Huang CH, Lau HP, Yeh HM. Spontaneous migration of a port-a-cath catheter into ipsilateral jugular vein in two patients with severe cough. *Ann Vas Surg* 2005; 19: 734-736.
- [5] Surov A, Buerke M, John E, Kösling S, Spielmann RP, Behrmann C. Intravenous port catheter embolization mechanisms, clinical features, and management. *Angiology* 2008; 59: 90-97.
- [6] Thomas J, Sinclair-Smith B, Bloomfield D, Davachi A. Non-surgical retrieval of a broken segment of steel spring guide from the right atrium and inferior vena cava. *Circulation* 1964; 30: 106-108.
- [7] Dondelinger RF, Lepoutre B, Kurdziel JC. Percutaneous vascular foreign body retrieval: experience of an 11-year period. *Eur J Radiol* 1991; 12: 4-10.
- [8] Yedlicka JW Jr., Carlson JH, Hunter DW, Amplatz K, Castafieda-Zuiga WR. Intravascular foreign body removal. In: Castafieda-Zuiniga WR, Tadavarthy SM, eds. *Interventional Radiology*. Baltimore: Williams & Wilkins, 1992: 705-6.