



# Angioplasty inflated balloon to unknot an entrapped Swan-Ganz catheter

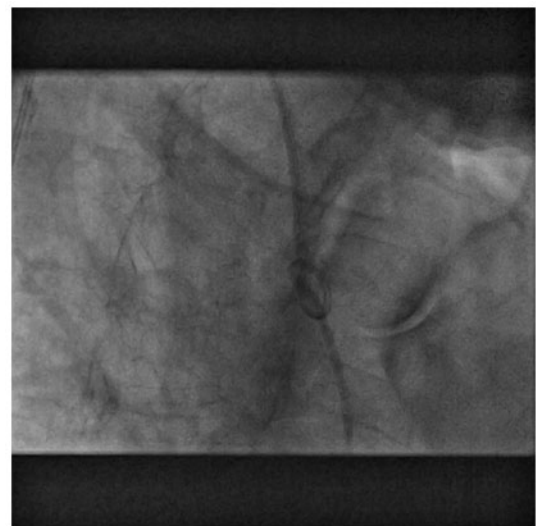
Anthony Matta <sup>1,2\*</sup>, Nicolas Boudou<sup>2</sup>, Paul Ohayon<sup>2</sup>, and Didier Carrié <sup>2</sup>

<sup>1</sup>Cardiology Division, Department of Cardiology, Faculty of Medicine, Holy Spirit University of Kaslik, Kaslik, Lebanon; and <sup>2</sup>Department of Cardiology, Rangueil Hospital, Toulouse, France

Received 30 May 2019; first decision 15 August 2019; accepted 1 October 2019; online publish-ahead-of-print 19 October 2019

A 77-year-old male patient was transferred to our hospital after a complicated bedside right heart catheterization by a Swan-Ganz Catheter (SGC) inserted through the subclavian vein which was indicated to investigate the aetiology of new-onset severe pulmonary arterial hypertension in the context of respiratory insufficiency. During the procedure, while placing the SGC through the right ventricle by the operating physician it got tangled, and knotted then entrapped, thereby the physician encountered a resistance with impossibility to remove the SGC. At admission in intensive care unit (ICU), patient was haemodynamically stable. A transthoracic echocardiography (TTE) shows the presence of guiding catheter at the base of the pulmonary artery with a dilated right ventricle. In the catheterization lab, fluoroscopy showed the SGC forming a kinked knot hanging in the right ventricle (*Figure 1*). Avoiding to perform a stressful surgical approach, we choose to start an interventional radiologic procedure by passing a size 0.25 Fr guide-wire through the common femoral vein. The guide-wire was introduced into a hallow in the centre of the knot, and subsequently a balloon was successively inflated by 8, 15, and 23 mm in order to expand progressively the diameter of the knot reversing thereafter the preformed knot (*Supplementary material* online, *Video S1*). We pursue a right heart catheterization that revealed a pre-capillary pulmonary arterial hypertension of 43 mmHg, a pulmonary capillary wedge pressure of 13 mmHg, and a cardiac output of 3.7 mL/min/m<sup>2</sup>. The SGC was successfully removed, and the patient returned to the ICU where he was monitored.

Multiple removal strategies were noted in the literature such as using a dormier basket,<sup>1</sup> an endomyocardial biopsy forceps,<sup>2</sup> and in some critical situations, clinicians prefer to keep the knotted catheter regardless of the potential associated complications.<sup>3</sup> In summary, we report an interventional technique to proceed with this serious complication for right heart catheterization which is an invasive procedure that must be performed under fluoroscopic guidance. Physicians



**Figure 1** Fluoroscopy showing the Swan Ganz catheter entrapped in the right ventricle.

should be aware of this rare complication when a guide-wire is advanced if any resistance is encountered, and of several available strategies to manage this unusual situation.

## Supplementary material

*Supplementary material* is available at *European Heart Journal - Case Reports* online.

**Consent:** The author/s confirm that written consent for submission and publication of this case report including image(s) and associated text has been obtained from the patient in line with COPE guidance.

\* Corresponding author. Tel: +96171183083, Email: [dr.anthonymatta@hotmail.com](mailto:dr.anthonymatta@hotmail.com)

Handling Editor: Vijay Kunadian

Peer-reviewers: Dejan Milasinovic and Hosam Hasan

© The Author(s) 2019. Published by Oxford University Press on behalf of the European Society of Cardiology.

This is an Open Access article distributed under the terms of the Creative Commons Attribution Non-Commercial License (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits non-commercial re-use, distribution, and reproduction in any medium, provided the original work is properly cited. For commercial re-use, please contact [journals.permissions@oup.com](mailto:journals.permissions@oup.com)

**Conflict of interest:** none declared.

## References

1. Hood S, McAlpine HM, Davidson SA. Successful retrieval of a knotted pulmonary artery catheter trapped in the right ventricle using a dormier basket. *Scott Med J* 1997;**147**:184.
2. Mehta N, Lochab SS, Tempe DK, Trehan V, Nigam M. Successful non surgical removal of a knotted and entrapped pulmonary artery catheter. *Catheter Cardiovasc Diagn* 1998;**43**:87–89.
3. Karanikas ID, Polychronidis A, Vrachatis A, Arvanitis DP, Simopoulos CE, Lazarides MK. Removal of knotted intravascular devices. Case report and review of the literature. *Eur J Vasc Endovasc Surg* 2002;**14**:518–520.