



Broken and forgotten: A case of unintentionally retained foreign object

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ABSTRACT

Central venous catheter have become ubiquitous with greater than 15 million catheter days/year in the intensive care setting alone. However, the procedure carries with it several immediate and other delayed complications that can result in significant morbidity, mortality, and increased healthcare cost. We report a rare case of significantly delayed complications associated with intravascular loss of guide wire during central venous catheter placement and its impact on patient's long term management. The case highlights not only the importance of proper technique and safety precaution in performing an increasingly common procedure, but also the need for timely identification and rectification of medical errors, especially in the context of improved physician-patient communication.

1. Introduction

Central venous catheter (CVC) has become ubiquitous with an estimate of more than five million CVCs being inserted yearly in the United States [1]. With the rising CVC frequency, there is an increased risk of procedure-related complications including inadvertent guide wire retention, which can result in significant morbidity, mortality and increased healthcare cost [2–4]. We herein report a unique case of complete intravascular loss of guide wire with subsequent guide wire fracture, pulmonary wire embolism, bacteremia, and septic shock following a sixteen-year delay.

2. Case report

Patient was a 39 year-old male with one week of malaise and encephalopathy who was admitted for septic shock. His blood cultures as well as fluid cultures obtained from left elbow olecranon bursa and right foot abscess grew MSSA raising concern for endocarditis with systemic emboli. Initial chest (Fig. 1A) and abdominal (Fig. 1B) radiographs were notable for presence of retained foreign objects while transesophageal echocardiography (TEE) was negative for vegetation.

Patient underwent further imaging including CT chest which showed multiple bilateral peripheral nodular opacities with developing central cavitation consistent with MSSA pulmonary septic emboli (Fig. 2A) as well as retained foreign body located in the right upper pulmonary artery sub-segmental branch (Fig. 2B).

CT abdomen and pelvis also showed a retained guide wire extending

from the inferior vena cava (IVC) to the left iliac and left common femoral vein (Fig. 3). Upon further investigation, patient was involved in a motor vehicle accident necessitating trauma intensive care stay with femoral central venous access placement sixteen years prior to current presentation at an outside facility. Of note, patient was aware of the guide wire presence with initial plan for re-imaging and retrieval but was lost to follow up until current presentation.

Interventional radiology were able to remove the IVC portion of the wire but unable to retrieve the right pulmonary artery portion due to its being completely epithelialized. Patient was started on appropriate antibiotic regimen with clearance of bacteremia after source control. Due to resolution of bacteremia and symptoms at the end of his treatment period and lack of exposed hardware, patient did not require chronic lifelong suppression therapy for his retained pulmonary artery fragment of guide wire.

3. Discussion

Pokharel et al. recently published a systemic analysis of case reports of inadvertent intravascular loss of guide wire reported in the literature up to December 2014 [5]. Seventy six incidents from sixty four publications were included, across five continents, with leading representations from Asia (46.9%) followed by Europe (26.6%) and North America (17.2%). The study also reported an abrupt rise in incident report after 2005 although the true guide wire loss incidence could be underreported due to fear of medicolegal consequences in certain areas of practice. There are multiple risk factors identified in this paper to be associated

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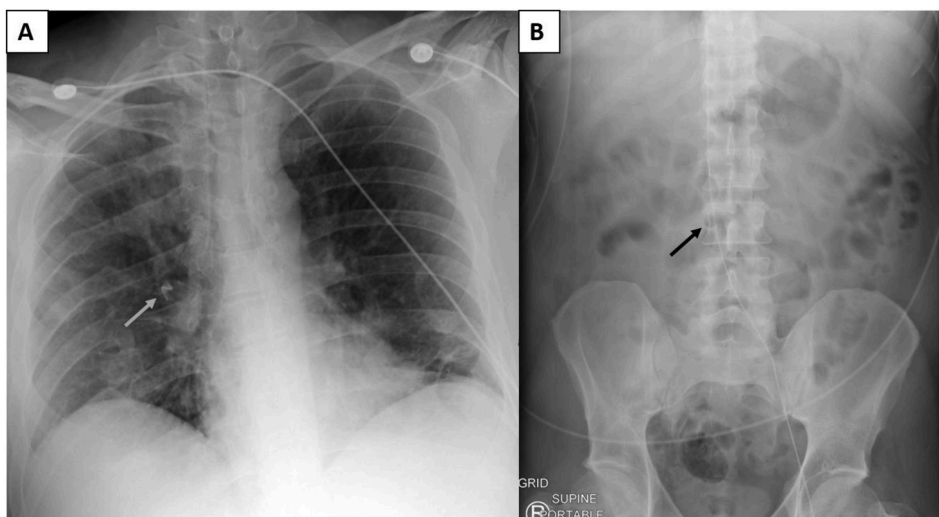


Fig. 1. Portable X ray images: **1A:** CXR showing radiopaque wire near the right supra-hilar region (white arrow). **1B:** KUB showing radiopaque wire extending from the IVC to the left iliac/left common femoral vein (black arrow).

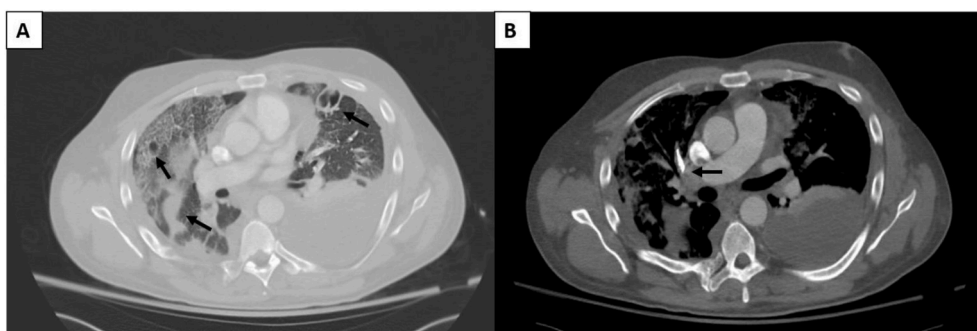


Fig. 2. CT Chest imaging (axial view): **2A:** bilateral peripheral nodular opacities with developing central cavitation consistent with MSSA septic emboli (black arrows). **2B:** Retained guide wire in the right upper pulmonary artery sub-segmental branch (black arrow).

with intravascular loss of guide wire including both individual factors such as missing or improper supervision, high work load, distraction, haste and environmental factors such as suboptimal lighting, sick patients, and number of kits being used.

Intravascular loss of guide wire can also cause a wide range of minor to life-threatening complications including infective endocarditis, cardiac tamponade, retroperitoneal hematoma, pulmonary embolism, thrombosis/subsequent cerebrovascular accident, pericardial effusion from ventricular perforation, chest pain/palpitation, abscesses/sepsis, lower limb thrombosis. Complications vary in severity, pending many factors including time length from guide wire loss to recovery, which ranges from during the procedure to years [5].

Guide wire loss often goes unnoticed due to lack of symptoms and is detected by chance on radiographs [6,7] requiring a high level of clinical awareness, suspicion and acuity. Retained guide wire can lead to additional invasive and costly diagnostic and therapeutic procedures for its retrieval. Of note, multiple methods were reportedly employed to retrieve lost guide wire depending on its location and terminal condition, from percutaneous to laparoscopic to open surgery with percutaneous approach being the method of choice [5–8].

Retained guide wire has been described in various scenarios in

literature search; however, rarely is it being completely retained intravascularly for such an extended period of time (up to sixteen years in our case). Additionally, our patient was aware of the presence of this guide wire with initial plans for monitoring and retrieval but unfortunately was lost to follow up. In contrast to many potentially severe consequences of retained guide wire, our patient's apparent lack of concern and awareness raised questions about physician-patient communication as well as our effort in rectifying medical errors. As a consequence, the long lost guide wire became a nidus for infection/bacteremia leading to presentation of septic shock and multiple systemic manifestations including pulmonary septic emboli. Our patient was able to recover after appropriate antibiotic treatment, but pieces of irretrievable fractured guide wire will forever be in his pulmonary artery, as questions about their long-term consequences such as fibrosis, inflammation, flow obstruction, etc. remain.

This case highlights not only the importance of proper CVC placement technique with complication awareness but also the need for timely interventions as well as improved physician-patient communication, especially in the context of medical errors.



Fig. 3. CT Abdomen/Pelvis imaging (coronal view): Retained guide wire from the IVC to the left iliac and left common femoral vein (black arrow).

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Declaration of competing interest

The authors have no competing interest to declare.

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