# Retrieval of the retained intervention guide wire from deltoid muscle- A rare and delayed presentation post cardiac resynchronization therapy (CRT-D) lead replacement.

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July 6, 2020

**Abstract**

Background and Aims- A fracture and retention of guidewire after cardiac resynchronization therapy device implant has not been reported so far, although it is an uncommon but known complication during cardiac interventions like percutaneous coronary interventions and other cardiac catheterization procedures. Methods- A 53 years old female patient presented to us, who had been diagnosed as a case of dilated cardiomyopathy with severe left ventricular dysfunction and underwent cardiac resynchronization therapy (CRT-D) device implant three years back and subsequently underwent lead replacement 6 months back due to lead dysfunction, with severe pain over the left arm and shoulder for last 1-2 days. On evaluation, it was found that she had a coronary guidewire which might have fractured and retained inadvertently in previous surgical procedure and has caused her symptoms that might have been aggravated by the movements of her arm. Emergency surgical exploration was done and the guidewire which was impacted in deltoid muscle was removed. Results, and Conclusion- We are reporting the case due to a very unlikely and unusual delayed presentation of retained intervention guide-wire post cardiac resynchronization therapy, retrieved from left deltoid muscle.

## Introduction

A fracture of guide-wires used in percutaneous coronary interventions and other intervention cardiology procedures is a very rare clinical entity. These guidewires may also be used based upon the operator's choice during other cardiac procedures like cardiac resynchronization therapy implant and other intervention techniques. The reported incidence of fracture of these guide-wires even after post coronary interventions is still uncommon and reported to be incidental in only 0.1-0.2% of all the cases [1, 2]. We are reporting the case as it's an extraordinarily delayed presentation of retained intervention guide-wire post cardiac resynchronization therapy which was successfully retrieved from left-arm deltoid muscle.

## Case report

A 53 years old female presented to us with sudden onset excruciating pain in the left upper arm and shoulder for the last 1-2 days which worsened on the movement of the arm. The patient also reported having a strange foreign body like sensation which also got aggravated with the movement of her left arm. She was a known case of dilated cardiomyopathy (DCMP), severe left ventricular dysfunction with ejection fraction (EF) 20%, for which she underwent cardiac resynchronisation therapy (CRT-D) three years back. Subsequently, the patient underwent lead replacement at another centre for the non-functional left ventricular lead about 6 months ago. The right atrial (RA) lead was also found to be non-functional which was replaced with subclavian vein puncture and screwed. Apart from the two procedures for CRT-D, the patient did not give the history of any other interventional procedures.

On examination, a wire tip like foreign material was palpable in the left upper arm which became more prominent on elevation and abduction of the arm. Therefore, she was subjected to undergo a chest x-ray which showed wire-like opacity extending from the pocket of the CRT-D device to left upper arm [Fig.1]. Computed tomography (CT) of thorax with contrast was done which confirmed the presence of the foreign body in the left upper arm [Fig.2], and upper limb vessels showed normal contrast opacification. Fluoroscopy showed the wire-like foreign body extending from the pocket of CRT-D to left-arm [Fig.3]. Surgical exploration was planned with an intent to remove this wire. A longitudinal incision was applied over the left upper arm over the palpable foreign body. The wire was impacted in the deltoid muscle and reached up to subcutaneous tissue, which was dissected and retrieved completely. There was no neurovascular injury noted. The retrieved wire resembled a coronary guidewire with coating and radiopacity at the distal tip which must have been used to deploy the pacemaker lead during the last procedure. The CRT-D device was programmed and checked for all parameters and was found to be properly functional. Postoperative recovery was uneventful and the patient was discharged on the second postoperative day. After 2 weeks of follow up, the patient was asymptomatic and had full recovery of the surgical wound.

## Discussion

A fracture and retention of guide-wires are uncommon but a known complication of the interventional cardiology procedures. Most cases are diagnosed immediately or just after the procedures and the wires are retrieved either percutaneously or surgically [3]. Rarely, the fractured wire may be missed inadvertently at the time of procedure and diagnosed late when the patient had complications related to the retained foreign body [4], or incidentally diagnosed while diagnostic evaluation for the other diseases.

Our patient had undergone two procedures; first, for implantation of cardiac resynchronization therapy defibrillator (CRT-D) 3 years back, and second, for replacement of left ventricular and right atrial lead for lead dysfunction 6 months ago. Both the procedures were done at different centres. Our patient had presented with pain in left arm and shoulder due to migration of guide-wire from CRT-D pocket to left upper arm, which became severe when the tip of the wire reaches to subcutaneous tissue after crossing the deltoid muscle of the left arm. Probably, the wire was fractured at the time of previous procedure and was inadvertently missed at that time and retained in the pectoral muscles and gradually migrated over time to arm with the movement of the arm. Management of retained guide-wire is the retrieval of the wire using either a percutaneous technique or open surgical technique [5]. In our patient as the wire was impacted in arm muscles, and was not suitable for percutaneous retrieval and thus open surgical retrieval was done.

## Conclusion

A fracture and retention of guide-wire is an uncommon but known complication during percutaneous cardiac interventions and should be dealt promptly to prevent untoward complications. Such unusual retention of guidewire causing unrelenting pain and discomfort after a cardiac resynchronization therapy lead replacement has not been reported yet.

## Conflict of interest

All the authors declare that there is no conflict of interest. Informed consent was taken from the patient for the publication of the case report.

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**Figure captions**

Figure 1**:** X-ray chest showing wire-like opacity extending from the pocket of the CRT-D device to left upper arm (red arrow)

Figure 2: Volume rendered (VR) 3D images of the chest computed tomography showing the presence of wire in the left arm (red arrow)

Figure 3: Fluoroscopic image showing the wire-like foreign body extending from the pocket of the CRT-D device to left arm (red arrow)