Percutaneous retrieval of intravascular foreign bodies: Roping the steer by its horns

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Objectives

To demonstrate current technique employed in the percutaneous retrieval of intravascular bodies and to report our experience.

Home made snare loop retrieval catheter with a long guidewire
Percutaneous retrieval of intravascular foreign bodies: Roping the steer by its horns

Why to retrieve bodies?

Based on our experience and guidelines, every mobile foreign body have to be removed because of the high risk of complications associated (thrombosis, pulmonary embolism, infection).

<table>
<thead>
<tr>
<th>Why to retrieve bodies?</th>
<th>Cath fragment</th>
<th>Coils</th>
<th>Swan-Ganz</th>
<th>Vena cava filter</th>
<th>Occluder device</th>
</tr>
</thead>
<tbody>
<tr>
<td>FB</td>
<td>4</td>
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<td>Successful technique</td>
<td>+</td>
<td>+</td>
<td>+</td>
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<tr>
<td>Complication</td>
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<td>1</td>
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</tbody>
</table>

Study table shown successful retrieval in all cases and one complication during the procedure of an embolization coil extraction, treated by a prolonged retrieval procedure.
How to retrieve foreign bodies?
The most frequently used technique to remove intravascular objects is the nitinol gooseneck snare loop combined with multipurpose catheters with a hook configuration. In our study, the procedure was done by femoral or transjugular approach. The intravascular foreign bodies (IFB) were demonstrated below.
61yo man with leukemia. A) Radiograph shows fractured catheter. B) Snare catheter introduced by femoral approach. C) Radiograph shows fragment catheter being withdrawn by tulip snare technique. D) Final radiograph showing the successful retrieval of the fragment catheter.
58 yo man with a catheter’s fragment dislodged during thrombolysis and located into popliteous artery. The first radiograph shows the fragmented catheter. The procedure was to introduce a snare lasso catheter and to capture the proximal portion of the catheter. When we pulled it to retrieve, the distal portion of the guidewire snare lasso ruptured from the median portion of the catheter. Another snare lasso was introduced in order to retrieve first the fragmented catheter and in a second time the fragmented guidewire snare lasso. The management of the catheter was successful, demonstrated by the last radiograph. Finally, the snare lasso catheter was retrieve by femoral approach. No complication during the procedure.
34 yo woman presenting a pulmonary malformation in a Rendu-Osler disease. A) Radiograph shows filling of malformation in the right lower lobe. B) Selective catheter into the afferent artery of the malformation. C) The control radiograph shows coil dislodged into the right cardiac cavity. D) Gooseneck snare loop catheter was manipulated until it surrounded the coil. E) Coil could be withdrawn together with catheter out of right femoral approach. F) Radiograph showing the procedure successful. The embolization procedure will be done another day. The patient presented two arrhythmias episodes during the procedure, but no other complication will be present.
Results

Various vascular sheaths ranging from 5 to 14 French were used. The snare technique has been used in all patient, using combination of multipurpose catheters and a nitinol snare loop. The procedure was successful in 11 (97%) of the 12 example. No case required surgery. We observed one procedure-related complication (rupture of the distal portion of the snare loop catheter) successful treated by a prolonged retrieval procedure.

Take home message

The snare technique is a useful and a safe method as an alternative procedure to surgery to remove intravascular foreign bodies. This technique is highly effective with low rate complications and should always be the primary method of choice.