RUPTURE OF RADIOPAQUE TIP OF TORCON NB CATHETER

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ABSTRACT

Radiopaque Tip Polyethylene diagnostic catheter was used when selecting the superior mesenteric artery before transarterial chemoembolization in hepatocellular carcinoma patient. A breaking of the catheter at the junction between the radiopaque tip and its shaft was noted. The broken tip was retrieved using 3-F vascular retreival forcep and surgical cutdown. It was claimed that opacification of the tip could reduce contrast consumption and fluoroscopy time. The use of the radiopaque tip "Torcon NB" catheter requires a high concern regarding possible catheter rupture.

Keyword: complication of angiography, catheter complication

Complications of Angiography can generally be divided into three categories: systemic complications, complication related to the puncture site, and complication related to catheter and guidewire. Intravascular foreign bodies due to catheter, guidewire or other eqipments and their transluminal retrieval techniques have been occasionally reported.[1-6] Regarding the broken diagnostic catheter, majority of complications have dealt with the fracture of venous catheter, however they are less frequent in the arterial system. Recently, radiopaque-tip "Torcon NB" diagnostic catheter (COOK®, Australia) has been released on the market. We report a catheter complication which may be due to a defect to the structural design of that kind of catheter.

CASE REPORT

A 62 year-old male with hepatocellular carcinoma was sent for transarterial chemoembolization. A resident was assigned to perform a diagnostic angiography before intervention. Using the 5-F (C2) cobra-shaped "Torcon NB" radiopaque-tip catheter (COOK®, Queensland, Australia) that will accept 0.035 inch or 0.038 inch guidewire, the resident selected the coeliac artery first and a complete angiography was done without technical or anatomical problems. Then she tried to catheterize the SMA to see the replaced hepatic artery or minor feeding artery. After multiple gentle manipulations, she could not select the SMA and decided to change the catheter type. During insertion of the 0.035 inch, Teflon-coated floppy guidewire (Terumo, Japan) the guidewire passed through the tip of the catheter into the aorta. The resident then noticed that the catheter tip was completely broken near the junction between the tip and its shaft.

We were consulted o the angiographic suite. By using a standard angiographic technique, the 3-French vascular retrieval forceps (COOK®, Bloomington,IN,USA) was introduced into the abdominal aorta via the guiding catheter and out the distal end. Under fluoroscopic control, thebroken tip was grasped and retrieved into the right common iliac artery but could not be removed

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through the 8-F vascular sheath after multiple attempts. A vascular surgeon was consulted immediately. The broken fragment was surgically removed via cutdown under local anesthesia.

We examined the removed tip and shaft of the catheter and found that all parts were removed completely without any residual part.(fiqure-1) The catheter was broken near the junction between radiopaque tip and shaft where the stainless steel braid ends. No immediate complication or distal embolization occured after the radiological and surgical procedures.

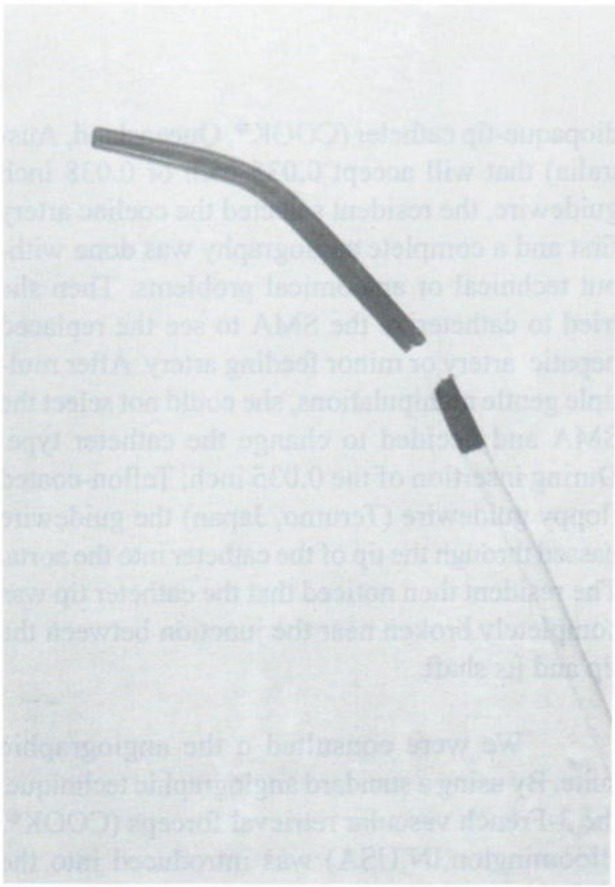

Fig. 1 Rupture of the catheter near the junction between the radiopaque tip (without metallic core) and its shaft (with metalliccore)

DISCUSSION

The most common iatrogenic foreign bodies are broken through-the-needle polyethylene and diagnostic catheter fragments. Other common objects include a guidewire and guidewire fragments, inferior vena cava filter, intravascular metallic stents and vascular sheaths. [8] Several authors have reported techniques in intravascular retrieval of iatrogenic foreign bodies.[2-6] The tools and techniques must be chosen in accordance with individual circumstances.[7]

For better visualization of diagnostic catheter tip, the Torcon MR or NB catheter (COOK®) was designed and released on the market in 1995. This kind of polyethylene catheter is constructed of two different materials. The shaft is made of a stainless steel core. The tip is a more plaint structure without metallic braid. So, the junction or connection between the two materials provides a weak point where the catheter could fragment. Paul et al.,[9] reported a rupture of this kind of catheter during abdominal angiography in the same way we found.

Recently, highly flexible retrieval devices have been introduced to practical uses. Most devices are specially designed for, but not limited to, intravascular retrieval.(10,11) They are smaller and less traumatic than their predecessors.[8] The device we used in this report is arat-tooth forcep which has two diametrically opposed jaws that both contain a single distal tooth.

We can not prove scientifically that a rupture of this kind of catheter is due to structuraldefect but this is the second report which raises the hypothesis. In conclusion, even it was claimed that opacification of tip could reduce contrast consumption and fluoroscopy time, the use of radiopaque tip "Torcon NB" catheter requires a high concern regarding possiblecatheter rupture.

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