Case 532

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Percutaneous removal of a displaced biliary stent

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Patient: 73 years, male

Clinical History:

73-year-old male with resected bile duct carcinoma developed stricture of biloenteric anastomosis. This was treated with metallic stent that migrated into the bowel. During second stent placement, the stent migrated again into the bowel. It was removed percutaneously.

Imaging Findings:

A 73-year-old man was treated four years ago at another hospital for bile duct carcinoma. He had surgical resection and biloenteric anastomosis.He presented two years after the initial operation to our hospital with obstructive jaundice. At that time he had no imaging or biochemical findings of metastatic disease. PTC showed complete obstruction at the site of the anastomosis. Because of the initial diagnosis the lesion was considered as malignant local recurrence, and was managed with percutaneous placement of a 10X65-mm Wallstent. The jaundice resolved and the patient was in excellent condition for the next two years, when he developed abdominal pain, and vomiting. On physical examination the abdomen was distended. Laboratory tests were remarkable for elevated bilirubin levels. Plain abdominal films (Fig. 1) demonstrated small bowel ileus caused by migration of the Wallstent into the small bowel. The patient was referred for percutaneous management. PTC showed a severe stenosis of the anastomosis (Fig. 2). A balloon-expandable stent (JOMED) was inserted through a 9-F sheath. During balloon dilatation the stent migrated into the distal bowel loop (Fig.3). The 9-F sheath was exchanged for a similar of 10-F. The tip of hydrophilic guide wire was manipulated through the mesh of the stent, and subsequently grasped with a 20-mm gooseneck snare. Both were pulled back into the sheath. Although it was impossible to withdraw completely the folded stent into the sheath we managed to pull them out of the liver capsule and through a small skin incision out of the patient (Fig.4a&b). A 10X70-mm Wallstent was subsequently placed through the anastomosis extending proximally up to the right bile duct to minimize the risk of future migration (Fig 5a&b). A 10-F pigtail catheter was left to seal the percutaneous tract without external bile drainage. Because we feared a possible damage to the liver capsule we performed a post interventional abdominal CT that did not show subcapsular hematoma or peritoneal hemorrhage. The patient underwent surgical removal of the migrated Wallstent four days later due to unresolving ileus. He did not have bleeding or other complications from the percutaneous procedure. Bilirubin levels returned to normal and the external biliary catheter was removed. He had an uneventful recovery.He remains asymptomatic 6 months after the procedure.

Discussion:

Discussion We initially treated our patient's anastomotic stricture with Wallstent placement, because we erroneously thought the lesion as malignant. Retrospective analysis of the clinical course of our patient's disease has convinced us, that the obstructive jaundice was due to a benign anastomotic stricture. Therefore surgical treatment of the recurrent jaundice was the appropriate choice. Transhepatic balloon dilatation without stenting should be the next choice, if surgery was contraindicated, as this procedure is expected to be successful for 36 months or more in 76% of the cases. Metallic stent placement in benign biliary obstruction should be reserved for those cases where all other techniques have failed. Our decision to place another metallic stent after the first migrated was based on the following reasons: one on the good patency of the previously placed Wallstent, and two on the patient's own persistence on having a second stent placed. We chose a balloon -expandable stent (Jostent) because it combines accuracy in placement and high radial force. Most authors agree that the Gianturco - Rosch self - expandable stent is more suitable for benign biliary strictures, because it is shown to produce less intimal hyperplasia as compared to stents with a tighter mesh like the Wallstent. Nevertheless migration of this stent has also been reported. Reasons for stent migration include primary misplacement, dislocation during endoscopy or percutaneous manipulations in cases of stent occlusion, and unknown causes. There are reports of spontaneous passage of metallic stents through the ileocecal valve, therefore we had adopted a conservative attitude in our patient. On the other hand, there are reports of bowel perforation and obstruction, hence, removal is advisable. We believe that the Wallstent initially placed in our patient migrated because it was placed with its proximal end below the hepatic duct bifurcation. The Wallstents tend to jump from small to bigger spaces, more specific from the narrow bile duct into the wide bowel loop. We believe that the short hepatic duct remnant was mainly the reason for the migration. Therefore we had to place a longer stent within the right duct to achieve stability. By doing so, the left duct has to drain through the metallic mesh. This is a potential cause of occlusion, but in our experience with patients with malignant strictures that it is relatively rare. Nevertheless in a benign disease it should be avoided. We did not manage to completely withdraw the stent into the sheath during extraction. This is attributed to the rigidity of this particular stent as compared to the Wallstent. Fortunately we did not have bleeding complications as the post interventional CT showed.. Percutaneous extraction of misplaced biliary stents is reported in the literature, but this procedure is not

practiced widely. We believe our experience adds a bit of information on the management of this complication.
Differential Diagnosis List: Successful percutaneous removal of a displaced biliary stent

Final Diagnosis: Successful percutaneous removal of a displaced biliary stent

References:

Gorich J, Rilinger N, Kramer S, Aschoff AJ, Vogel J, Brambs HJ, Sokiranski R. Displaced metallic biliary stents; technique and rationale for interventional radiologic retrieval. AJR 1997;169: 1529-33. (PMID:9393158)
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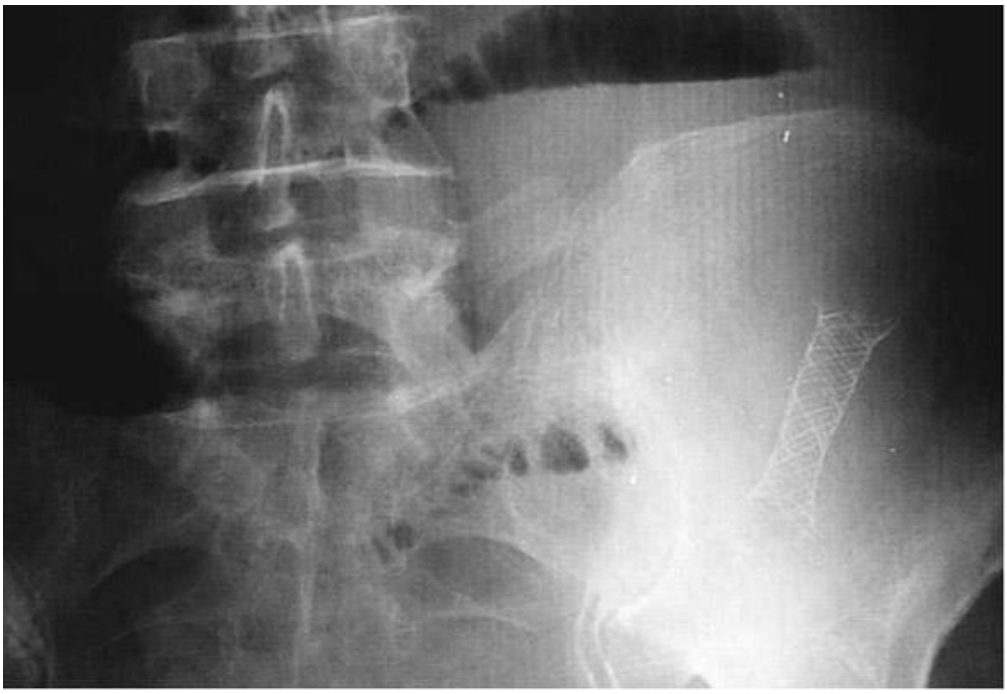
Mueller PR, van Sonnenberg E, Ferruci JT Jr, et al. Biliary stricture dilatation: multicenter review of clinical management in 73 patients. Radiology 1986; 160;17. (PMID: 6976698)
Gillams A, Dick R, Dooley JS, et al. Self-expandable stainless-steel braided endoprosthesis for biliary strictures. Radiology 1990; 174: 137. (PMID: 2294541)

Figure 1

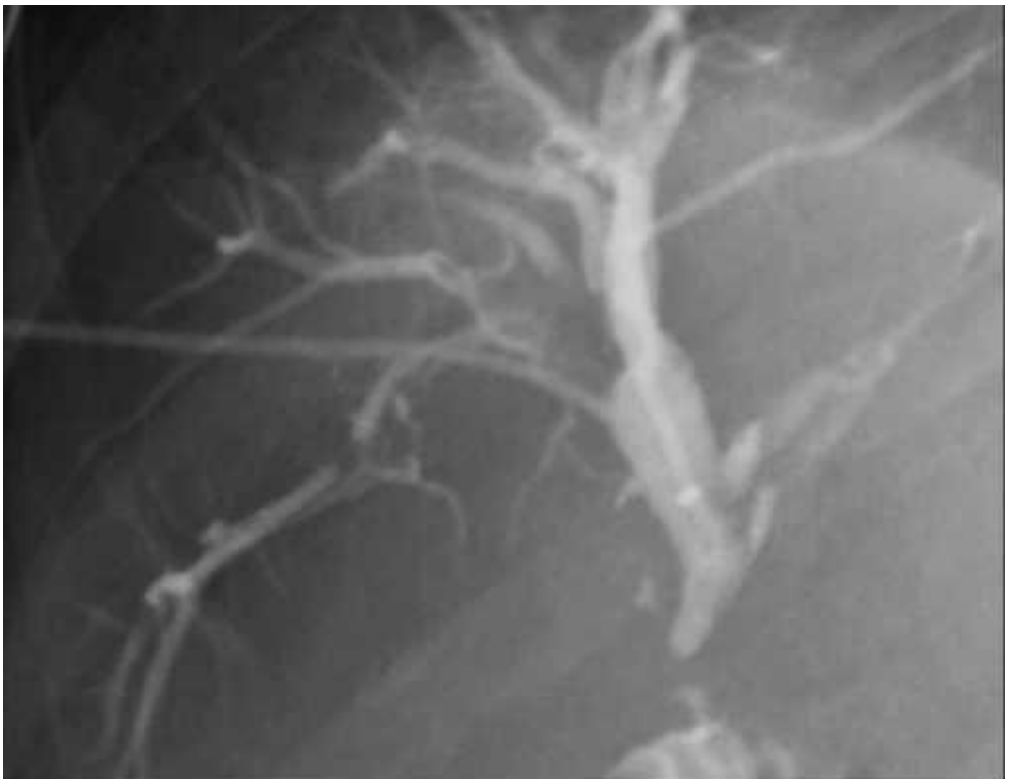
a



Description: Plain film shows distented small bowel loops and the migrated wallstent. **Origin:**

Figure 2

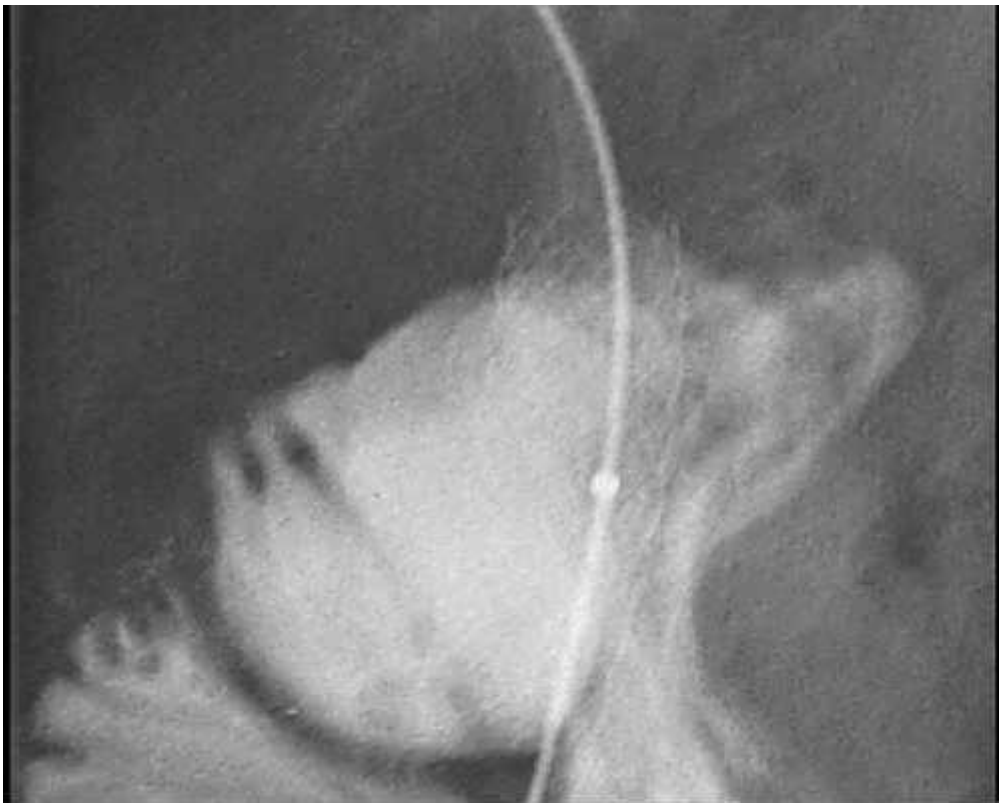
a



Description: PTC shows a stricture at the anastomosis **Origin:**

Figure 3

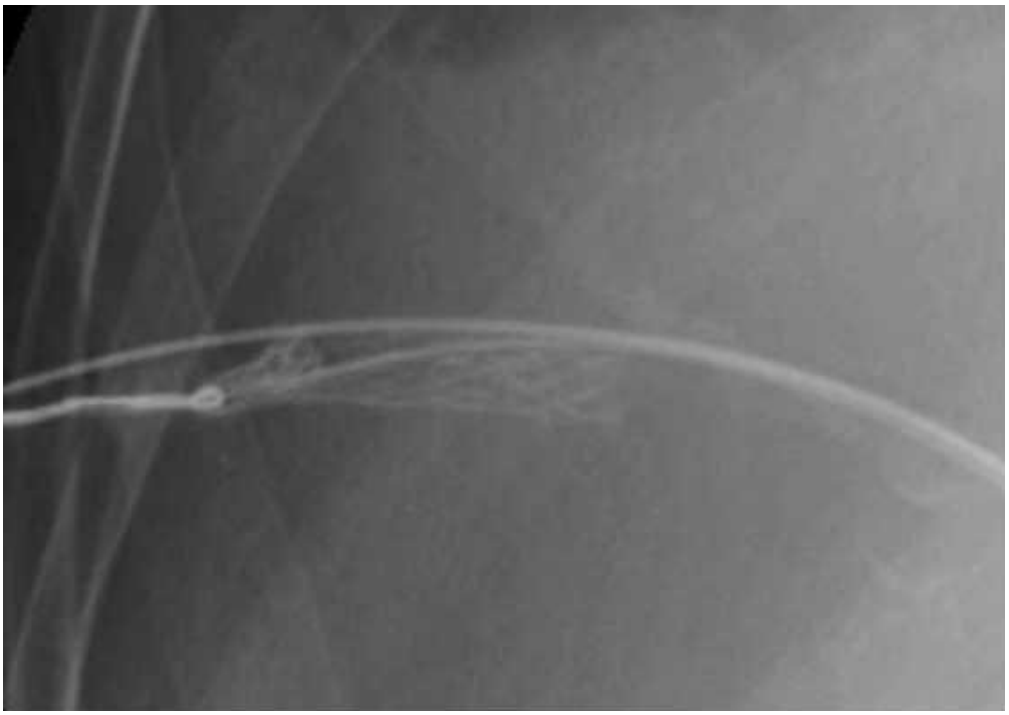
a



Description: Immediate displacement of the new stent into the bowel loop **Origin:**

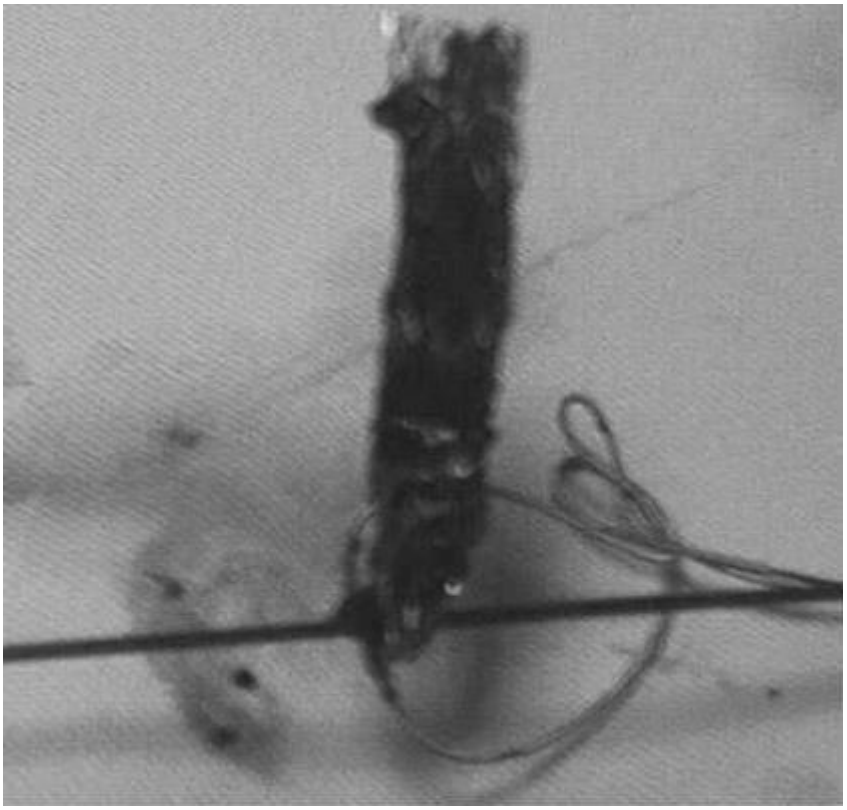
Figure 4

a



Description: Percutaneous extraction of the misplaced stent **Origin:**

b



Description: Photo of the extracted stent **Origin:**

Figure 5

a

Description: Resolution of the anastomotic stenosis after Wallstent placement **Origin:**

b

Description: Photo of the extracted stent with the use of the gooseneck snare. **Origin:**

Figure 6

a

Description: Balloon dilatation with a 10mm balloon **Origin:**

b

Description: Free passage of contrast medium at the end of the procedure **Origin:**