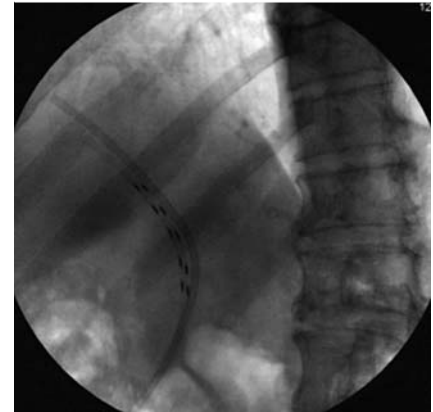


## Iodine-125 biliary stent for palliative treatment of locally advanced gallbladder cancer



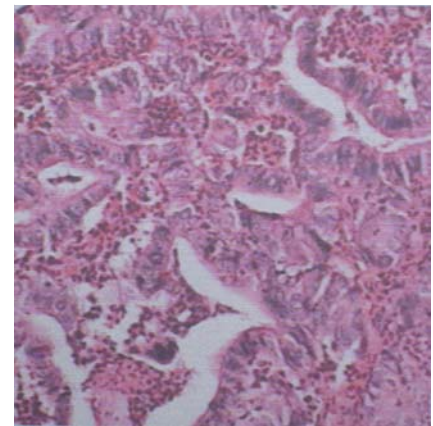
**Fig. 1** Computed tomographic (CT) scan showing carcinoma of the gallbladder infiltrating the common bile duct.



**Fig. 2** Endoscopic retrograde cholangiopancreatography (ERCP) showing a special iodine-125 stent and a normal plastic stent in the common bile duct.



**Fig. 3** Computed tomographic (CT) scan showed resolution of intrahepatic cholangiectasis and no progression of the lesion after 3 months of the implantation of the iodine-125 stent.



**Fig. 4** Histologic section showing features of adenocarcinoma.

The management of primary carcinoma of the gallbladder remains a challenging clinical problem. Intraluminal brachytherapy (ILBT) and interstitial brachytherapy (IBT) have been found to be effective in improving local control in patients with the advanced unresectable carcinoma. Our previous research demonstrated that the combination of radioactive stents and normal metallic or plastic stents was technically feasible and well tolerated by patients with advanced tumors around the pancreatic-head area [1].

A 74-year-old man was presented to our hospital with a 2-week history of abdominal distension and jaundice. A mag-

netic retrograde cholangiopancreatography (MRCP) scan showed a mass in the gallbladder neck, with calculi and gallstones in the common bile duct. A computed tomographic (CT) scan showed carcinoma of gallbladder infiltrating the common bile duct (Fig. 1).

The results of the laboratory investigations were as follows: white blood cell count  $6.40 \times 10^9/L$ ; red blood cell count  $4.02 \times 10^{12}/L$ ; platelet count  $197 \times 10^9/L$ ; total bilirubin  $448.5 \mu\text{mol}/L$ , direct bilirubin  $339.8 \mu\text{mol}/L$ , alanine aminotransferase  $36 \text{ U}/L$ , aspartate aminotransferase  $33 \text{ U}/L$ ; and  $\gamma$ -glutamyltransferase  $288 \text{ U}/L$ . Renal function, alpha-fetopro-

tein, and carcinoembryonic antigen were normal, while the serum level of CA19-9 was  $344.7 \text{ U}/\text{mL}$ . An endoscopic retrograde cholangiopancreatography (ERCP) showed that the lower common bile duct was filled with stones. The ERCP also demonstrated irregular stenosis in the upper common bile duct and dilatation of the proximal intrahepatic duct. Endoscopic sphincterotomy was performed and the stones were successfully removed. An endoscopic retrograde brush was used during the operation, and a few days later, the cytology results confirmed the presence of adenocarcinoma. We then placed a special iodine-125 stent, in



**Fig. 5** Computed tomographic (CT) scan showed no significant increase in tumor volume as well as no metastasis.

which the iodine-125 seeds were inserted into a customized plastic stent, and a normal plastic stent in the common bile duct (● Fig. 2).

The jaundice subsided in 3 days, and 3 months later a CT scan showed resolution of the intrahepatic cholangiectasis (● Fig. 3).

Following this, the combination of the iodine-125 stent and a normal plastic stent was replaced five times at intervals of 4–5 months. The implantation was considered to be safe in this patient as there were no significant procedure-related complications such as acute pancreatitis or early cholangitis. During the fourth implantation, we collected specimens from the bile duct after the removal of the iodine-125 stent and pathological examination also showed the specimen to be an adenocarcinoma (● Fig. 4).

After 2.5 years, the patient remains under regular follow-up; a recent examination revealed that liver and kidney function was normal and a CT scan showed no remarkable increase in tumor volume (● Fig. 5).

We are unaware of any previous reports similar to the present case [2,3]. We conclude on the basis of this report that the placement of radioactive stents and plastic stents for the palliative treatment of malignant lesions such as adenocarcinoma is technically feasible, well tolerated in patients with advanced tumors of carcinoma of gallbladder, and should be safe and effective.

**Competing interests:** None

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