Extra-Anatomic Stenting of the Biliary System

SANJAY S BAIJAL, SUMIT ROY, GOURDAS CHOUDHURI

Departments of Radiology and Gastroenterology,
Sanjay Gandhi Postgraduate Institute of Medical Sciences, P B 375, Lucknow 226 001

Abstract

Tumor necrosis interfered with conventional methods of stenting in a patient with hilar cholangiocarcinoma. Therefore, a hepaticojejunal fistula was percutaneously catheterized and dilated, and a large caliber endoprosthesis inserted to drain the right hepatic ductal system.

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Introduction

Malignant strictures involving the confluence of hepatic ducts are frequently managed by percutaneous insertion of biliary endoprostheses. Either one or both ductal systems are decompressed in this fashion. Reduced to its bare essentials, the procedure involves catheterization and dilatation of the lesion, followed by placement of a suitable prosthesis through it.

We recently encountered a case in which extensive tumor necrosis precluded the use of conventional techniques. Extra-anatomic stenting provided a satisfactory solution to the problem.

Case Report

A middle-aged patient with Bismuth type II hilar cholangiocarcinoma was referred to us with a displaced external biliary catheter. Following percutaneous cholangiography, catheter drainage of both lobes of the liver was performed. An 8.3 Fr Ring biliary catheter (Cook Inc, Bloomington, USA) was left to drain internally on each side. Five weeks later, the patient returned with occlusion of the right catheter; under fluoroscopic guidance, it was cleaned using a guidewire, followed by repeated saline flushes. Within two weeks he developed percutaneous leakage at both puncture sites. The right-sided catheter was replaced by a 12 Fr nasojejunal tube with multiple side ports. A fresh Ring catheter was inserted in place of the left one. After six weeks of satisfactory drainage, the patient received internal stenting. In view of his history of repeated catheter malfunction, we started to use Gianturco stents, hand made from the mandril of a 0.035" guidewire.

A preliminary cholangiogram through the 12 Fr tube opacified a large cavity inferior to the porta hepatitis, freely communicating with the right hepatic duct at the confluence. A narrow tortuous fistula led anteriorly into the duodenal cap. Using Coon's technique, the drainage catheters were replaced by three Gianturco stents. One each was placed in the right and left hepatic ducts at their junction, and a third in the common hepatic duct, a little beyond its origin (Fig 1). Check cholangiogram confirmed the patency of the stented segments. A 7 Fr catheter was retained on each side to maintain access to the biliary system.

Within 34 h, all stents had migrated. The proximal two were in the retropancreatic cavity, while the distal one had moved beyond the stenosis. A 0.035" J tip guidewire was introduced into the left hepatic duct, and maneuvered down the common bile duct into the duodenum. Over it, a 12 Fr biliary sheath (Cook Inc, Bloomington, USA) was passed in, till it abutted against the stent in the common bile duct. A 6 cm long Amplatz prosthesis, without the lower flap, fashioned from a nephrostomy catheter (Angiomed GmbH, Karlsruhe, Germany) was loaded in the sheath. A matched dilator was then used to deliver it astride the hilar lesion; and the sheath was withdrawn. The external catheter on the right side was exchanged for a 7 Fr multipurpose A-2 catheter (Cordis Corp, Miami, USA). Under fluoroscopic guidance, this was negotiated through the retropancreatic cavity, via the fistula into the duodenum (Figs 2a & 2b). The tract was coaxially dilated to 12 Fr, and biliary sheath of the same caliber placed with its tip in the duodenum. A 12 Fr, 10 cm long endoprosthesis of the same type as inserted on the left was deployed, creating a "neonephro-pancreato-duodenostomy", and the sheath removed (Fig 3). Contrast studies performed the next day confirmed stent patency. The patient, till his death two months later, did not develop clinical features suggesting occlusion of either endoprosthesis.

Fig 1: Gianturco stents reconstructing confluence of hepatic ducts; tumor cavity and in communication with duodenum outlined by contrast injected in biliary tree.

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Discussion
Obstructive jaundice due to malignant lesions at the porta hepatis often provides a challenge to the skills of the interventional radiologist. Though decompression of one side usually permits recovery of adequate liver function, it may increase the risk of biliary sepsis. Bilateral drainage can be achieved by either of the following methods: 1) one prosthesis from each ductal system opens in the common bile duct or 2) one stent shunts bile from one side to the other, whereas another channels it distal to the lesion. In either case, duct morphology limits the caliber of the prosthesis that can be utilized, enhancing the chances of stent malfunction. Coons has demonstrated that reconstitution of the confluence by expan-
dable metallic devices is an attractive option in such a situation. 5

Tumor necrosis defeated our attempts at adapting the last strategy. Rather than persisting with poorly tolerated external catheters, we decided to exploit the tenuous communication between the tumor cavity and duodenum as a solution to the problem. The resultant technique provided an apparently satisfactory answer, allowing independent drainage of both ductal systems by large caliber endoprotheses. We do recognize that the presence of a fistula played an important part in our success. Nevertheless, the ease with which this track could be catheterized, dilated and stented encourages us to suggest that, by adapting the technique described by Laffey et al, 6 it should be possible to perform hepato-biliary drainage by the percutaneous route. This would indeed be a welcome addition to the repertoire of the interventional biliary radiologist. A fallback procedure would then become available for the management of cases of obstructive jaundice not amenable to conventional methods of treatment.

References

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