



## Cholangiocarcinoma arising after biliary-enteric drainage procedures for benign disease

### BACKGROUND

Although choledochoduodenostomy was widely performed for choledocholithiasis in the 1960s and 1970s, Roux-en-Y hepaticojejunostomy is currently the preferred biliary-enteric anastomosis for benign and malignant disease and is generally considered a low risk procedure, aside from the potential for cholangitis.

### AIMS

We report three cases referred over a 12 month period in which cholangiocarcinoma developed after previous biliary-enteric anastomosis, and review the literature to determine the likelihood of an association.

### PATIENTS

#### Case No 1

A 51 year old female developed obstructive jaundice 26 years after choledochoduodenostomy for a biliary stricture after iatrogenic bile duct injury. Endoscopic retrograde cholangiopancreatography (ERCP) showed neoplastic infiltration at the level of the anastomosis, biopsy of which revealed cholangiocarcinoma (fig 1). Percutaneous transhepatic cholangiography (PTC) demonstrated diffuse biliary strictures and biliary endoprotheses were inserted. Death occurred two months later.

#### Case No 2

A 73 year old female presented with obstructive jaundice 39 years after

biliary-enteric anastomosis for iatrogenic bile duct injury. Computed tomography scanning and PTC revealed cirrhosis and focal strictures of the biliary confluence and common bile duct, which were stented. The patient died two weeks later. Autopsy confirmed cirrhosis and multifocal cholangiocarcinoma.

#### Case No 3

A 72 year old male renal allograft recipient developed obstructive jaundice 15 years after choledochoduodenostomy for choledocholithiasis. ERCP and PTC demonstrated hilar stenosis and biopsy confirmed cholangiocarcinoma. A palliative surgical bypass was undertaken. The patient died four months after diagnosis.

### DISCUSSION

The occurrence of cholangiocarcinoma many years following surgical biliary-enteric bypass may be coincidental but it raises the possibility of an aetiological link. An alarming incidence of cholangiocarcinoma among a cohort 1003 patients has recently been reported,<sup>1</sup> while another study reported a 7.4% incidence of cholangiocarcinoma after sphincteroplasty.<sup>2</sup> Twelve other cases of cholangiocarcinoma occurring late (average 20 years) after biliary-enteric drainage have also been reported.<sup>3-9</sup> Mean survival was 3.3 months. This dismal outcome may be due to the multifocal nature of the tumours, supporting the hypothesis of toxic carcinogenesis affecting the biliary epithelium, causing a field change.

As for choledochal cysts where there is an abnormal pancreaticocholedochal junction, an activated mixture of pancreatic secretions and bile may contain cytotoxic components, and may result in chronic inflammation.<sup>10,11</sup> Bacterial infection is a further factor contributing to the chronic irritation of the mucosa. All three patients in this report demonstrated the known association between choledochoduodenostomy and cholangitis.<sup>12</sup> This strong relationship is supported in two previous reports.<sup>1,2</sup> Mucosal changes have been documented in humans late after choledochoduodenostomy,<sup>13</sup> and in two animal models biliary drainage procedures have induced premalignant or malignant changes to the biliary epithelium.<sup>14,15</sup>

It remains to be verified whether the recent epidemiological data which have shown a steady increase in the incidence of cholangiocarcinoma in England and Wales since the early 1980s<sup>16</sup> corresponds to the popularity of choledochoduodenostomy two decades previously.

### CONCLUSION

Experimental, clinical, and epidemiological data are available to support the hypothesis of a link between cholangiocarcinoma and biliary drainage procedures. We believe that the evidence is strong enough to prompt a reappraisal of policies regarding these procedures.

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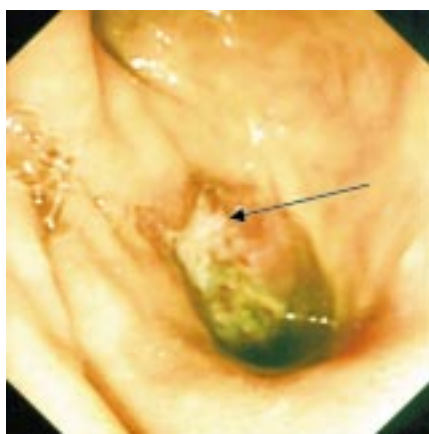
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**Figure 1** Adenocarcinoma (arrow) on the biliary side of a choledochoduodenal anastomosis, as seen at endoscopic retrograde cholangiopancreatography.

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