



Original research

Predictors of success of treatment of distal two thirds common bile duct strictures: A retrospective Cohort study over two years



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HIGHLIGHTS

- Distal biliary strictures have a multifactorial etiology.
- Pancreatic adenocarcinoma was the most common cause followed by fibrotic stricture secondary to stones.
- Patients were classified according to the intervention into (endoscopy, open surgery, percutaneous and follow up) groups.
- In univariate analysis, the success of treatment was significantly associated with the benign nature of the stricture of CBD.
- This is the first report to address this issue focusing on the distal location of the strictures no matter the etiology.

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ABSTRACT

Background: Distal biliary stricture is a challenging clinical condition that requires a co-ordinated multidisciplinary approach.

The aim of this work: was to evaluate the predictors of success of different treatment modalities of distal two thirds CBD strictures.

Patients and methods: Data were retrieved retrospectively from the medical records of the patients with distal biliary strictures treated in the Main Alexandria University Hospital from June 2013 to June 2015. Patients were classified into three groups according to the intervention performed: (endoscopic, open surgical, and percutaneous). In addition to the forth group that was followed up without intervention.

Results: The study included 282 patients. The mean age was 61.1 ± 10.8 years (25–78) years. The most frequent presenting symptom was jaundice. Pancreatic adenocarcinoma was the most common cause followed by fibrotic stricture secondary to stones.

Conclusion: In univariate analysis, the success of treatment was significantly associated with the pathology of the distal two thirds CBD. In the multivariate analysis, only two factors were affecting the success of the treatment; the stricture length and site.

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1. Introduction

The common bile duct (CBD) begins at the union of the cystic and common hepatic ducts and ends at the papilla of Vater in the second part of duodenum. It varies in length from 5 to 15 cm depending on the exact site of union [1]. We report our experience with strictures in the distal two thirds of the common bile duct. These are challenging and require a co-ordinated, multi-

disciplinary approach for both diagnosis and treatment [1].

Distal biliary strictures have a multifactorial etiology [1]. Benign causes include choledocholithiasis, chronic pancreatitis, IgG4 autoimmune pancreatitis, HIV cholangiopathy, portal biliopathy, papillary stenosis, choledochal cyst and opium intake. Malignant causes include; cancer head of pancreas, distal cholangiocarcinoma, and ampullary carcinoma, while a subset of patients have an indeterminate stricture. The most common growth pattern of extrahepatic cholangiocarcinoma is the infiltrative type. It characteristically manifests as a focal biliary stricture without an identifiable mass, mimicking a benign lesion [2,3].

Imaging of patients with extrahepatic biliary stricture has

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traditionally included computed tomography [4], ultrasonography and cholangiography for diagnosis and staging [5,6]. However, a gray area persists in the diagnosis of some extrahepatic biliary strictures, particularly those in which there is no evidence of a mass or stone [2].

Determining the etiology of a distal biliary stricture is crucial for appropriate therapy. However, such determination can be particularly problematic in cases of biliary strictures without an identifiable mass on computed tomography [4] or magnetic resonance imaging (MRI). The decision to operate has traditionally been made on the basis of clinical history and cholangiographic appearance of the stricture [7]. However, determining the cause of a stricture on the basis of morphologic features and brush cytology is unreliable. Empiric resection may be necessary to differentiate benign from malignant strictures [8].

Palliative methods for malignant bile duct obstructions include surgical bilioenteric bypass, intraluminal or external radiotherapy, chemotherapy, photo-dynamic therapy, percutaneous therapy, and endoscopic palliation [4]. For patients with strictures distal to the hepatic hilum, placement of a single stent can afford bile drainage of the whole liver [9].

The aim of this study was to evaluate the predictors of success of treatment of different modalities of distal two thirds CBD strictures.

2. Patients and methods

2.1. Study setting

The present study was conducted in the Gastrointestinal Surgery unit, Main Alexandria University Hospital, Faculty of Medicine, Alexandria University, Egypt. It is the largest hospital of its kind in Alexandria, a tertiary care facility and a center of expertise in patient care and management. It serves population of Alexandria city and nearby governorates (Matrouh, El-Beheira, and Kafr El-Sheikh) with a catchment population of about 20 millions that leads to high case load that warrants the accumulation of a sufficient number of cases during a reasonable period of time.

2.2. Study design

Retrospective Cohort Study.

2.3. Study population

The study population was patients with abnormal narrowing of the distal biliary tree, attending gastrointestinal surgical unit in the Alexandria Main University Hospital. The study population was classified into three groups according type of intervention performed (endoscopic, open surgical, and percutaneous) in addition to the fourth group that was followed up without intervention.

2.4. Eligibility criteria

All patients diagnosed to have abnormal narrowing of distal two thirds biliary tree.

2.5. Sample size calculation

A minimum sample size of 246 was required to achieve 80% power and a success rate of 80% with standard error of 0.05 with a significance level of 0.05.

2.6. Tools of data collection

After having approval from the ethical committee of Alexandria

University. Data were retrieved from the medical records of the Main Alexandria University Hospital from June 2013 to June 2015. Records included the following data:

1. Socio-demographic data.
2. Clinical data: Symptoms of jaundice, cholangitis, right hypochondrial pains.
3. Laboratory investigations.
4. Imaging films and reports: Ultrasonography of the abdomen and magnetic resonance cholangiopancreatography (MRCP) if indicated to complete the imaging characteristics of the stricture as shown in Figs. 1 and 2. CT was done for the differentiation between benign and malignant strictures. Based on the study of Choi et al. [10], distal malignant strictures were differentiated by their longer length (>18 mm), CBD diameter (larger than 2.2 cm), wall thickness more than 1.5 mm and most significantly; hyperenhancement during the portal venous phase. Malignant CBD strictures usually manifest as irregular strictures with a shouldered margin, whereas benign ones tend to have smooth borders with tapered margins. Another feature for a benign stricture is non progression during follow-up. ERCP was done for therapeutic purposes only.
5. Endoscopic reports.
6. Intervention data: Endoscopic treatment encompassed stricture dilatation and stenting by ERCP, percutaneous treatment included image guided stricture dilatation and stenting (internal-external). Surgical treatment was done either as primary treatment for resectable malignant strictures or after failure of either endoscopic or percutaneous treatments in benign cases. Diverse operations according to the case performed; included pancreaticoduodenectomy, CBD exploration, localized duct resection and bilioenteric bypass.
7. Histopathological reports.
8. Complications of the different modalities of interventions.
9. Short term follow up: from 4 months up to one year; for improvements of the symptoms. Re-appearance of jaundice was considered failure of treatment.

2.7. The outcome variable

The outcome variable was the success rate determined by the freedom from symptoms and absence of the recurrence in the follow up period.

2.8. Statistical analysis

Statistical analysis was done using Statistical Package of Social Science Program (SPSS) version 18.0. (Chicago: SPSS Inc.) 18.

The qualitative variables were summarized by frequency and percentage. Chi squared test was used to test for association between the success and the other qualitative variables. Monte Carlo test was used if more than 20% of total cells had expected cell counts <5.

The quantitative variables were summarized by the mean and standard deviation. Student' test was used to compare between the success state regarding the quantitative variables.

Multivariate Regression analysis model was used to assess the significance of the predictors of success rate while controlling for other co variables.

5% level of significance was used on all the tests of association or tests of comparison.

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