



Introduction

Biliary stents allow drainage of the bile ducts in palliative or preoperative conditions in cases of malignant biliary stenosis and biliary calibration in cases of benign etiological stenosis [1-3]. Initially made of plastic and of a small caliber, biliary stents have gradually increased in diameter to reduce the obstruction rate and increase their lifespan [4,5]. Despite these achievements, the obstruction rate with plastic stents remains high, occurring in 30% of cases in the first three months after installation and 70% of cases after a 6 month period [6]. Metal stents with larger diameters were then developed to double the patency time of biliary stents but at a higher cost [7]. According to the latest recommendations of the European Society of Gastro Enterology (ESGE), the use of a metal biliary stent is recommended in patients with malignant stenosis if the patient's life expectancy is more than four months. For benign strictures, recommendations promote the use of plastic biliary stents [8]. However, this approach requires an average of four endoscopic retrograde cholangiography (ERC) procedures [9].

biliary stent placement, including preoperative drainage; (2) age ≥ 18 years old; and (3) Karnofsky score ≥ 40 . The exclusion criteria were as follows: (1) hilar stenosis; and (2) coagulation disorder (PT $>$ 50%, platelets $<$ 80,000). "Control" patients who had been treated with a covered or uncovered Cook Evolution (Consore[®]) metal, 10 mm diameter biliary stent (length, 4 or 6 cm) were identified by searching a database from January 2016 to March 2018. "Case" patients were excluded if they had a diameter ≥ 10 mm

Grade IIIa	0	1
Grade V	0	3
Type of adverse event		
Acute cholecystitis	0	1
Acute pancreatitis	1	0
Cholangitis	0	2
Death	0	3
Biliary stent obstruction rate, no. (%)	20 (41.7)	12 (50)
Delay before stent replacement (months), mean [range]*	4.86 [0.23-17.12]	5.13 [0.16-6.93]
Etiology of stent obstruction/migration, no. (%)		
Sludge	3 (23.1)	1 (11.1)
Tumor ingrowth	7 (53.8)	5 (55.5)
Migration	3 (23.1)	4 (44.4)
Biliary stent replacement program (chronic pancreatitis)	0	2
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this effect could be reduced by producing so called "active" bile duct prostheses coated with a substance that slows the proliferation of epithelial tissue, as is the case for cardiac stents [18]. Another possibility would be to further enlarge the diameter of the biliary stent such that even if epithelial tissue develops, it does not obstruct the prosthesis. This possibility was developed in a study in 2018; the results showed that an uncovered prosthesis with a diameter of 14 mm extended the median time to obstruction by up to 6.22 (5.37-7.04) months, with a 6 month patency rate of 91% [19]. For benign stenosis, the opposite trend was observed, with a tendency toward a longer patency time for 12 mm prostheses (4.86 months h

management of malignant biliary obstruction: stents of 10 French gauge are preferable to stents of 8 French gauge. Gastrointest Endosc 34:412-417.

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