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Placement of metallic biliary endoprostheses in complex hilar tumours

M. Maillard[a,*], S. Novellas[b], G. Baudin[a], L. Evesque[c], L. Bellmann[a], J. Gugenheim[d], P. Chevallier[a]

[a] *Department of medical imaging, centre hospitalier régional et universitaire de Nice, hôpital L'Archet-2, 151, route Saint-Antoine-de-Ginestière, BP 3079, 06202 Nice cedex 3, France*
[b] *Institut Arnault-Tzanck, avenue du Docteur-Maurice-Donat, 06721 Saint-Laurent-du-Var, France*
[c] *Hepatogastroenterology department, centre hospitalier régional et universitaire de Nice, hôpital L'Archet-2, 151, route Saint-Antoine-de-Ginestière, BP 3079, 06202 Nice cedex 3, France*
[d] *Digestive surgery department, centre hospitalier régional et universitaire de Nice, hôpital L'Archet-2, 151, route Saint-Antoine-de-Ginestière, BP 3079, 06202 Nice cedex 3, France*

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Percutaneous biliary drainage;
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Abstract
Purpose: To assess the technical success, clinical success and complications after 1 month of percutaneous biliary drainage with the placement of several metallic endoprostheses in complex hilar liver tumours.
Materials and methods: This is a retrospective study, on a homogenous target population of 68 consecutive patients, who underwent multiple percutaneous biliary drainage for complex hilar tumour (Bismuth type II, III and IV) between August 1998 and August 2010. Patients benefiting from previous endoscopic drainage were excluded from the study. The clinical data, biological data, imaging and interventional radiology procedures were studied.
Results: The rate of success of the technique was 98.5% and the clinical rate of success was 84% after 1 week and 93% after 1 month. The rate of minor and major complications was 25 and 13% respectively.
Conclusion: Multiple percutaneous biliary drainage in complex hilar tumour is a safe and effective first intention procedure.

* Corresponding author.
E-mail address: mickael.maillard@gmail.com (M. Maillard).

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Cholangiocarcinoma and hepatic metastases are the main causes of the obstruction of the hepatic hilum. These tumours have a poor prognosis with a mean survival of 5 years for cholangiocarcinomas under 5% [1]. Most of these patients die less than one year after the diagnosis of cholangiocarcinoma [2]. The locoregional tumoral invasion and the alteration of the patient's general state often prevent curative surgical treatment [3,4]. Palliative treatments are therefore the only ones proposed [5]. Drainage of the bile ducts, whether surgical, endoscopic or percutaneous, has become an indispensable palliative treatment [6,7]. Although carried out for many years, consensus still has not been reached about the rules of biliary drainage, in particular for complex hilar tumours (Bismuth type II, III and IV). Certain teams drain the maximum dilated biliary sectors, others consider that draining 30% of the liver suffices to provide a significant improvement in the jaundice [8–12]. The purpose of this retrospective study is to present the results of a series of extensive percutaneous biliary drainages with the placement of several endoprostheses in cases of complex hilar tumours (Bismuth type II, III and IV).

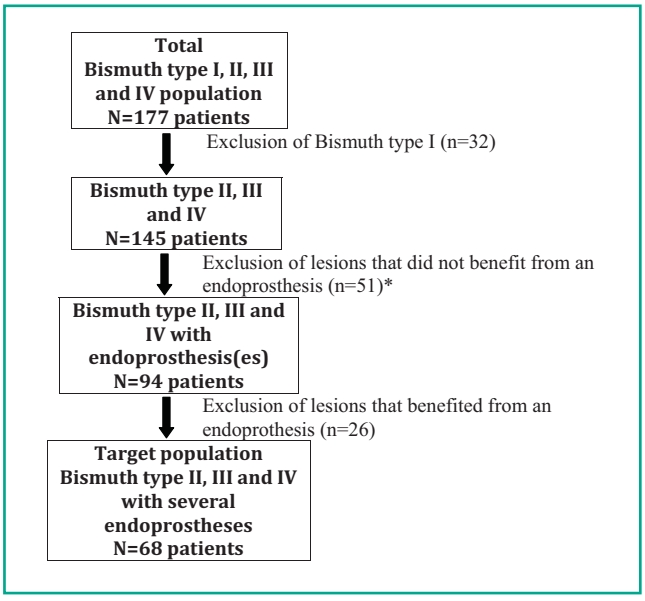

Figure 1. Selection of the target population for the study. *These patients underwent surgery or benefited from external biliary drainage.

Materials and methods

This retrospective study selected all consecutive patients that underwent biliary drainage for a malignant obstruction of the hepatic hilum between August 1998 and August 2010 for a total of 177 patients. Patients benefiting from previous endoscopic drainage were excluded from the study. The indication of biliary drainage was first raised following multidisciplinary consultation. The consent of all patients was obtained after being informed as to the therapeutic procedure, its indications, results and possible complications. The clinical data, biological data, imaging and interventional radiology procedures were studied retrospectively.

The population

All 177 patients benefited from an assessment of the imaging, most often comprising abdominal sonography, a thoracoabdomino-pelvic CT and a hepatic MRI. The locoregional assessment was used to classify the extension of the biliary cholangiocarcinoma according to the Bismuth and Corlette classification and plan the subsequent interventional treatment [3]. This classification was also used by extension for the secondary invasion of the hilus. A common therapeutic strategy of drainage was used by the interventional radiologists of the department. Therefore, in case of biliary drainage of a hilar tumour, each excluded and dilated biliary sector had to be drained and, if possible, fitted with an endoprosthesis in the absence of atrophy or major invasion of the tumour on a sector or a lobe of the liver. A strict selection provided a target population of 68 patients who benefited from biliary drainage with the placement of several endoprostheses for complex hilar tumour (Fig. 1). None of these patients were candidates for curative surgical treatment due to the extension of the tumour and/or the performance status of the patient. The different histological types of tumours, the ASA score, the symptoms of the patients before the drainage as well as the clinical and biological monitoring during the month following the drainage was obtained in the 68 patients.

Procedures

The drainages, by five different hospital practitioners during the period examined, were all carried out under a general anaesthetic. The patients had adapted antibioprophylaxis by a third generation cephalosporin such as cefazolin before any procedure. All of the patients were treated in an intervention room after control of the haemostasis assessment. The number of biliary sectors was first defined according to the Bismuth classification, the trophicity of the dilated biliary sectors and the hepatic tumour invasion from the data obtained from the CT, MRI and sonograph.

First, a dilated intrahepatic duct was detected under sonography control in order to be able to puncture it with a thin needle such as a Chiba 15 cm long, 21 or 22 G (gauges). A percutaneous transhepatic cholangiography was then carried out in order to allow for the precise analysis of the anatomy of the biliary tree and an exact classification of the hilar tumour [13]. The cholangiography confirmed the planning of the drainage procedure by choosing the biliary sectors to fit.

Then, at the same time as the Chiba needle, a splenoportography needle was introduced under scopy to insert a hydrophilic guide such as the Térumo 0,035F (French) in the bile ducts of the sector approached. Several incisions were required in order to place the number of biliary prostheses previously defined. The operator then crossed the biliary obstructions with the 7F guide catheter in all of the biliary sectors approached. After crossing the obstruction, an angioplasty balloon dilated the obstruction and facilitated the placement of the self-expanding uncovered metallic endoprosthesis (Fig. 2).