



Prevention of Biliary Stent Obstruction: Findings from a Randomized Controlled Trial

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Educational objectives

- Know the reasons for obstruction of plastic biliary prostheses
- Know the factors acting on the permeability of plastic prostheses
- Propose a therapeutic approach to increase the permeability of digestive prostheses

Keywords: Plastic biliary prosthesis, biliary stenoses

Abbreviations

ICM: ipp, cefalexin, metronidazole

IE= Occurring Events

IN = Events Not Occurring

CE = Events Occurring Control Group

CN = Events Not Occurring in the Control Group

Introduction

The frequency of cholangiocarcinoma is 2 per 100,000 people, most often the diagnosis is made at the stage of cholestatic jaundice or cholangitis, treatment is focused on surgery and chemotherapy and targeted therapies, endoscopic treatment with prosthesis Plastic or metallic bile is essential to relieve jaundice or cholangitis in order to prepare the patient for invasive therapies.

However, the use of plastic and even metal prostheses is burdened with a significant rate of early or late obstruction with a lower rate for metal prostheses.

Under our skies the problem of availability and non-reimbursement of metal prostheses forces us to use plastic prostheses.

Obstruction of biliary prostheses is responsible for the recurrence of jaundice or the appearance of cholangitis depriving the patient of chemotherapy.

Why this test and its pathophysiological bases

We have noted over the years an inter-individual variability in terms of biliary obstruction in patients with some whose prosthesis is obstructed in the month following its installation and others who keep their prostheses permeable for several months suggesting a exogenous factor independent of the type of prosthesis. just as the obstruction or the appearance of lithiasis in metal biliary prostheses in the months following the

installation of these prostheses in patients who have never had biliary lithiasis makes us think of a local interaction with the bile salts.

The other element which supports these hypotheses is the macroscopic analysis of the obstructed prostheses after their removal shows a rather distal obstruction of the prosthesis on its free edge in the duodenal lumen, and especially the very low rate of obstruction of the prostheses. plastics that migrate into the bile ducts.

Hypothesis mentioned

Acid reflux into the bile ducts.

Chemical interaction between acidic gastric juice and bile in the bile ducts which creates a precipitate which obstructs the prostheses or allows the appearance of lithiasis in the biliary prostheses.

Pathophysiological bases

Bile acids are produced in the liver by the oxidation of cholesterol.

Bile acids also serve the purpose of breaking down fats.

They become bile salts following the drop in pH.

The bile salts formed under the action of acid reflux in the bile ducts induce precipitates which obstruct the prostheses “theory”

Retrograde acid reflux

Hypothesis to be demonstrated: retrograde acid reflux in the bile ducts

The sphincter of ODDI: is a sphincter which regulates bile flow by inducing hyperpressure in the bile ducts and thereby prevents the reflux of duodenal fluid into the bile ducts.

The cancellation of this pressure guard under the effect of sphincterotomy and the prosthesis induces acid reflux in the bile ducts.

This explains the appearance of cholelithiasis after sphincterotomy as well as the obstruction of plastic and metal prostheses.

Suppression of this acid bile reflux by proton pump inhibitors was chosen as the basis for this trial.

Choice of test type

RANDOMIZED CONTROL TEST

Because it is a therapeutic intervention that is tested

Allows you to test the validity of a specific hypothesis

Objective

To evaluate the effectiveness of PPI treatment with double antibiotic therapy on the lifespan without obstruction of a plastic biliary prosthesis after its installation by ERCP.

Study

Monocentric, single-blind randomized

Inclusion and exclusion criteria defined.

Strict monitoring criteria

Criteria for stopping tracking

Inclusion criteria

OBSTRUCTION OF BILIARY TUMORS OF NEOPLASTIC ORIGIN

PANCREAS CANCER

BILIARY TRACT TUMORS

EXTRINSIC COMPRESSION OF THE VBP BY METASTATIC ADPs

“Post-operative” BENIGN STENOSES 03 liver transplant patient

Exclusion criteria

Non-compliance with treatment

Side effects leading to treatment interruption

Loss of vision of the patient

Absence of initial cholestasis

Tracking Discontinuation Criteria

- Operated patient
- Death
- Obstruction of the prosthesis and its replacement

Objective of the protocol

1- EXTEND THE LIFE OF THE PROSTHESIS

Absence of jaundice per protocol.

Patient arrives at surgery without resorting to prosthesis replacement

No interruption of chemotherapy

2- DECREASE THE FREQUENCY OF EXPECTED POST DRAINAGE EVENTS

Occurrence of expected events after placement of the prosthesis

The occurrence of an expected accident is an emergency replacement of the prosthesis because it is fatal

Expected events after placement of the prosthesis

1. Reappearance of jaundice
2. Early cholangitis: sign of contamination per procedure
3. Late cholangitis: sign of obstruction
4. Elevation of bilirubin: indicator of obstruction
5. Migration of the prosthesis: caused by obstruction and hyperpressure upstream
6. Appearance of liver metastases “monitoring stopped”

TEST PHASE

Trial start date 03/2023 followed until April 2024

Number of patients included 131

Age ranges from 33 years to 97 years

SIMPLE BLIND RANDOMIZATION

Patients without PPI vs. patients included in the ICM protocol

All patients were drained by plastic biliary prosthesis, 47 patients were placed under the ICM arm, 49 patients without ICM, 25 patients were lost to follow-up, 10 patients were excluded due to poor compliance with treatment.

In the control group there were 33 men and 16 women with an age varying from 33 to 97 years vs. 26 men and 21 women in the ICM group with an average age of 34 to 95 years, the strict follow-up criteria were the appearance of symptoms of cholangitis, with collection of monthly bilirubin levels and follow-up until obstruction or death

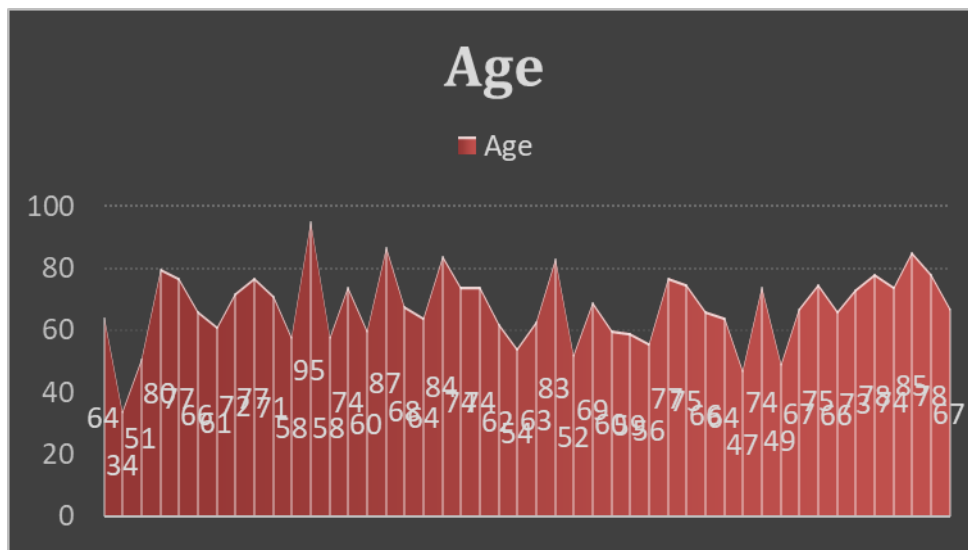


Table 1: Age ranges from 34 years to 95 years Average Age 64 years

The indications were mainly pancreatic cancer and bile ducts with 28 pancreatic cancers in the ICM group and 30 bile duct cancers.

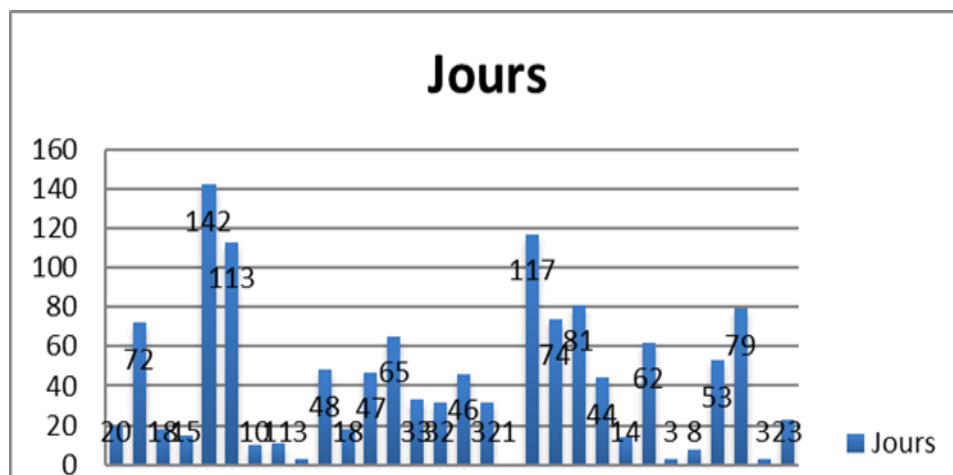


Table 2: duration of follow-up for each patient

30 patients died during follow-up

Life expectancy after placement of the prosthesis is 1 day to 142 days without obstruction of the prosthesis

Average survival is 85 days

Functional prosthesis until the day of death in 80% of patients.

15 Patients Still Alive Without Obstruction of the Prosthesis at the end of the study with a Follow-up of 106 Days to 349 Days

Average 199.86 Days

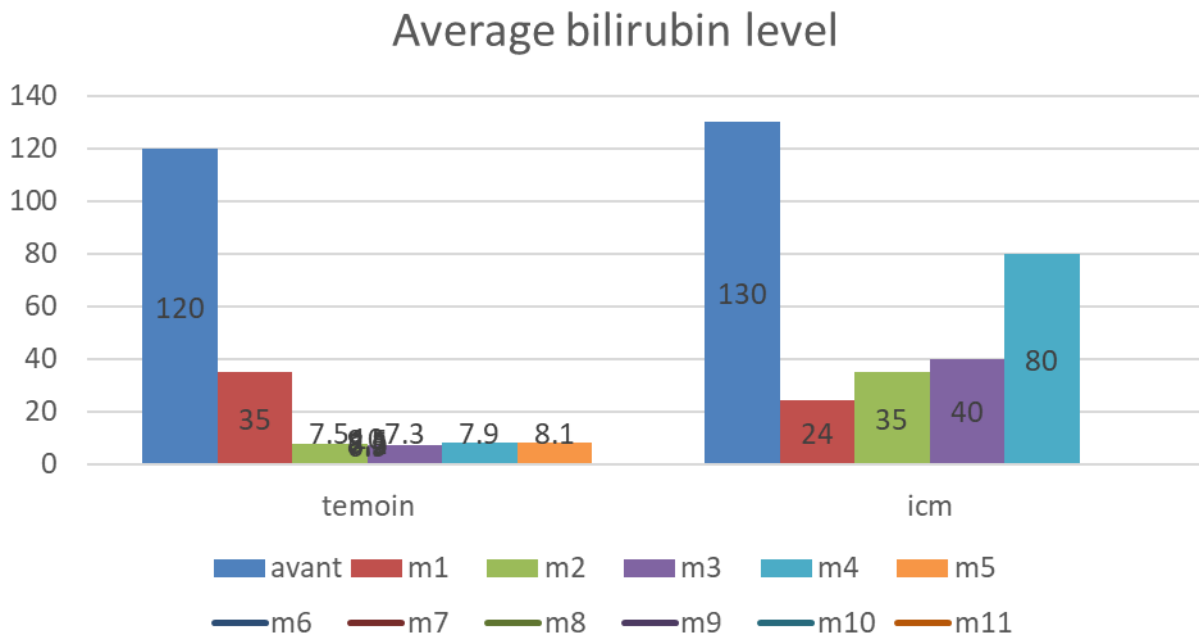


Table 3; on the left followed by the bilirubin level in the ICM group, on the right the control group

The results of follow-up of the patients at one month, in the control group, 06 patients out of 40 presented an obstruction of the prosthesis, i.e. 15% of patients vs. 03 patients out of 32 in the ICM group, i.e. 9.3%, at the second month eight additional patients in the control group had obstruction of the prosthesis, i.e. a total of 35% of patients vs. 02 additional patients in the ICM group, i.e. 15.6% of patients, at the third month 12 additional patients presented obstruction of the prosthesis, i.e. a total of 65% of patients vs. an additional patient in the ICM group, i.e. a total of 15.6% of patients, after 05 months all patients in the control group had prosthesis dysfunction vs. the rate remained unchanged in the ICM group.

The main manifestations of prosthesis obstructions at one month in the control group were as follows, 2.1% early cholangitis (less than a week after placement of the prosthesis) 13% late cholangitis, 6.52% migration and 13% jaundice vs. 2.12% early cholangitis, 6.32% late cholangitis, no migration and 6.32% migration in the ICM group, at the second month of follow-up the control group presented 28.56% of late cholangitis vs. 10.6% in the ICM group, 8.1% of migration in the control group vs. 2.2% in the ICM group, 28% of jaundice in the control group vs 10.6% in the ICM group, the disparity widens in the third month with 65% late

cholangitis vs 12.7% in the ICM group, 16% migration in the control group vs 2% in the ICM group ICM, and 65% jaundice in the control group vs. 12.7% in the ICM group.

The statistical analysis of this study shows the following

Calculation of relative risk according to this formula

$$RR = (IE / (IE + IN)) / (CE / (CE + CN))$$

RELATIVE RISK OF OBSTRUCTION OF THE PROSTHESIS AT M1 is 0.52

This means that the result is reduced by exposure which constitutes a protective factor.

The risk relative to M2 is 0.37 which constitutes a protection factor

The risk relative to M3 is calculated at 0.23 which constitutes a protection factor.

In conclusion

The absence of prosthesis obstruction allows the patient to benefit from chemotherapy and possibly extend lifespan without incident requiring its interruption.

This original work demonstrates the protective effect of PPIs on the maintenance of function of plastic biliary prostheses, this trial opens the way to other larger-scale multicenter studies possibly paving the way for a recommendation.

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