

Self-Expanding Metallic Stents: Application and Long Term Follow-Up in Patients with Malignant and Benign Obstructive Jaundice

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Summary: *Forty-seven self expandable metallic stents were placed in 41 cases of malignant or benign obstructive jaundice between January 1990 and May 1992. Percutaneous transhepatic approach was used in 33, endoscopic in 5 and simultaneously combined percutaneous-endoscopic in 3.*

The biliary obstruction cause was malignant in 36 and benign in 5 of the cases. All of the benign cases had multiple prior biliary surgery.

The follow-up ranged between 6 to 23 months in benign cases. All of the cases with benign biliary stenosis are alive.

Key Words: Self-expandable metallic stent, biliary obstruction.

Molnar and Stokckum (1974) were the first authors who showed that non-surgical management of obstructive jaundice was possible by external transhepatic drainage (1). Following this, endoprosthetic applications took place, which again proved to be quite successful (2-11).

Recently, self-expandable metallic stents, so called wallstents, have been produced and found very successful both experimentally and clinically (14).

We had applied wallstents successfully both

in malignant and benign cases of obstructive jaundice successfully before (15-16). The results we obtained from these primary cases encouraged us to increase our series.

The results of wallstent applications performed both in malignant and benign cases of obstructive jaundice between 1990 and 1992 in our departments are presented in this report.

MATERIAL AND METHOD

Forty-one patients with malignant or benign obstructive jaundice were managed by wallstents between January 1990 and May 1992 in the Radiology and the Gastroenterology Departments of our hospital. Of these patients 26 were males and 15 were females. The mean age was 54 (range: 31-79).

The cause of biliary obstruction was malignant in 36 cases, and benign in 5 cases. The age and sex distribution of the series is shown in Table I.

All of the benign cases had at least three unsuccessful prior surgeries for relieving biliary stenoses (Figures 1A and B).

Percutaneous transhepatic approach was performed in 33, endoscopic approach in 5, and simultaneously combined percutaneous-endoscopic approach in 3. The distribution of these approaches according to obstruction causes are shown in Table II. Self expandable metallic stents "WALLSTENT" (Medinvent

Table I: Age and sex distribution of the cases.

	Malignant (36)	Benign (5)	Total (41)
M/F	24/12	2/3	26/15
Age	56	49	54

SA, Switzerland) were used in all of the cases. The completely expanded width was 30 F of the wallstents. The expanded length ranged between 51 and 85 mm.

RESULTS

The wallstents were placed successfully in all of the cases.

Serum bilirubin and alkalene phosphatase levels decreased and jaundice improved in all of the cases.

Two wallstents (one into the right and one into the left hepatic duct) were placed in 3 patients with hilar malignancies (Cholangiocarcinoma Type II) by simultaneously combined

Table II: The distribution of wallstent placement methods with respect to etiology.

	Percutaneous Transhepatic	Endoscopic	Combined	TOTAL
Chol Ca I	13	2		15
Chol Ca II	2		3	5
Panc Ca	10	3		13
Met Ca	3			3
BBS	5			5
TOTAL	33	5	3	41

Chol Ca I: Cholangiocarcinoma Type I
Chol Ca II: Cholangiocarcinoma Type II
Panc Ca: Cancer of the head of the pancreas
Met Ca: Metastatic cancer of the liver
BBS: Benign biliary stenosis

percutaneous-endoscopic combined approach (Figures 2A, B and C).

A second wallstent at the same session was placed in two benign patients because of the dislocation of the first wallstent.

Two adjacent wallstents were placed in a type I cholangiocarcinoma, because of the tumor length.

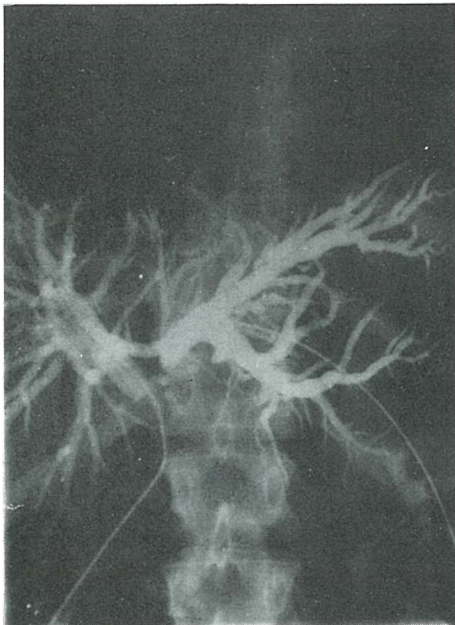
Altogether, 47 wallstents were placed in 41 patients.



Figure 1:

a) A cholangiogram of a patient with benign biliary stenosis showing markedly dilated intrahepatic bile ducts.

b) A wallstent is placed to the same patient.



The successfully placed wallstent dislocated while displacing the T-Tube of a patient with cholangiocarcinoma (type I). The biliary drainage from the wallstent ceased. Therefore, a 10 F conventional stent was placed endoscopically through this wallstent.

The wallstent of a patient with cholangiocarcinoma (type I) was obstructed in the sixth month of the wallstent placement. Three conventional stents at different occasions were placed to manage this patient.

The follow-up ranged between 4 days to 22 months in malignant cases. The mean survival time after wallstent placement was 9 months.

The follow-up ranged between 6 to 23 months in benign cases. All of patients with benign biliary stenosis are alive.

Two malignant patients died, one in the 4th and the other in the 9th day of wallstent placement, because of the stage of their primary diseases.

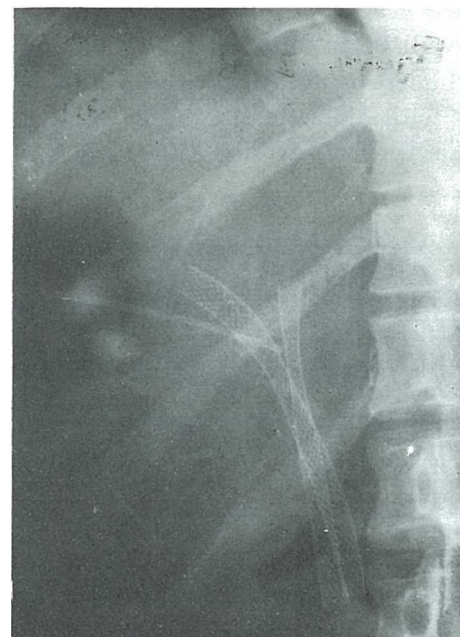


Figure 2:

a) A cholangiogram of a patient with hilar (type II) cholangiocarcinoma. Intrahepatic bile ducts are markedly dilated.

b) Two wallstents are placed simultaneously by combined percutaneous-endoscopic method.

c) Direct radiography of the same patient showing two wallstents, one in the right and one in the left hepatic duct.

No major complications were seen because of wallstent placements.

DISCUSSION

Wallstents were placed successfully in all of the cases. Two wallstents were dislocated just after the placement in two cases with benign biliary stenosis (BBS). We think that the early wallstent dislocation in these cases were due to the rigidity and the shortness of the stenotic segment. A second wallstent through the first one was placed at the same session in these cases. The dislocation observed in malignant cases was due to T-Tube extraction after successful wallstent placement. The problem was solved introducing a conventional 10 F stent endoscopically through this dislocated stent at the same session. No major complications, other than these, were seen during wallstent placement.

Clinical and laboratory improvements were observed in all of the cases.

The complications could be seen during wallstent placement are pleural effusion, biliary pleuritis, peritonitis, hepatic arterial aneurysm, septicemia, cholangitis, stent deformity and dislocation, and common bile duct penetration (17-21). Late obstruction of the wallstent is seen not uncommonly (21-27). We also observed late obstruction of the wallstent in a case of cholangiocarcinoma, biliary decompression was obtained again placing conventional stents through it.

Surgery is suggested in BBS because of its

higher success rate. However, the success rate decreases after each recurrence (28-29). Balloon dilatation and conventional stenting are alternative measures, but the results of these procedures are obscure (14). Wallstent placement in the management of BBS is suggested having higher success rates (21-27). We managed successfully 5 patients with BBS who had multiple unsuccessful operations to relieve biliary obstruction.

Although it has been shown that a 25% drainage of the liver lessens the symptoms of cholestasis, the risk of colangitis development in the undrained parts of the liver is high and worsens the prognosis in hilar malignancies (30). Therefore, placing 2 or more, stents in order to drain all of the liver in such cases would be reasonable. The good result we obtained in 3 cases of hilar cholangiocarcinoma (type II) who were managed with double wallstents, placed using simultaneously combined percutaneous-endoscopic technique, is remarkable.

A thinner, 7 F, introducing catheter is used with wallstents, which makes it less traumatic than conventional counterpart. The largest percutaneous transhepatic or endoscopic stent that could be used is 12 F. On the other hand, 30 F wallstents are easily placed. The larger size lessens possible future obstruction and secures better drainage.

In conclusion, as observed in our series, malignant or benign biliary obstructions could be managed safely and successfully with self-expandable metallic stents.

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