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Transparieto-hepatic dilation of benign biliary stenosis: 5 years experience

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A B S T R A C T

Objective: To assess the results of percutaneous transparieto-hepatic dilation of benign biliary stenosis achieved over a period of 5 years.
Design: A retrospective study to assess the technique, complications and the clinical, analytical and radiology results.
Patients: Data was gathered on 13 patients diagnosed in our Hospital between the years 2002 and 2006 with benign biliary stenosis and who had been treated using percutaneous dilation. Patients diagnosed with malignant disease and those who had a prosthesis were excluded. Seven of the patients had received a liver transplant. One patient had an endoscopic dilation on two occasions, with the stenosis persisting.
Results: A clinical and radiological improvement was observed in 60% of the cases, and an analytical improvement in 69% (61% normal). Re-stenosis occurred in 30% of the cases, of which 50% were rescue support using re-dilation. The complications presented (30.7%) were resolved conservatively. No significant differences were observed between the transplanted and the non-transplanted groups.
Conclusions: Transparieto-hepatic dilation of benign biliary stenosis is a fairly safe technique and has a high rate of resolution in the medium term, and avoids the use of surgery in 75% of patients. The results need to be confirmed in larger samples.
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Dilatación transparietohepática de estenosis biliar benigna: experiencia de 5 años

Palabras clave:
Estenosis biliar
Dilatación percutánea transparietohepática

R E S U M E N

Objetivo: Valorar los resultados de la dilatación percutánea transparietohepática de las estenosis biliares benignas durante un período de 5 años.
Diseño: Estudio retrospectivo para evaluar la técnica, las complicaciones y los resultados clínicos, analíticos y radiológicos.

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Dilatación con balón
Anastomosis bilioentérica

Pacientes: Se recogieron datos de 13 pacientes diagnosticados de estenosis biliar benigna que se trataron mediante dilatación percutánea en nuestro centro entre los años 2002-2006. Se excluyó a los pacientes diagnosticados de enfermedad maligna y a aquellos pacientes a los que se les colocó una prótesis. Siete de los pacientes han sido receptores de trasplante hepático. Un paciente había recibido dilatación endoscópica en 2 ocasiones con persistencia de la estenosis.
Resultados: Se comprobó mejoría clínica y radiológica en el 60% de los casos y analítica en el 69% de los casos (el 61% de normalización). El 30% de los casos presentó reestenosis, de los que el 50% fueron subsidiarios de rescate mediante redilatación. Las complicaciones que se presentaron (30,7%) se resolvieron de forma conservadora. No se observaron diferencias significativas entre el grupo de trasplante y el grupo sin trasplante.
Conclusiones: La dilatación de las estenosis benignas de la vía biliar por vía transparietohepática es una técnica bastante segura, tiene una alta tasa de resolución a medio plazo y permite evitar la cirugía en más de un 75% de los pacientes. Los resultados deben confirmarse en muestras mayores.
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Introduction

Benign biliary stenoses represents approximately 25% of all biliary stenoses.[1] The postoperative rates of stenoses currently range between 0.2% and 0.7%,[2,3] although some studies indicate that it can reach as high as 2.8%.[4] In the case of liver transplants, the incidence can reach 13%.[5]

The aim of treatment for biliary stenoses is to avoid the symptoms derived from biliary obstruction and its complications: cholangitis and biliary cirrhosis.[1]

Traditionally, surgery was the treatment of choice,[6] but this was associated with a significant level of morbidity and different long-term results. Endoscopic treatment, with or without the placement of a prosthesis, provides a non-invasive, better-tolerated technique, with similar results and lower morbidity.[1]

The transparietohepatic approach under radiological control and dilation with a high-pressure balloon yields good short and mid-term results, and are also applicable in those cases in which the endoscopic approach is not feasible, providing a significantly lower morbidity than with the surgical approach.[7]

The aim of this study was to analyze the short-term evolution of these patients and evaluate the complications resulting from this technique, as well as mid-term results.

Method

Here we present the experience from our centre. A retrospective data collection on patients diagnosed as having benign biliary stenoses who had received biliary dilation with a balloon using the transparietohepatic approach between 2002 and 2006 (Table) was performed. All patients with malign stenoses and those who received prostheses at the same time as the biliary dilation were excluded from the study. We also excluded one patient who died 24 hrs after the dilation due to a multi-organ failure secondary to a biliary sepsis already established at the time the procedure was performed.

Patient follow-up was carried out at our centre with a mean time of 19 months (range: 3-41), including clinical exams, typical laboratory tests, complementary radiological tests, and the treatment given in those cases that presented restenosis.

The statistical analysis was performed using SPSS 12.0 software for Windows. The quantitative variables were summarized as medians. Comparison of discrete variables was performed using Chi-squared tests. Difference in means was analyzed using the Student's t-test (Mann-Whitney for variables that did not comply with criteria for normality). We considered values to be statistically significant when $P<.05$.

Results

Thirteen patients received dilation with balloons by transparietohepatic cholangiography, 8 of which were male and 5 females. Mean age was 57.5 years (range: 36-76). All patients had a background of hepatobiliary surgery.

Seven patients (54%) had received a liver transplant. Five of these had received from cadaveric donors and 2 from live donors, one patient underwent retrasplantation from a cadaver organ donor. Three of the transplanted patients have undergone one or more procedures due to stenosis or biliary fistula. Furthermore, another patient had previously received dilation by endoscopy on 2 occasions with no results.

Among non-transplanted patients, 4 received a hepaticojejunostomy (3 of which were due to a previous biliodigestive anastomosis stricture) and 2 presented stenoses after a liver resection and cholecystectomy, respectively.

The symptoms presented in biliary stenoses (Table) were primarily cholangitis (9 cases), followed by jaundice (4 cases) and asymptomatic changes in lab chemistry (one case). One patient presented a pattern of persistent cholestasis before

Table 1 – Patients and results

Age, gender	Background	Symptoms	Predilation lab results	No. dil.	Clinical evolution	Lab evolution	Restenosis	Salvage	Restenosis	Complications	Total follow up, months*
39, F	LT from CD	No	Bil.: 0.80 mg/dl GGT: 333 U/l	1	Persistent pruritus and eosinophilia	Worsening	Yes (+1 month)	Surgery (+2 months)		Pancreatitis biliopleural fistula	2
57, M	LT from LD Hepaticojejunostomy	Cholangitis	AF 342 U/l Bil.: 4.3 mg/dl GGT: 473 U/l	1	Cholangitis (+1 month)	Persistent alteration	Yes (+1 month)	Re-dilation (+1 month)	Yes (+28 months)	Re-dilation: suprahepatic vein-biliary fistula	41
58, F	Whipple Hepaticojejunostomy	Jaundice	AF: 1,075 U/l Bil.: 2.6 mg/dl GGT: 1,069 U/l	1	Cholangitis (+2.5 months)	Worsening	Yes (+7 months)	Surgery (+7 months)			7
36, M	Liver resection	Cholangitis	AF: 1,114 U/l Bil.: 4.7 mg/dl GGT: 979 U/l	1	Asymptomatic	Normality					3
53, F	LT from CD Biliodigestive anastomosis	Jaundice	AF: 485 U/l Bil.: 2 mg/dl GGT: 24 U/l	1	Asymptomatic	Normality					36
49, M	LT from CD HIV	Cholangitis	AF: 76 U/l Bil.: 26.8 mg/dl GGT: 186 U/l	2	Cholangitis (+4 months)	Improvement					4
57, F	Biliodigestive anastomosis Hepaticojejunostomy	Jaundice	AF: 367 U/l Bil.: 26.3 mg/dl GGT: 49 U/l	1	Asymptomatic	Slight change					29
43, M	LT from LD Re-LT from CD	Cholangitis	AF: 276 U/l Bil.: 3.4 U/l GGT: 194 U/l	1	Asymptomatic	Improvement				Portobiliary fistula	30
66, M	LT from CD Jejunojejunal anastomosis	Cholangitis	AF: 438 U/l Bil.: 2.7 mg/dl GGT: 508 U/l	1	Asymptomatic	Normality					33
75, M	Choledochoduodenostomy Sphincteroplasty or choledochoduodenostomy Hepaticojejunostomy	Cholangitis	AF: 306 U/l Bil.: 1.10 mg/dl GGT: 221 U/l	1	Asymptomatic	Normality	Yes (+2 months)	Re-dilation		Subcapsular haematoma	29
76, F	Cholecystectomy Hepaticojejunostomy	Jaundice/cholangitis	AF: 249U/l Bil.: 1.60 mg/dl GGT: 56 U/l	1	Asymptomatic	Normality					17
63, M	LT from CD Hepaticojejunostomy	Cholangitis	AF: 139 U/l Bil.: 1.40 U/l GGT: 217 U/l	2	Asymptomatic	Normality					8
76, M	Cholecystectomy	Cholangitis	AF: 131 U/l Bil.: 2.40 mg/dl GGT: 555 U/l AF: 316 U/l	1	Cholangitis (+4 months)	Improvement	IHBD dilation				6

CD indicates cadaveric donor; F, female; HIV, human immunodeficiency virus; IHBD, intrahepatic bile duct; LD, live donor; LT, liver transplantation; M, male; No dil., number of dilations.
*Follow-up was considered to be interrupted when the patient was subjected to salvage surgery for restenosis.

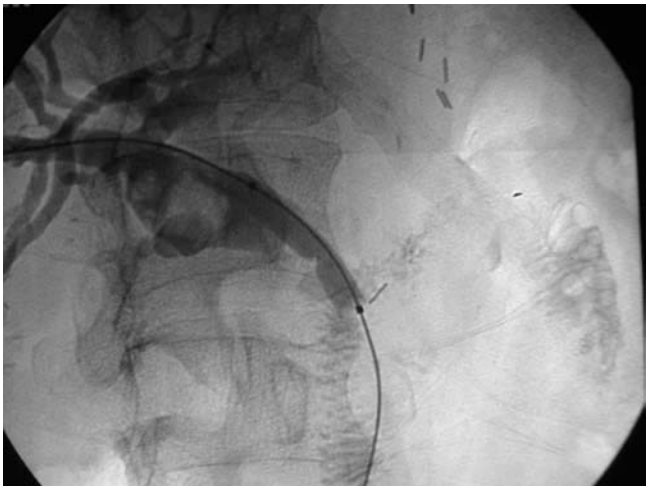

Figure – Radiological image of a percutaneous balloon dilation.

the dilation was performed. The confirmative diagnosis was made using cholangiography (8 cases), transparietohepatic cholangiography (2 cases), and CAT scan (2 cases).

We performed dilations using a high-pressure angioplasty balloon with volumes ranging from 4–8x20–40 mm (Figure). A transparietohepatic catheter was placed in all patients for cholangiography control at 2 weeks. A single dilation was sufficient in 11 cases, and the other 2 cases required a second session in order to retain the initial dilation achieved.

Of the 12 symptomatic patients that were treated, 8 (66.6%) remained asymptomatic with a mean follow-up of 23 months, and 4 (33.3%) presented cholangitis within the first 6 months. The only asymptomatic case immediately worsened after dilation, and presented with persistent eosinophilia and itching.

Six patients (46%) achieved normal blood chemistry levels within in the first 2 months, and another 2 (15.4%) in later months. One case (7.7%) maintained a discrete alteration in the liver profile, and 2 cases (15.4%) presented significantly altered chemistry. One patient (7.7%) experienced persistent worsening during the first postoperative days.

We observed radiographic restenosis in 4 cases (31%) during the first 1-7 months of follow-up, 2 of which received salvage treatment with re-dilation, one of which presented a restenosis 28 months later, and the other presented no further pathological symptoms. The other 2 patients were treated using a surgical approach.

Four patients (31%) presented postoperative complications. One of these presented a light, acute pancreatitis, acute cholangitis, and biliopleural fistula. Another patient presented with a haemorrhage, possibly due to a portobiliary fistula. A third patient presented with a post-TPHC right subcapsular haematoma, and a fourth patient presented with a fistula between the suprahepatic vein and the bile duct, which was treated by embolization. All patients received conservative treatment for resolving these complications.

We observed no significant differences between the group of patients that had received liver transplants and patients with other aetiologies in the presentation of symptoms, rate of restenosis, or the appearance of complications.

Discussion

The development of endoscopy and interventional radiology offers the possibility of managing the various complications derived from bile duct surgeries, such as biliary fistula, biliary stenosis, and the appearance of biliomas, with high success rates.[8] Furthermore, these techniques imply a reduced level of surgical aggression to the patient, who at times may be immunosuppressed (such as in transplant patients) or septic.

The transparietohepatic approach allows biliary access in patients in which endoscopy is not feasible due to digestive anastomosis, or in those cases in which endoscopic treatment has not been successful.

Percutaneous dilation has produced positive short and mid-term results in the treatment of benign biliary stenosis, and is especially useful in those cases in which endoscopic treatment is not applicable (biliodigestive anastomosis), or when it has not produced positive results. Some severe or complex stenoses are more manageable using transparietohepatic dilation, and aseptic percutanous approaches could be preferable to endoscopy in immunosuppressed patients, such as transplant recipients.[7]

Transparietohepatic dilation in simple biliary stenosis has demonstrated a success rate of 67%-90%,[9-12] even better than endoscopic treatment. The results are better in stenoses from a biliary lesion than from anastomosis. In cases following liver transplants, worse results are produced, with 27% success rates.[13,14]

In our experience, we have shown clinical and radiological improvements in approximately 61% of cases, and improvements in lab chemistry in 69% of cases (61% reached normalization).

Thirty percent of cases presented restenosis: the majority presented early, during the first month, and all were within 7 months post-dilation. Of the restenosis cases, 50% received salvage treatment using re-dilation, with positive mid-term results.

In our group, we observed no significant differences between patients that had received transplants and those in which the stenosis was produced by other causes.

Morbidity rates have been described as high as 54%,[15] although more recent publications tend towards 25%,[9,16,17] and these depend strongly on the experience of the interventional radiology team. The most frequent complications include pleural punctures, biliopleural fistula, biliary fistula, renal rupture, intestinal perforation, and vascular lesions (hepatic artery and portal vein).

The incidence of complications in our group is close to those described in the medical literature,[1,5,7] all cases were resolved using conservative treatment, and no secuelae were produced.

In spite of our small sample size and limited follow-up time, the results obtained at our centre allow us to consider this to be a safe and effective procedure for the treatment of biliary stenoses.

Conclusion

The dilation of benign stenoses of the bile duct using a transparietohepatic approach has a high rate of mid-term resolution and eliminates the need for surgery in over 75% of patients.

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