

Endoscopic stenting of post-operative biliary strictures

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ÖZET: Postoperatif benign biliyer darlıkların endoskopik stent tedavisi

1989-1994 arasındaki 5 yıllık sürede ERCP ünitesinde 116 benign biliyer striktür saptandı. Bunlardan postoperatif darlığı bulunan 20 olguya stent yerleştirildi. Yirmi olgudan 17'si takip edildi. Takip edilen 17 olgudan 5 'inde (%29) ortalama 14.6 ay sonra stentler çıkarılarak kalıcı düzelme sağlandı. Bu olgular 29.4 aylık izlem süresinde semptomsuzdular. Oniki olgudan 6'sı ilk yerleştirilen stentlerle izlenirken diğer 6 olguda stentler 2-4 kez değiştirildi. Bu 12 olgu da halen asemptomatik olarak izlenmektedirler. Bir olguda kolanjit, 1 olguda akut pankreatit ve 1 olguda karaciğer absesi olmak üzere 3 olguda (%13) endoskopik işleme bağlı komplikasyon oldu. Mortalitemiz yoktur. Olguların büyük çoğunluğu cerrahi tedaviye uygun değildiler. Postoperatif benign biliyer darlıkların endoskopik stent tedavisinin cerrahi tedaviye iyi bir alternatif olduğu, özellikle cerrahi tedavi için uygun olmayan hastalarda endoskopik stent tedavisinin ilk tercih edilecek tedavi olduğu kanısına varıldı.

Anahtar kelimeler: **Biliyer darlık, Benign, Postoperatif, Tedavi, Endoskopi, Stent**

DESPİTE the improvement in surgical techniques and development of new methods management of post-operative benign biliary stricture (BBS) is still very important. The rate of BBS after open Choleystectomy is reported to be 0.2 to 0.5 %, and it is somewhat more frequent after laparoscopic Choleystectomy (1,2). The annual number of new BBS could easily be estimated to be very high considering these rates. Until recently the main treatment modality was surgery. However, the high morbidity and mortality after surgery for BBS, high recurrence rate and great number of cases where surgery is not suitable caused the improvement of percutaneous or endoscopic treatment methods. Although percutaneous method is inevitable in certain cases, this way of managing BBS is not desirable for all the cases because of the invasiveness. On the contrary, endoscopic stenting with low morbidity and mortality and high success rate has become a promising method in the management of BBS (2,3). There are only few reports about the use of endoscopic stent-

SUMMARY

One hundred and sixteen cases of benign biliary strictures were diagnosed between 1989 and 1994. Endoscopic stenting was performed to 20 of them. Seventeen cases were followed-up. In 5 (29 %) out of 17 cases stents were removed in 14.6 months and cure was obtained. These cases have been followed up for 29.4 months without any evidence of restenosis. In the remaining 12 cases where stents could not be removed 6 had one stent placement, whereas in the other six stents were replaced with new ones (2 to 4 new stents). One case of pancreatitis, one case of cholangitis and one case of hepatic abscess was observed after endoscopic intervention. The overall morbidity is 13 %. There are no mortalities. Most of the patients were risky for surgical intervention. We conclude that, endoscopic stenting is an alternative to surgery in postoperative BBS and in cases where surgery is not possible it is the choice of treatment.

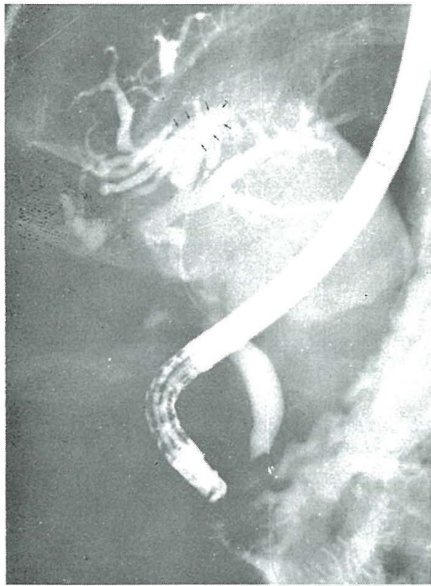
Key words: **Biliary stricture, Benign, Post-operative, Treatment, Endoscopy, Stenting**

ing in BBS (2-5). In different studies where either surgical or percutaneous methods were used, it has been reported that the success was influenced by the localization, the length, the duration, the number of the stricture, the number of correction attempts, accompanying fistula and inflammatory process, and development of cirrhosis (6-8). Reports comparing different treatment methods are fail to compare sufficiently because of there is no classifying method that consider all these factors.

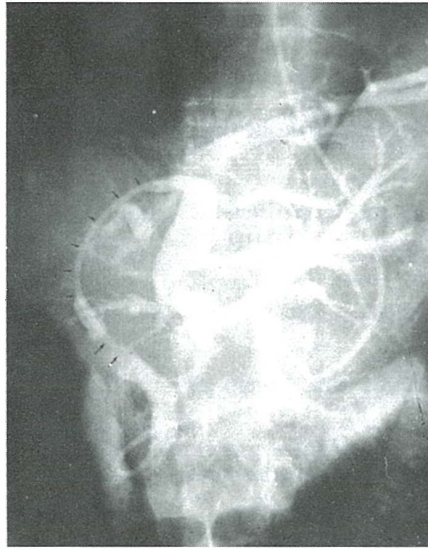
In Western societies 90 - 95 % of the BBS are secondary to choleystectomies or common bile duct explorations. On the other hand, surgery for hepatic hydatid disease (HHD) is the major cause of BBS in countries where HHD is endemic. The two main characteristics of BBS secondary to HHD are high incidence of accompanying fistula and more proximal location. In this report our cases of BBS which about half were secondary to HHD surgery and were managed by endoscopic stenting are presented.

METHODS

One hundred and sixteen cases of BBS were diagnosed among 2251 ERCPs performed at the Endoscopy Unit of Yüksek İhtisas Hospital, Turkey, since 1989. Twenty of these cases that had devel-



A

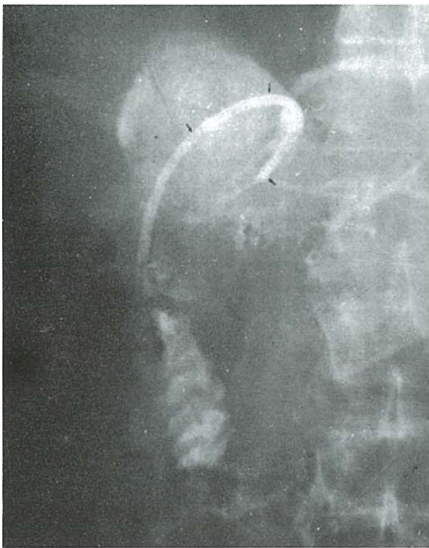


B

Figure 1. A. ERC demonstrates a long strictures at CHD and left hepatic duct (arrows). A cavity is also seen (small arrows).

B. Strictures are seen well in NBD cholangiogram (arrows).

C. A ten F gauge stent in place.



C

oped postoperatively were managed by endoscopic stenting. Stent placement was decided according to the following criteria: 1) if the patient's general condition is not suitable for surgery, such as accompanying disease and/or advanced age; 2) if the stricture was proximally located; 3) if the patient had secondary biliary cirrhosis; and 4) if the patient had multiple biliary surgery.

ERCP was followed by endoscopic sphincterotomy if a biliary stricture was diagnosed: A 6,7 or 10 F

nasobiliary drainage catheter was placed in the proximal of the stricture after the stricture was passed by a guide wire and dilated by dilatation balloon (4, 6 or 8 mm outer diameter) (Fig. 1,2). The patient was observed for at least 3 days. The aims of this procedure were: 1) to treat co-existing cholangitis and/or fistula; and 2) to observe whether biliary drainage is sufficient or not and if there is not sufficient biliary drainage, to wash with isotonic saline for removing debris. After the displacement of naso-biliary drainage catheter, one or two stents (7, 10 or 11,5 French outer diameter) were placed endoscopically following repeat dilatations when necessary (Fig. 3). The patients were then followed clinically, biochemically and ultrasonographically. The patients were discharged and followed every three months if clinical and biochemical improvement was observed and if the biliary dilatation disappeared ultrasonographically. The stent was replaced with a new one if obstructed.

CASES

Twenty cases post-operative BBS were managed by endoscopic stenting between 1989 and 1994. Twelve were male and 8 were female. The mean age was 45.05 ± 14.59 (range: 20 and 68). The etiologies are shown in Table 1.

Table 2. Distribution of the BBS according to Bismuth classification

Table 1. Etiologic distribution in post-operative BBS

Etiology	n	(%)
HHD surgery	10	50
Cholecystectomy	6	30
Cholecystectomy + CBD exploration	4	20

Etiology	n	(%)
Type I	0	0
Type II	10	50
Type III	3	15
Type IV	7	35
Type V	0	0

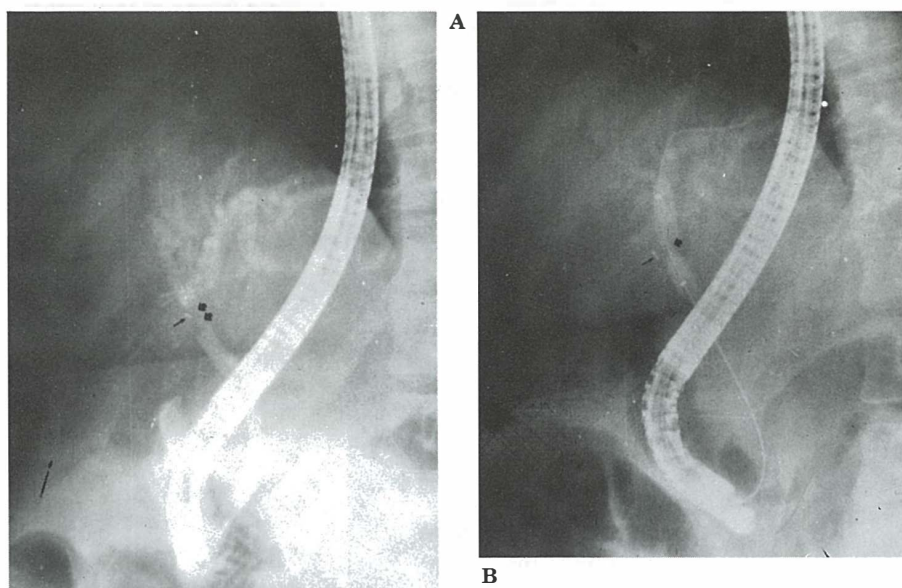


Figure 2. A. ERC demonstrates a tight stricture at the hepatic bifurcation (arrows)

B. Balloon dilatation of the stricture (Arrow shows indentation due to stricture)

Seven cases (35 %) had multiple operations. The period between the first operation and the endoscopic treatment ranged from 4 months to 58 months; and the mean was 27.58 ± 17.55 months. Choledochotomies had been performed to 3 cases and surgical stent had been replaced in one case before endoscopic intervention. The complaints just before endoscopic management were as follows: jaundice in 19 (85 %), pruritis in 17 (85 %), right upper quadrant pain in 9 (20 %), bilio-cutaneous fistula in 3 (15 %) and biloptisis in 2 (10 %). The mean serum total bilirubin was 9.95 ± 10.67 mg/dl (range: 0.8 and 35.1) and alkaline phosphatase was 1163.00 ± 782.20 U/L (range: 260 and 2994). These values decreased to 2.65 ± 0.40 mg/dl and 623.75 ± 306.34 U/L respectively five days after the endoscopic intervention. Nine patients (45 %) had cirrhosis and one (5 %) had chronic active hepatitis before the treatment. The distribution of the patients according to the Bismuth's classification is shown in Table 2.

The guide wire could not be passed through the stricture to the proximal biliary branches in six cases. These cases were managed first by percutaneous approach where the guide wire was passed through the stricture to the duodenum via distal common bile duct and caught endoscopically with a snare. A stent was then placed endoscopically using this wire.

RESULTS

Three patients were lost to follow up after the first stent placement. In 5 cases the stents were removed average 14.6 ± 11.3 months after first placement. In two cases, stents were removed because of stent clogging that caused jaundice 3 and 8 months after first stent placement. No other

stents were placed to these two cases because it was observed that the strictures had improved. The stents were changed every twice a year in the third case, and the stricture had improved after three years of management and the stent was removed. In the fourth case, the stent was replaced 2 and 12 years after first placement, and it was removed after one year of management because of stricture improvement. In the fifth cases the stents were replaced by the new ones 12 and 19 months after initial placement, and then removed because of stricture improvement. Unfortunately, the symptom recurred 2 months after the removal and another stent was placed which remained in place for 3 months and removed because of stricture healing. These five cases have been followed for average of 29.40 ± 12.11 months since stent removals. All of them are asymptomatic at present time. In the remaining 12 cases the stents are still in place. Only one stent was placed in 6 cases; in 5 of them the stents are in place for one to eleven months. In the remaining one, the stent is in place for 55 months. This case had cirrhosis prior to stent insertion and refuses to have ERCP. His biochemical results are good and he has no sign of stent obstruction. The stents have been changed more than once and a stent is in place in the remaining 6 cases (twice in one, three times in one and four times in three). These 12 cases

Table 3. Associated lesions at ERC

Lesion	n
Cavity communicating with biliary tree	4
Bilio-bronchial fistula	2
Bilio-cutaneous fistula	3
Stone	3

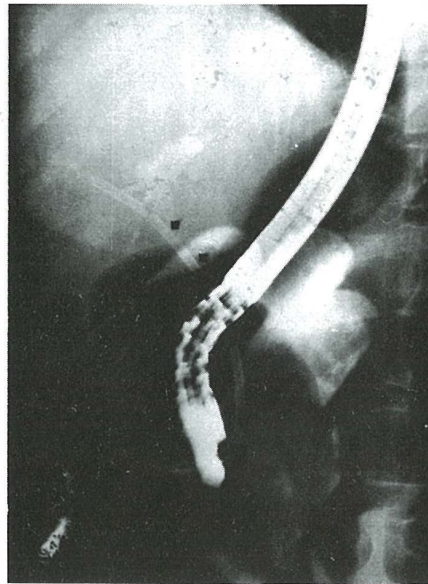
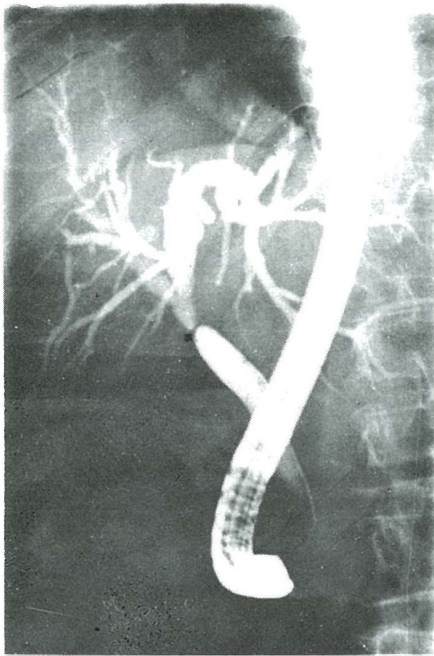


Figure 3. A. ERC showing a tight stricture at CHD (arrow).

B. A10 F gauge stent is placed endoscopically.

have been followed for average 15.33 ± 15.46 months after the first stenting. The follow up results are shown in Table 4.

The stents were removed because of clogging in five cases, and cholangitis developed in one of them. This case of cholangitis was treated by naso biliary drainage following stent removal and antibiotic coverage. Liver abscess developed in one case 1 week after stent placement who was managed surgically. Esophageal variceal bleeding occurred in a case who had cirrhosis. This case was treated by injection sclerotherapy. Severe pancreatitis was observed in one case after ERCP who improved with medical treatment and stent was inserted then.

DISCUSSION

The classical treatment of BBS is surgical correction or constructing bilio-digestive anastomosis. The morbidity after surgery has been reported to be 10 - 26 % and the mortality 0-10% (6-10). Frequently, surgery may not be possible because of bad general condition of the patients. The success after surgery is no very high and recurrence is not infrequent. Therefore, percutaneous and/or endoscopic methods have been developed as an alternative to surgery in the management of BBS.

Percutaneous treatment is highly invasive and should be spared for those who are not suitable for surgery and endoscopic access is not possible. The morbidity of percutaneous approach is reported to be 21 - 35% and mortality is 0% (11,12). Foutch et al. reported that endoscopic ballooning was quite successful in managing BBS (13). We have used balloon dilation as a supplement to

stenting. Davids et al. also reported 80 % success with endoscopic stenting (2). In our series 45 % of the patients had cirrhosis and one (5 %) had chronic active hepatitis; 50 % of the cases had Bismuth III or IV stenosis and no one had Bismuth I. In 40% there was multiple stricture and in 25 % there was an accompanying fistula. As can easily be seen most of our patients were poor candidates for surgical intervention. In Csendes report operative mortality is absent in strictures of types I and II, while it is around 25% in cases of types III and IV (8). Five (25 %) of our patients had cure and have been followed for 29.4 month stent free. Davids et al. reported that cure was obtained in 46 out of 66 cases one year after stent placement. Strictures were improved in 18 % of our patients in one year. There is no reasonable explanation for this difference in results, however the scarcity of the number of cases may be considered. Our morbidity rate is 13 % and there are no mortalities. The morbidity rate has been reported 35 %, and mortality has been reported 1,5 % by endoscopic stenting (9). We conclude that endoscopic stenting in postoperative BBS is a good alternative to surgery and in cases where surgery is not possible it is the choice of treatment.

Table 3. Associated lesions at ERC

Lesion	n
Cavity communicating with biliary tree	4
Bilio-bronchial fistula	2
Bilio-cutaneous fistula	3
Stone	3

* stenting period

* period after stent removal

REFERENCES

1. Moossa AR, Mayer AD, Stabile B. Iatrogenic injury to the bile duct: who, how, where? *Arch Surg* 1990; 125: 1028-20.
2. Davids PHP, Rauws EAJ, Coene PPLO, Tygat GNJ, Huijbregtse K. Endoscopic stenting for post-operative stenting. *Gastrointest Endosc* 1992; 38: 12-18.
3. Geenen DJ, Geenen JE, Hogan WJ, et al. Endoscopic therapy for benign bile duct strictures. *Gastrointest Endosc* 1989; 35: 367-71.
4. Berkelhammer C, Kortan P, Haber GB. Endoscopic biliary prosthesis as treatment for benign post-operative bile duct strictures. *Gastrointest Endosc* 1989; 35: 95-101.
5. Huijbregtse K, Tygat GNJ. Palliative treatment of obstructive jaundice by transpapillary introduction of a large bore endoprosthesis. *Gut* 1982; 23: 371-75.
6. Pitt HA, Kaufman SL, Colemann J, White RI, Cameron JL. Benign postoperative biliary strictures: operate or dilate? *Ann Surg* 1989; 210(4): 417-25.
7. Genest JF, Nanos E, Grundfest-Broniatowski S, Vogt D, Hermann RE. Benign biliary strictures: an analytic review (1970 to 1984). *Surgery* 1986; 99: 409-13.
8. Csendes A, Diaz C, Burdiles P, et al. Indications and results of hepaticojejunostomy in benign strictures of the biliary tract. *Hepato-gastroenterol* 1992; 39: 333-36.
9. Davids PHP, Tanka AKF, Rauws EAJ, et al. Benign biliary strictures: surgery or endoscopy? *Ann Surg* 1993; 217 (3): 237-43.
10. Pellegrini CA, Thomas MJ, Way LW. Recurrent biliary stricture: patterns of recurrence and outcome of surgical therapy. *Am J Surg* 1984; 147: 177-80.
11. Vogel SB, Howard RJ, Caridi J, Hawkins IF. Evaluation of percutaneous transhepatic balloon dilatation of benign biliary strictures in high-risk patients. *Am J Surg* 1985; 149: 73-8.
12. Lee MJ, Mueller PR, Saini S, Hahn PF, Dawson SL. Percutaneous dilatation of benign biliary strictures: single-session therapy with general anesthesia. *AJR* 1991; 157: 1263-66.
13. Foutch PG, Sivak MV. Therapeutic endoscopic balloon dilatation of the extrahepatic biliary ducts. *Am J Gastroenterol* 1985; 80(7): 575-79.