

Malignant biliary stenosis treated with two percutaneous stents – case report

M. Radovanovic¹, M. Radojkovic², M. Stojanovic², S. Ristic¹, G. Stanojevic², L. Jeremic², Z. Siric¹, Z. Rancic³, B. Ilic²

¹Radiology Institute, Clinical Center Nis, Serbia

²Surgery Clinic, Clinical Center Nis, Serbia

³Division of Cardiac and Vascular Surgery, Departments of Surgery, University Hospital Zürich, Switzerland

Rezumat

Stenoză biliară malignă tratată prin două stenturi percutanale - prezentare de caz

Introducere: În ultimele 3 decenii radiologia intervențională a devenit cel mai important instrument în tratamentul paliativ al pacienților cu stenoze biliare maligne.

Prezentare de caz: Raportăm cazul unui pacient cu obstrucție biliară malignă, determinată de o tumoră recidivantă a canalului hepatic comun restant, cu infiltrarea hepaticojejunostomei create anterior. Decompresia biliară a fost obținută prin plasarea a două stenturi metalice auto-expandabile.

Discuție: La pacientul prezentat, abordul percutanat a fost obligatoriu din cauza intervenției chirurgicale anterioare. De asemenea, având în vedere nerezecabilitatea leziunii recidivante și prognosticul prost și definitiv, era preferabil realizarea drenajului biliar intern. De aceea plasarea stentului metalic auto-expandabil a fost metoda terapeutică de elecție.

Concluzie: Scopul intervențiilor radiologice minim invazive percutanate este obținerea decompresiei biliare eficiente cu drenaj biliar intern când este posibil.

Cuvinte cheie: stenoză biliară malignă, radiologie intervențională

Abstract

Introduction: During last three decades interventional radiology became most powerful tool in palliative treatment of patients with malignant biliary stenosis.

Case report: We report a case of 62-year-old patient with malignant biliary obstruction caused by recidivant tumor of common bile duct remnant with infiltration of previously created hepaticojejunostomia. Biliary decompression was achieved by placement of two self-expanding metallic stents.

Discussion: In presented patient, due to previous surgery percutaneous approach was mandatory. Also, considering the unresectability of recidivant lesion and poor prognosis, definitive, preferable internal biliary drainage was to be achieved. Therefore the placement of metallic self-expanding stent was the therapeutic method of choice.

Conclusion: The aim of percutaneous minimally invasive radiological interventions is to achieve effective biliary decompression with internal bile drainage if possible.

Key words: malignant biliary stenosis, interventional radiology

Corresponding author:

Milan Radojkovic
Sestre Bakovic 14/28, 18000 Nis, Serbia
Tel.: +381 69 716567
E-mail: mida71@open.telekom.rs

Introduction

Biliary obstruction is the most important issue in the treatment of patients with unresectable biliary malignancy. It requires multidisciplinary therapeutical approach (gastroenterologists, surgeons, oncologists, interventional radiologists, nutritionists) in order to ensure as efficient and durable biliary decompression as possible. Successful internal biliary drainage provides

efficient palliation of symptoms and morbidities due to biliary obstruction (pruritus, malnutrition, anemia, cholangitis, hepatic failure) as well as administration of chemotherapeutical agents metabolized by liver. During last three decades interventional radiology gained a leading role in palliative treatment of these patients with poor prognosis due to its percutaneous procedures.

Case report

A 62-year-old woman was admitted to our department for obstructive jaundice. Eighteen months before she underwent surgery for carcinoma of the common bile duct (CBD) when resection of CBD and Roux-en-Y hepaticojejunostomy was performed. Initial serum laboratory investigation showed cholestasis with total bilirubin 430,1 $\mu\text{mol/L}$, mild leukocytosis ($12,0 \times 10^9/\text{L}$) and elevated C-reactive protein levels (52,4 mg/L). Echosonography revealed intrahepatic bile ducts dilatation. Magnetic resonance cholangiopancreatography (MRCP) confirmed cholestasis and demonstrated infiltration and obstruction of hepaticojejunostomy caused by recidivant tumor of extrahepatic bile duct remnant (Fig. 1).

An urgent percutaneous transhepatic transanastomotic biliary drainage (PTBD) was performed using standard Seldinger's technique, roentgenoscopy and echosonography guidance and 35 cm long 12Fr catheter (VTCB Biliary System 12F Percuflex® Catheter, Medi-tech). Subsequent cholangiography through placed internal-external biliary drainage catheter confirmed the diagnosis (Fig. 2).

Definitive internal biliary drainage was achieved by placing metallic self-expanding stent (Wallstent-uni 8x40 mm, Boston Scientific) through stenotic extrahepatic bile duct remnant and hepaticojejunostomy using previous percutaneous approach: guide wire (0,035", 150 cm, Terumo Corporation) was inserted through placed external biliary drainage catheter and balloon-dilatation of malignant stenosis was performed with stent placement following (Fig. 3).

Follow-up radiography next day was suspicious of stent dislocation into the gut and therefore the procedure was repeated, placing a second stent and ensuring its position through the malignant stenosis (Fig. 4).

Previously placed external biliary drainage catheter was extracted. Complete regression of jaundice was achieved. Position and function of stents was confirmed echosonographically 3 weeks and 5 months after the procedure (Fig. 5).

Discussion

During last three decades endoscopic and percutaneous procedures have significantly changed the treatment of patients with obstructive jaundice, particularly those with incurable malignant biliary stenosis, providing effective and durable biliary drainage in ambulatory circumstances (1). Due to their effectiveness and relative feasibility these minimally invasive techniques became routine in numerous institutions.

Minimally invasive biliary drainage (BD) can be definitive (in unresectable malignancies) or temporary (for urgent

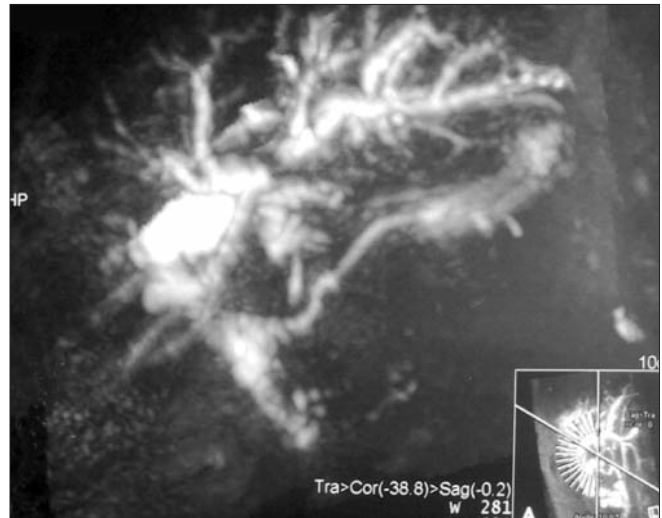


Figure 1. MRCP showing recidivant tumor of extrahepatic bile duct remnant with subsequent biliary obstruction and dilatation

Figure 2. Cholangiography through internal-external biliary drainage catheter showing extrahepatic bile duct remnant and anastomotic stenosis



Figure 3. Self-expanding metallic stent placed through stenotic extrahepatic bile duct remnant and hepaticojejunostomy



Figure 4. Two self-expanding metallic stents placed through stenotic extrahepatic bile duct remnant and hepatico-jejunostomy

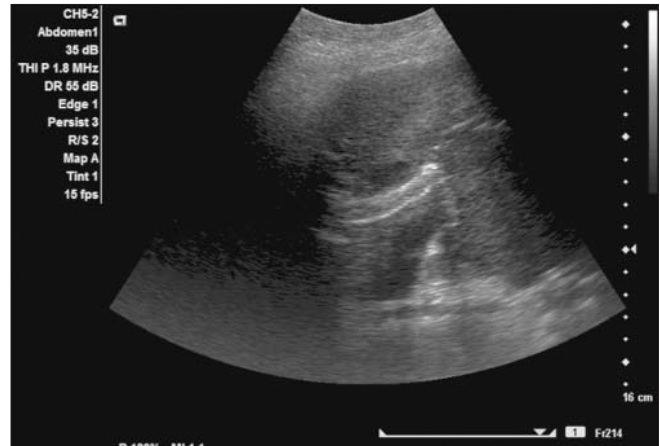


Figure 5. Echasonographic presentation of stents

biliary decompression), followed by definitive surgery. In addition, BD can be internal or external or both (combined internal-external), can be achieved endoscopically or percutaneously and using drainage catheters or endoprosthesis - stents. In external biliary drainage, catheter's end is placed in dilated bile duct above the obstruction (proximally) providing external bile drainage into the sac. In internal-external biliary drainage, catheter's end crosses through the dilated bile duct, passes the obstruction and is placed below the obstruction (distally). This method is more effective, reliable and provides internal bile drainage and reestablishment of enterohepatic bile circulation. Finally, well placed stent may completely reestablish the bile flow through the occluded duct, providing successful internal drainage and excluding the necessity for external biliary drainage. Stents can be plastic or metallic. The latter are preferable due to their longer mean patency (6-10 months vs. 3-6 months for plastic stents)(2), self-expanding quality, less probability to migrate and occlude and less need for routine exchange compared to plastic stents (3).

The choice of BD method/technique is highly individual and depends on the type of biliary obstruction (patient-dependent), interventional radiologist's experience and technical conditions. Low biliary obstruction (below the insertion of cystic duct) can be successfully treated by a single well placed catheter or stent draining the entire biliary tree. If possible, endoscopic placement of metallic self-expanding stent (internal drainage without transhepatic crossing of external catheter) is preferable in these patients (4), since this is easier and less invasive for patient. High malignant biliary obstruction is much more difficult to treat (4) and is classified (Bismuth and Corlette) as Type I (tumors involving CBD but not the confluence of the right and left hepatic ducts), Type II (tumors involving the confluence) and Type III (tumors extending to either left or right secondary confluence)(5). Optimal treatment of these patients requires percutaneous transstenotic placement of a stent (internal drainage) or drainage catheter (external drainage) in specified preprocedurally radiologically targeted bile duct in order to obtain

maximal bile drainage (6). In patients who are candidates for further definitive operative treatment stent placement should not be considered as therapeutic option for biliary decompression. In patients with unresectable malignancies and limited life expectancy whenever possible stents should be placed to provide definitive internal biliary drainage and catheter-free quality of life. Stenting in patients with high biliary obstruction may make further percutaneous procedures more difficult, but in return, occluded stents may often be treated endoscopically excluding the necessity of percutaneous external catheter.

In presented patient, due to previous surgery percutaneous approach was mandatory. Also, considering the unresectability of recidivant lesion and poor prognosis, definitive, preferable internal biliary drainage was to be achieved. Therefore the placement of metallic self-expanding stent was the therapeutic method of choice. Although rare, migration of a stent that makes it dysfunctional should always be acknowledged as possible occurrence by interventional radiologist and checked upon on follow-up imaging examination. If suspected as dislocated into the gut, a stent may be replaced or additional second stent may be inserted like in presented case ensuring adequate transstenotic position and optimal internal biliary drainage.

Conclusion

Palliative treatment of high malignant biliary obstruction may be very challenging for interventional radiologist. The main therapeutic goal in these patients is providing most effective and preferable internal definitive biliary drainage, using as few devices (catheters, stents) and interventions as possible and ensuring most optimal palliation. Comprehensive knowledge of biliary tree anatomy and detailed preprocedure imaging examination are mandatory for successful PTBD.

References

1. Jarnagin WR, Burke E, Powers C, Fong Y, Blumgart LH. Intrahepatic biliary enteric bypass provides effective palliation in selected patients with malignant obstruction at the hepatic duct

- confluence. *Am J Surg.* 1998;175(6):453-60.
2. Lee BH, Choe DH, Lee JH, Kim KH, Chin SY. Metallic stents in malignant biliary obstruction: prospective long-term clinical results. *AJR Am J Roentgenol.* 1997;168(3):741-5.
 3. Wagner HJ, Knyrim K, Vakil N, Klose KJ. Plastic endoprosthesis versus metal stents in the palliative treatment of malignant hilar biliary obstruction: a prospective and randomized trial. *Endoscopy.* 1993;25(3):213-8.
 4. Rerknimitr R, Kladcharoen N, Mahachai V, Kullavanijaya P. Result of endoscopic biliary drainage in hilar cholangiocarcinoma. *J Clin Gastroenterol.* 2004;38(6):518-23.
 5. Bismuth H, Corlette MB. Intrahepatic cholangioenteric anastomosis in carcinoma of the hilus of the liver. *Surg Gynecol Obstet.* 1975;140(2):170-8.
 6. Zhai R, Qian X, Dai D, Yu P. Malignant biliary obstruction: treatment with interventional radiology. *Chin Med J (Engl).* 2003;116(6):888-92.