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ORIGINAL ARTICLE

Long Term Assessment of Combined Endoscopic-Radiologic Rendezvous Technique for Treatment of Malignant Obstructive Jaundice

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ABSTRACT

Background: Malignant biliary obstructions, are mainly treated by endoscopic retrograde cholangio-pancreatography (ERCP); but, if ERCP fails, percutaneous transhepatic cholangiography (PTC) remain save approaches regardless of advancements of the recent ERCP technique. Rendezvous technique combines the radiological and endoscopic technique for palliative treatment in cases where the endoscopic techniques have failed.

Methods: This study is a controlled study and was carried out upon (24) patients complaining of malignant biliary obstruction symptoms with failed cannulation by ERCP, between the period from January 2017 and January 2019 in the general surgery department of Zagazig University Hospitals. **Results:** The mean age of patients was 55.81 ± 15.13 , range from 35-75. Most of them were males (66.7%). 41.7% of Malignant obstructive jaundice cases caused by pancreatic carcinoma, 33.3% caused by periampullary carcinoma and 25% of them caused by cholangiocarcinoma. Regarding the site of obstruction, more than half of them (62.5%) had distal site of obstruction and 37.5% of them had proximal site of obstruction. Concerning CT, 70% of the studied group had liver nodules and 30 % of them had liver nodules and malignant ascites. In addition to MRCP, all of the studied group (100%) had marked intra hepatic biliary radical dilatation, success rate of rendezvous technique was 91.7%. **Conclusions:** Percutaneous-transhepatic-endoscopic rendezvous procedures have high success rates (91.7%). If percutaneous procedure is necessary, RV techniques may approving safety than PTC, and have all the advantages of endoscopy.

Keywords: Rendezvous technique; Malignant obstructive jaundice; ERCP; PTC



INTRODUCTION

The occurrence of malignant biliary obstruction is highly increased. There are many causes of malignant biliary obstruction including primary biliary carcinomas and non biliary carcinomas. Treatment of malignant biliary obstruction are surgery, percutaneous transhepatic biliary drainage (PTD) or stenting.

Most of patients with malignant biliary obstruction may benefit from palliative treatment [1].

Rendezvous technique (RT) combines the endoscopy and radiological technique to help cannulation of the bile duct. The word Rendezvous (a French word meaning meeting) was made when the endoscopist and the

radiologist met one other at the level of the duodenum, the radiologist with a trans-cystic guide wire and the endoscopist with his lateral view endoscope for biliary procedures, as made by radiologists through percutaneous transhepatic access [2]. RT is a valuable procedure for common bile duct (CBD) access where the preceding endoscopic attempts were unsuccessful. This technique increases the success rate of cannulation of biliary tract and consequently facilitates the diagnosis and treatment of biliary tract diseases [3].

METHODS

This study is a clinical study was carried out upon (24) patients complaining of malignant biliary obstruction symptoms with failed cannulation by ERCP, between the period from January 2017 and January 2019 in the general surgery department of Zagazig University Hospitals.

Inclusion criteria includes Age 35-75 years, both sexes, patients with inoperable malignant biliary obstruction due to either disease extent or difficulty due to associated diseases or age. We excluded operable cases and patients fit for surgery, patients who have uncorrectable severe coagulopathy and patients who have unsafe access.

All patients were questioned about history of chronic and metabolic diseases and of previous surgical operations with their timing, date of admission, contact information and other habits of medical interest. Patients had been subjected for general and local (abdominal) examination with thorough review of previous operations' reports and previous or recent investigations. Symptoms and signs of biliary complications such as abdominal pain, jaundice, fever, dark urine or itching.

Laboratory tests included complete blood count, Liver function tests including serum total and direct bilirubin, Alkaline Phosphatase (ALP), γ -glutamyltransferase (GGT), transaminases levels (ALT and AST), Albumin, Kidney Function Tests (KFTs), and bleeding profile to aid in the assessment of patient fitness for surgery. Radiological examinations is pelvic-abdominal CT in selected cases that

needed further evaluation. MRCP was done in all patients to determine site, degree of stenosis and possible modality of management.

Written informed consent was obtained from the patient and the study was approved by the research ethical committee of Faculty of Medicine, Zagazig University. The work has been carried out in accordance with The Code of Ethics of the World Medical Association (Declaration of Helsinki) for studies involving humans.

Operative technique:

Informed permission and clinical assessment for all patients were obtained before the procedure. Antibiotics are taken half an hour before the procedure and continued for 24 hours after it. Intravenous sedation and analgesia was administered after 4-6 hours fasting for solid and 2 hours for liquids under conscious sedation protocol.

The patients position may be supine or right anterior oblique position, if possible with the arm extended to the side or elevated above the head. Examination liver by ultrasound is necessary before skin preparation to detect the level of dilatation of the biliary tree. Sterilization of the skin puncture site was done by using betadine. The duct selected mainly the right duct must be the most accessible duct for drainage and in direct continuity with the common hepatic duct as shown in Fig.(1). The needle used for access to the bile duct was inserted in the anterior axillary line, toward the porta hepatis and of size 18G under fluoroscopic guidance.

After initial percutaneous transhepatic bile duct puncture, PTC was performed. The J shaped guide wire was advanced from the 18-G needle to access the bile duct. The dilation of puncture tract was made by using 5, 6 and 7 Fr dilators successively. An introducer of 7 Fr long arterial sheath was introduced over the wire to the level of the obstruction.

The introducer should be stiff to allows support of the guide wire and facilitates its direction through the stricture. When the guide wire passed the obstructing lesion, the introducer was advanced over it down to the duodenum

(Fig.2,3). We replaced the guide wire while the introducer in place which was taken by the endoscope by a long ordinary guide wire used in ERCP and easily grasped by snare (Fig.4).

The guide wire was introduced through the introducer till the duodenum. When the length of the long guide wire was in the duodenum is sufficient, the snare taken it by combined navigation of the snare under endoscopic visualization and the wire under fluoroscopy. A stent was placed over the guide wire (Fig.5). The proximal end of the stent was situated sufficiently covering the stricture, and the distal end of the stent passed 1–2 cm outside the major papilla. The percutaneous introducer and guide wire could be withdrawn when the duct drainage has been established.

Post-operative follow-up:

Clinical evaluation of all patients for any complications were recorded. Postoperative laboratory investigations: CBC, liver function tests, coagulation profile and renal function tests were estimated. Follow up of the patients after one week of procedure to detect and manage its early complications in the outpatient clinic then every month for one year after the operation.

Statistical analysis:

Data collected throughout history, clinical examination, laboratory investigations and outcome measures coded, entered and analyzed using Microsoft Excel software. Data were then imported into Statistical Package for the Social Sciences (SPSS version 20.0) (Statistical Package for the Social Sciences) software for analysis. According to the type of data , qualitative data represented as number and percentage and quantitative continues data represented by mean \pm SD.

RESULTS

This is Prospective case control observational study including 24 patients complaining of

malignant biliary obstruction symptoms with failed difficult cannulation by ERCP.

The mean age of patients was 55.81 ± 15.13 , range from 35-75. Most of them were males (66.7%) as shown in Table (1). 41.7 % of Malignant obstructive jaundice cases caused by pancreatic carcinoma, 25% of them caused by cholangiocarcinoma and 33.3% of them caused by periampullary carcinoma (Table 2). Regarding the site of obstruction, 75% of patients had distal site of obstruction and 25% of them had proximal site of obstruction.

Table (3) shows that Mean \pm SD of bilirubin among the studied cases was 18.4 ± 5.4 , range from 6-30 mmol/L , mean \pm SD of GGT was 179.5 ± 18.6 , range from 150-200 , mean \pm SD of ALT was 150 ± 48.8 , range from 100-200, mean \pm SD of CEA was 32.4 ± 8.9 , range from 25-40, mean \pm SD of Ca 19.9 was 48.6 ± 7.9 , range from 40-55 and mean \pm SD of albumin was 2.4 ± 0.5 range from 2-3.

Regarding CT, 70% of the studied group had liver nodules and 30 % of them had liver nodules and malignant ascites. Concerning MRCP, 50% of the studied group had marked intra hepatic biliary radical dilatation, 31.25% of them had moderate intra hepatic biliary radical dilatation and 18.75% had minimal intra hepatic biliary radical dilatation.

Causes of failure of standard cannulation, 16.7% had anatomical variation of papilla, 33.3% had extrinsic mass distortion, 33.3% had ampullary carcinoma and 16.7% had Mass fungating in duodenum as shown in Table 4.

The success rate of this technique was 91.7%. Table (5) shows that most of the studied group had no complications, while 8.3% of them had systemic infection and 4.16% had bleeding and anesthesia related complications.

Table 1 : Demographic data among the studied group

Item	N=24	%=100
Age (Yrs.)	<i>Mean ± SD:</i> 55.81 ± 15.13	
	<i>Range:</i> 35-75	
Sex:		
<i>Males</i>	16	66.7
<i>females</i>	8	33.3

Table 2: Causes of MOJ among the studied group

Item	N=24	%=100
Causes:		
<i>Pancreatic carcinoma</i>	10	41.6
<i>Periampullary carcinoma</i>	8	33.3
<i>Cholangiocarcinoma</i>	6	25

Table 3: Investigations among the studied group

Item	Mean ± SD	Range
<i>Bilirubin (mmol/L)</i>	19.4± 6.4	6-34
<i>GGT (IU/l)</i>	179.5 ± 18.6	150-200
<i>ALT (IU/l)</i>	150± 48.8	100-200
Tumor markers:		
<i>CEA (ng/ml):</i>	32.4± 8.9	25-40
<i>Ca 19.9 (IU/ml):</i>	48.6 ±7.9	40-55
<i>Albumin(g/dl)</i>	2.4± 0.5	2-3

Table 4: Causes of failure of standard cannulation among the studied group

Item	N=24	%=100
Causes of failure:		
<i>Anatomical variation of papillae</i>	4	16.6
<i>Distortion by extrinsic mass</i>	8	33.3
<i>Ampullary carcinoma</i>	8	33.3
<i>Mass fungating in duodenum</i>	4	16.6

Table 5: Technique related complications among the studied group

Item	N=24	%=100
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Fig (1): Sterilization of the skin overlying the selected puncture site was prepared using betadine .The duct selected for drainage was the most feasible duct to approach and which was in straight continuity with the common hepatic duct.

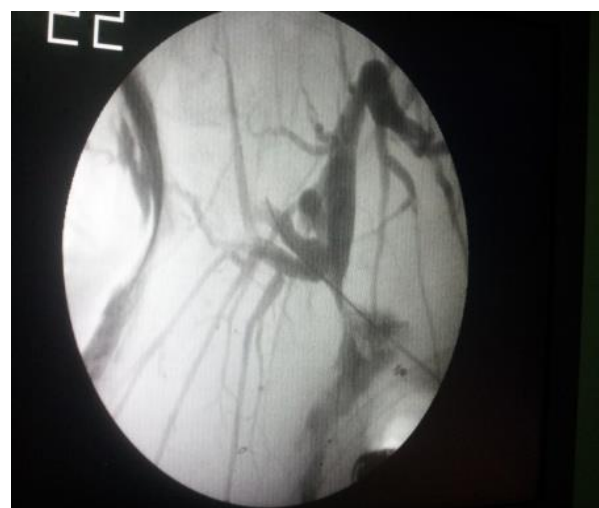


Fig (2): The obstructing lesion was traversed by the hydrophilic guide wire,

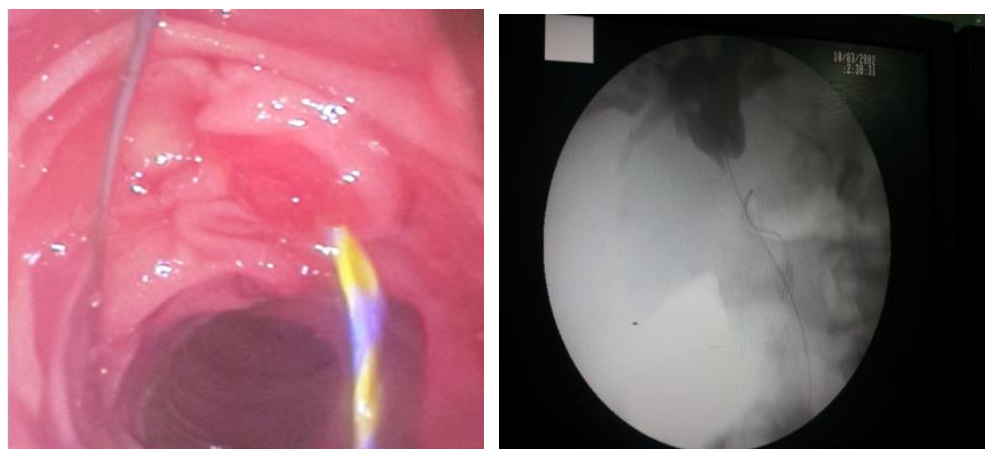


Fig (3): The introducer was advanced over it down to the duodenum



Fig (4): Guide wire which was grasped by the endoscope with difficulty due to its slippery surface, by a long ordinary guide wire used in ERCP and easily grasped by snare

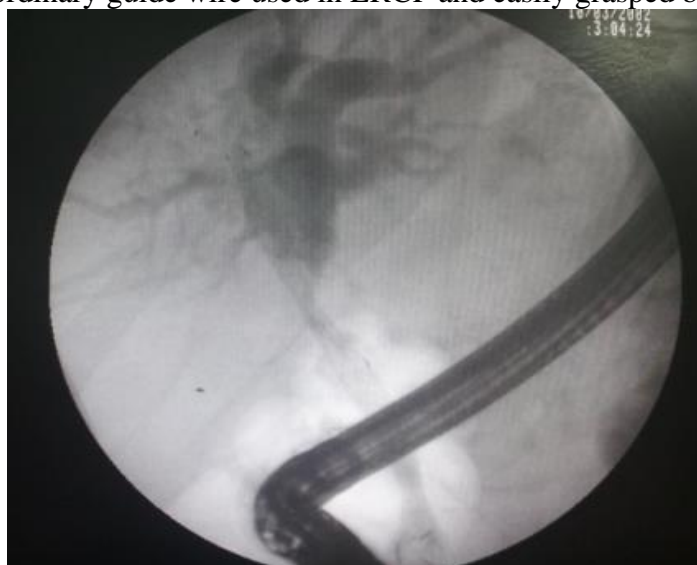
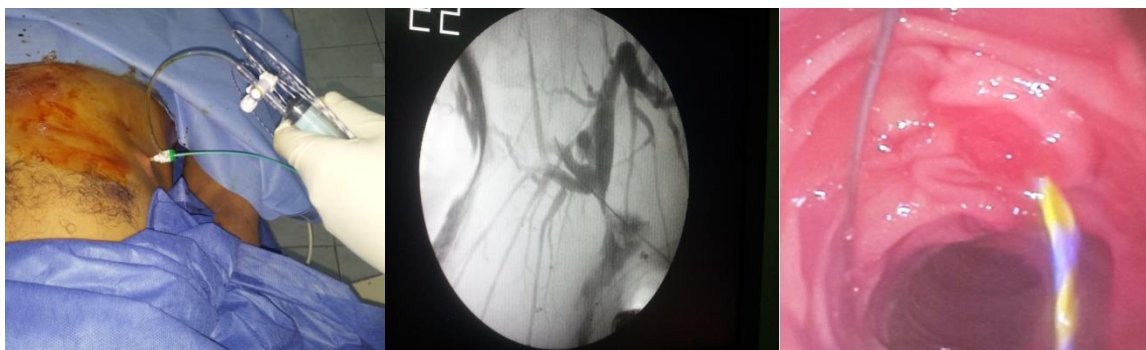


Fig (5): An inside stent was placed over the guide wire





DISCUSSION

The aim of our study was to assess the clinical outcome of deep biliary cannulation using rendezvous technique for treatment of malignant obstructive jaundice. A clinical trial study was conducted between the period from January 2017 and January 2019 in the general surgery department of Zagazig University Hospitals, and this study was carried out upon (24) patients complaining of malignant biliary obstruction symptoms with failed difficult cannulation by ERCP.

In our study the mean \pm SD of age of the studied group was 55.81 ± 15.13 , range from 35-75. Most of them were males (66.7%). Our results are in line with study of Hazem & Ashraf [4] as they reported that their study included 63.3% males and 36.6% females with age ranging from 37 to 75 years with mean age of 56 years diagnosed with malignant obstructive jaundice. In contrary with our results, a study of Calvo and his colleagues [5] as they found that the mean age of the patients was 74 years.

There are multiple causes of biliary obstruction as gall stones, malignant obstruction by hepatic, pancreatic or common bile duct tumours, also inflammation of bile ducts may cause biliary obstruction [6]. Regarding the cause of MOJ, the present study shows that 41.7 of MOJ cases caused by pancreatic carcinoma, 33.3% of them caused by periampullary carcinoma and 25% of them caused by cholangiocarcinoma. However, Yang and his colleagues [7] found that bile duct stones were the most common cause (20%) , while 12% of their studied group had Klatskin tumor and 9% of them had pancreatic tumor.

The current study shows that regarding the site of obstruction, 75% of the cases had distal site of obstruction and 25% of them had proximal site of obstruction. Our results are in agreement with study of Shweel and his colleagues [8] as they reported that the obstructing lesion involved the common bile duct in 52% of patients and common hepatic in 48% of patients.

In the study in our hands, mean \pm SD of bilirubin among the studied cases was 18.4 ± 5.4 , range from 6-30 mmol/L, mean \pm SD of GGT was 179.5 ± 18.6 , range from 150-200 , mean \pm SD of ALT was 150 ± 48.8 , range from 100-200, mean \pm SD of CEA was 32.4 ± 8.9 , range from 25-40, mean \pm SD of Ca 19.9 was 48.6 ± 7.9 , range from 40-55 and mean \pm SD of albumin was 2.4 ± 0.5 range from 2-3. Our results are supported by study of Artifon and his colleagues [9] as they reported that mean of bilirubin among their studied group was 16.8. Khashab and his colleagues [10] found that the mean of bilirubin among their patients was 15.8. Computed tomography (CT) can assess if there is lymph node enlargement or distant metastases, but may not identify associated gall stones. Magnetic resonance imaging (MRI) allows soft tissue discrimination and the ability to assess the biliary tree[12]. As regard CT, 70% of the studied group had liver nodules and 30 % of them had liver nodules and malignant ascites. Regarding MRCP, 50% of the studied group had marked intra hepatic biliary radical dilatation, 31.25% of them had moderate intra hepatic biliary radical dilatation and 18.75% of

them had minimal intra hepatic biliary radical dilatation.

As regard causes of unsuccessful cannulation, 16.7% had anatomical variation of papilla, 33.3% had extrinsic mass distortion, 33.3% had ampullary carcinoma and 16.7% had Mass fungating in duodenum. Furthermore, Yang and his colleagues [7] observed that failure of Rendezvous technique occurred in 2 patients who had a Roux-en-Y anastomosis.

The present study shows that the success rate was 91.7%. Our results are in line with study of Shweel and his colleagues [8] as they reported that deep cannulation and stent insertion using rendezvous technique had a success rate of 100%. These results were in agreement with those obtained by Chang and his colleagues [12]. The failure of rendezvous technique was nearly 8% due to failed pass wire of site of obstruction due to big mass as HCC or due to big duodenal mass and endoscopist failed to take wire at this moment drainage done by PTD and stent put completely percutaneous.

The current study shows that most of the studied group had no complications, while 8.3% of them had systemic infection and 4.16% had bleeding and anesthesia related complications. Our results are supported by study of Shweel and his colleagues [8] as they reported that no major complications were observed in their patients. Minor complications include minor bleeding in 4% of patients, 4% devolved cholangitis, 4% showed subcapsular biloma and 4% showed distal migration of the internal biliary stent 7 days after the intervention.

According to Bokemeyer and his colleagues [13] made a comprehensive data analysis of complications, including drainage-related complications and all procedure-related complications taking place up to 30 days after the intervention. After percutaneous-transhepatic-endoscopic rendezvous procedures, they reported complication rate of 16.6% including drainage-related complication rate of 8% and all procedure-related complication rate of 8.6%. Li and his colleagues [14] included both drainage-related

and procedure-related complications occurring within the first 30 days of the procedure (26% complications).

CONCLUSIONS

Percutaneous-transhepatic-endoscopic rendezvous procedures have high success rates (91.7%). If percutaneous procedure is necessary, RV techniques may approving safety than PTC, and have all the advantages of endoscopy.

Conflicts of interest: There are no conflicts of interest.

Financial Disclosures: No

Limitations:

The study has three limitations. First, the limited numbers of patients involved in this study. Second, lack of financial support altered the decision for some cases and the last one was technical in two cases who intubation of the dilated biliary radical failed because of repeated trails.

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