

## ORIGINAL ARTICLE

# OBSERVATIONAL STUDY ON CANNULATION RATE DURING ERCP AT HOSPITAL ALOR SETAR

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ERCP (Endoscopic Retrograde Cholangiopancreatography) was introduced in this hospital in late 1995. Since then, a lot of improvement have been achieved in the management of biliary tract diseases. Various general surgeons posted to this hospital have been trained in this procedure. A study was done to include all patients admitted for ERCP from August 1998 to July 1999. A total of 322 new patients with a mean of 26.9 cases a month had underwent this procedure. The duration of cannulation varied from 2 minutes to 45 minutes with a mean of 12 minutes. Cannulation rate by various surgeons differed. Overall success rate was 80%. Mortality was 0.6% and morbidity was 0.9%. ERCP is safe and it takes at least 6 months of regular duodenoscopy before one can master the technique. Achieving 80% cannulation rate, has definitely reduced unnecessary common bile duct (CBD) explorations. During this study we have trained various surgeons in this procedure and at least 2 surgeons could be credentialled according to the guidelines provided by the Malaysian Society of Gastroenterology and Hepatology. During this study we have identified various reasons for the failure of cannulation which are useful for future training of endoscopists.

*Key words : Cannulation rate, ERCP*

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### Introduction

Endoscopic retrograde cholangiopancreatography (ERCP) was first described by Mc Cune et al in 1968 but was later popularized by Oi et al in Japan, as well as Demlin and Classen in Europe in 1970's as a diagnostic tool (1,2). In 1974, Classen and Demlin performed the first endoscopic sphincterotomy and since then this procedure has been used for stenting, stone crushing and nasobiliary drainage.

In Malaysia, facilities to perform this procedure was only available 10 years ago. Hepatology and hepatobiliary surgery more specialist are being trained in this field.

In Hospital Alor Setar, none of the surgeons except one, has formally been trained in this. The

success of ERCP depends on how well one cannulates the major duodenal papilla. Further therapeutic work only follows after this step. This study was designed to assess the successfulness of ERCP and the its shorfalls in a non subspecialized hospital like Hospital Alor Setar.

### Materials and Methods

322 new patients come for ERCP procedure for various indications from August 1998 to July 1999 were included in this study. After an overnight fasting, they were given i.v cefuroxime 1.5 gm stat in the ward prior to the procedure. Protrombin and activated partial tromboplastin time were corrected to near normal levels in all patients.

The procedure was performed with the patient

in the prone position. All patients were monitored with a pulse oxymeter. Initial sedation was with 3 mg midazolam and 30 mg pethidine. I.V hyoscine was only given if the initial pulse was less than 120/min. Further additional sedation was given if necessary.

The time of cannulation was taken from the time of introduction of the duodenoscope and the time of successful CBD cannulation detected on fluoroscopy. After completion of this procedure, whether for diagnostic or therapeutic purposes, findings were documented into a special performa form.

All surgeons who did this procedure had performed at least 100 upper gastrointestinal scopes (OGDS). Every surgeon was given between 10 to 20 minutes, failing which a rescue surgeon took over. In this hospital, time allocated for ERCP was 5 hrs 30 min per week.

**Results**

Demographic data shows a male to female ratio of almost 1:1. Malays being the main racial group in this part of the country constituted 80% of

the cases.

Figure 2 showed that, the majority of the patients were in the age group of 50 to 64 years. The youngest was 13 years who came for CBD injury after lapascopic cholecystectomy. He had a hemolytic disorder presenting with gallstones. The oldest was 90 years presenting with large CBD stones.

Indications for ERCP during the study are shown in Table 1. The biodata of the surgeons are briefly indicated in Table 2.

Figure 3 to 7 indicates the performance by various surgeons who have been handling this procedure in order to gain experience. Figure 3 showed that the trainer had a good success rate although since October 1998, he did less procedure in anticipation of his transfer.

Figure 4 showed the results of a regular performer of this procedure. It took a minimum of 75 cases to reach competence level which was above 80%.

Unfortunately most of the other doctors did not perform the procedure frequently as in figure 5, but there was a sign that these doctors were showing some improvement from March 1999. The overall cannulation rate was reduced below 90% due to poor

Figure 1. Racial distribution

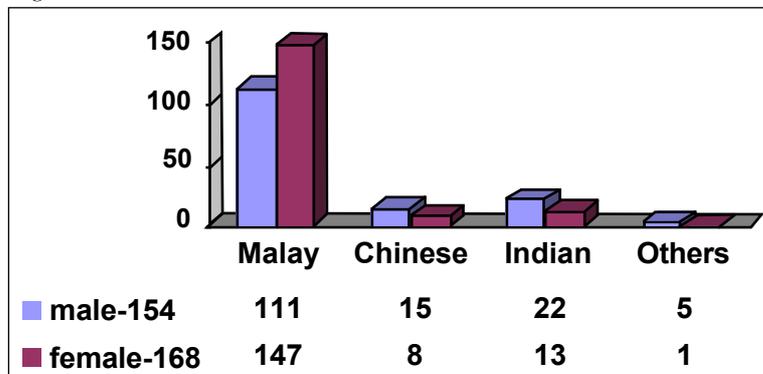
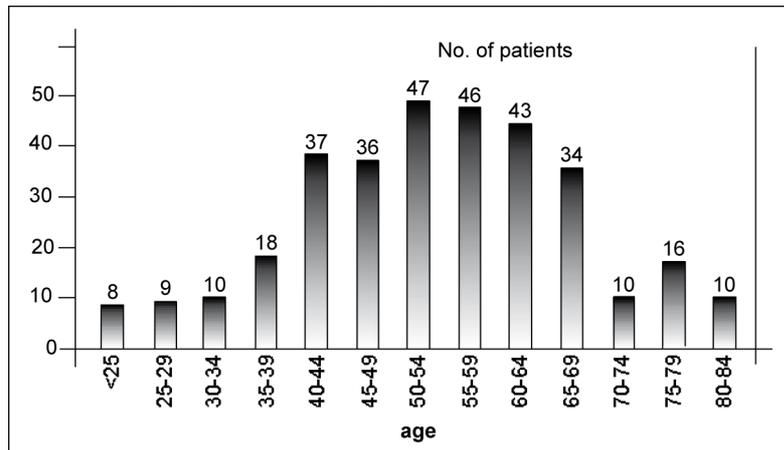


Figure 2. Age Distribution of the patients



cannulation.

The overall success rate for this procedure was good (> 80%) except in Oct 98, Nov 98, Apr 99 and Jun 99 where the rescue doctors were on frequent leave. The total overall cannulation rate was 79.9 % during this study. The value would have been higher if a few cases where the ampulla was not seen or even destroyed by periampullary carcinoma had been excluded.

We also looked into the reasons why the cannulation was not successful. The various reasons ranged from cannulating from far, inability to centralize the ampulla, inability to coordinate the small and large wheels of the duodenoscope, insufflation of too much air into the stomach leading to the inability to enter the pylorus, ampulla in a duodenal diverticulum, flat ampulla, ampulla hiding in the hood of duodenal folds, not well versed with the precut technique, as well as tumour and stone blocking the lower CBD.

There were two morbidities, one developed acute pancreatitis and the other cholangitis and two mortalities, one died due to acute pancreatitis and the other due to cholangitis.

269 patients ( 83% ) had endoscopic sphincterotomy and therapeutic intervention at the same time while the rest 17% had diagnostic procedure. The above figures give us an overall mortalities of 0.9% and mortality of 0.6% . A part from the oesophageal perforation , our complications were due to sphincterotomy. This figure might be biased because we did not routinely do serum amylase level after ERCP. It was found that up to 75% of the cases could be associated with painless

hyperamylasemia which did not need any treatment. (3) Acute pancreatitis is a known dreaded complication and the incidence reported varies between 0.7% to 7.4%. In our study it was 0.6% and one patient died of severe haemorrhagic pancreatitis. Our oesophageal perforation occurred due to inability of a new surgeon to manipulate the scope through the cricopharyngeus in a frail old lady who subsequently died of mediastinitis. Although oesophageal perforation is a known complication of endoscopy especially with the side viewing duodenoscope, there is no data on the incidence rate. Such incidence have been reported only once (5).

## Conclusion

The above study has clearly showed that ERCP is not a procedure, which can be performed easily even by surgeons with a wide experience in endoscopy. Surgeons who are beginning to perform ERCP need a lot of patience and more importantly one should continuously practice doing this procedure with guidance .It took doctor B , six solid months of training before he could reach 90% success in cannulating the major duodenal papilla. Although this is a good guide but this is only a single surgeon's figure .Since we have identified our basic shortfalls , we hope that better training can be provided for new surgeons.

Referring to the recommendations of the Malaysian Society of Gastroenterology and Hepatology ( 4 ) , a unit accredited for training in ERCP should perform a minimum of 150 ERCP's a year.

Table 1 :- Indications for ERCP

Biliary System		Pancreas	
Choledocholithiasis	172	Acute Pancreatitis	30
Obstructive jaundice	34	Chronic Pancreatitis	9
Acute cholangitis	16	Carcinoma Head of Pancreas	11
Cholelithiasis with of jaundice	16	Carcinoma Ampulla of Vater	6
Intrahepatic stone	6	Carcinoma Body of Pancreas	1
Cholangiocarcinoma	6	Pancreatic Pseudocyst	2
Raised alkaline phosphatase	3	Polyps on Ampulla of Vater	1
Acute cholecystitis	3		
CBD injury	3		
Jaundice for investigation	2		
Choledochal cyst	1		

Table 2. Biodata of Surgeons

a) Surgeon A-	Consultant. Trained in ERCP. Started this service. Frequent participation. Transferred out in Jan.1999
b) Surgeon B-	Clinical specialist.On the job training. Frequent participation
c) Others	- Other consultants, Clinical specialist, visiting specialist. Infrequent participation
d) Rescue	- Surgeon A +/- Surgeon C

Figure 3. Surgeon A

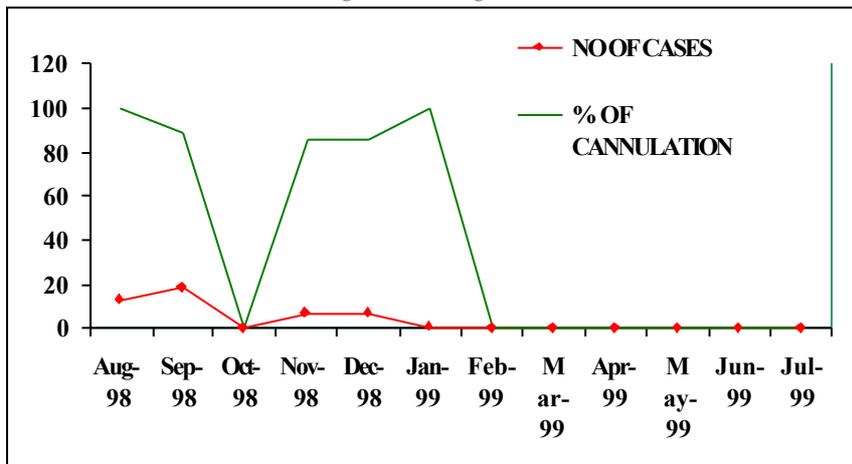


Figure 4. Surgeon B

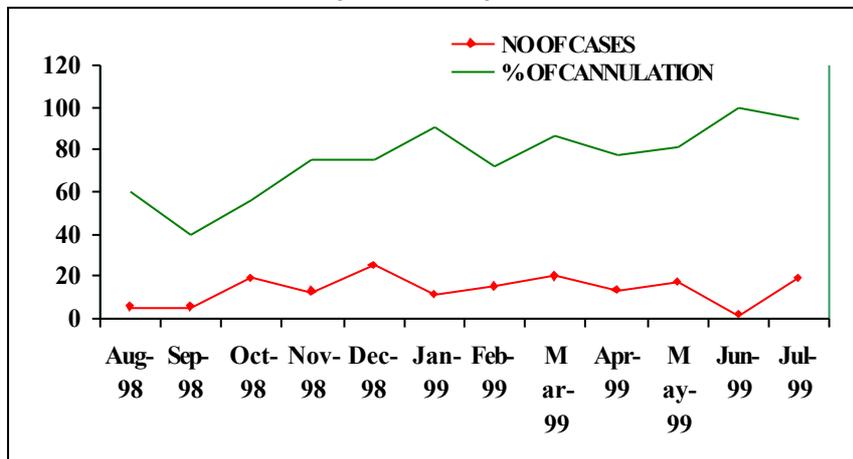


Figure 5. Others

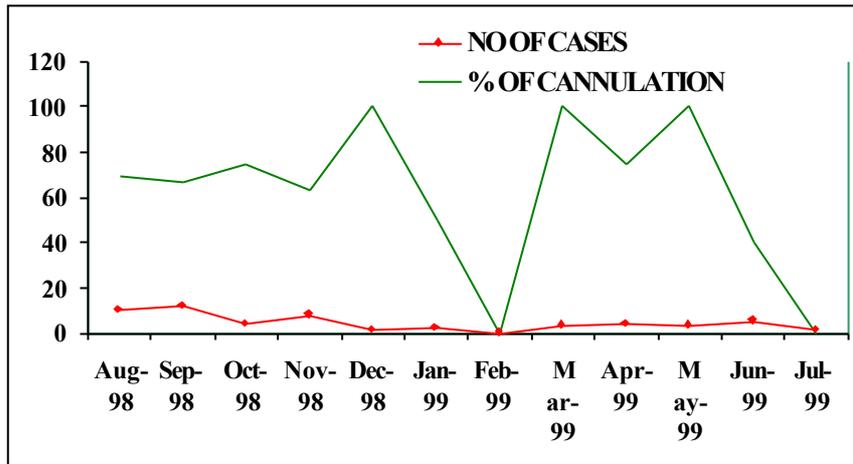


Figure 6. Rescue

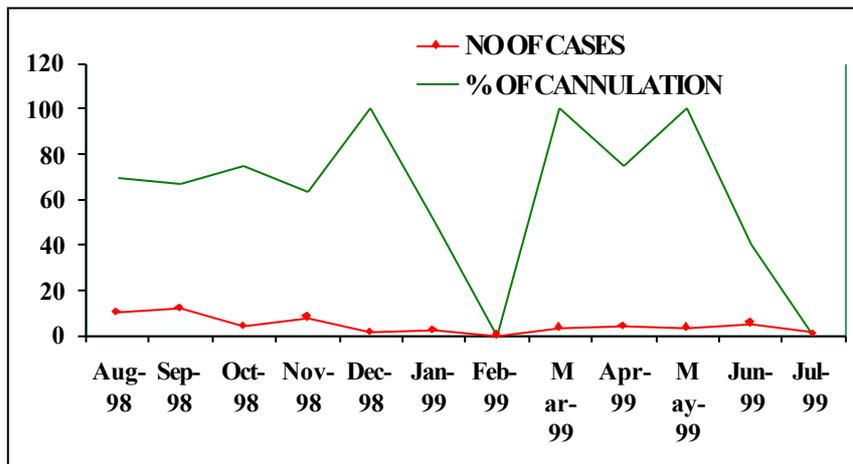
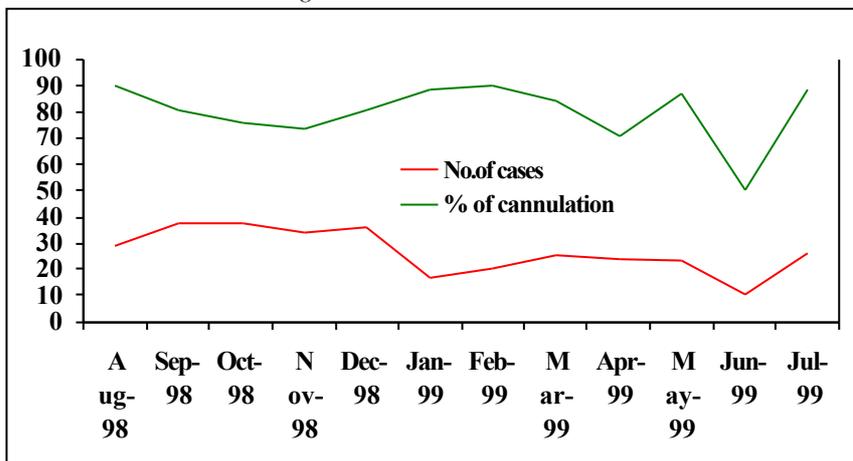


Figure 7. Overall Success



Looking into the credentialing requirements by this society, we have at least 2 surgeons who during this period of the study have been successful in reaching this figure.

Finally this study has shown that, ERCP is a relatively a safe procedure if it can be done with proper supervision. The success in ERCP services have definitely reduced the number of open common bile duct surgery and with a proportional increase in laparoscopic cholecystectomy procedures being done.

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