

Cholecystectomy rate following endoscopic biliary interventions

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ABSTRACT

Introduction: Gallstones disease is a common disorder and symptomatic disease is usually managed with surgery while those with common bile duct stones are usually managed with endoscopic intervention before proceeding to surgery. This study was intended to assess the rate of cholecystectomy among patients who had undergone ERC interventions, the reasons for not proceeding to cholecystectomy and related complications. **Materials and Methods:** Patients who had intact gallbladder and had undergone ERC for stones related complications over a two year period were retrospectively identified from the Endoscopic Unit Registry. Detailed case note reviews were conducted. **Results:** The overall cholecystectomy rate post-ERC interventions was 36.9% (48/130). Cholecystectomy was offered to 59.2% (n=77) and the uptake was only 58.4% (n=45/77). Among those who agreed for cholecystectomy, 11.1% (n=5/45) failed to turn up for their scheduled surgery. Three patients (6.7%) had symptoms recurrence before their scheduled surgery: two subsequently underwent cholecystectomy without ERC intervention and one who was pregnant was managed conservatively with holecystectomy. Among the patients who had declined cholecystectomy, 18.8% (n=6/32) had symptoms recurrence. Four patients required repeat ERC interventions and eventually all had cholecystectomy subsequently. The most common reason for declining cholecystectomy was 'not keen' and already asymptomatic (46.9%, n=15/32). Among patients who were not offered cholecystectomy (n=53/130), symptoms recurrence occurred in 15.2% (n=7/53). Four patients required repeat ERC interventions and three subsequently underwent cholecystectomy. **Conclusions:** The cholecystectomy rate remains low after ERC interventions. Recurrence of symptoms necessitating re-interventions occurred in patients offered and not offered cholecystectomy. The uptake rate should be improved and delay to cholecystectomy should be reduced to avoid symptoms recurrence. Patients not undergoing interventions should be advised regarding symptoms recurrence and should be monitored.

Keywords: Choledocholithiasis, cholecystectomy, endoscopic retrograde cholangiopancreatography, gallstones disease

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INTRODUCTION

Gallstones disease is common in clinical practise. However, a majority of patients are asymptomatic and may not be aware of their

underlying condition. This group of patients may present with severe complication such as acute gallstones pancreatitis or cholangitis as the first manifestations. Most symptomatic patients present with intermittent and recurrent mild to moderate epigastric or right upper quadrant pain that is typically colicky in nature and radiates to the back.

Biliary stones are usually gallstones that have migrated from the gallbladder. However, primary biliary stones can occur and is reported to be more common in the East.¹⁻³ Symptomatic gallstones disease is usually managed with cholecystectomy. However, patients with biliary stones are usually managed with endoscopic retrograde cholangiographic (ERC) interventions (Figures 1a and b) followed by either open (OC) or laparoscopic cholecystectomy (LC) to avoid further complications such as pancreatitis, cholangitis and recurrent chole-docholithiasis.²⁻³ However after ERC interventions, patient may not proceed to a cholecystectomy for various reasons. This may lead to recurrence of symptoms which increases the risk of re-admissions and length of hospitalisation thereby increasing healthcare cost.⁴⁻⁶

This study assessed the rate of cholecystectomy after ERC interventions and evaluate the reasons for not proceeding to cholecystectomy. For patients who had been offered cholecystectomy, the reasons for declining and complications such symptoms recurrence and subsequent outcomes were also assessed.

MATERIALS AND METHODS

Patients who had not previously had cholecystectomy and had ERC interventions for

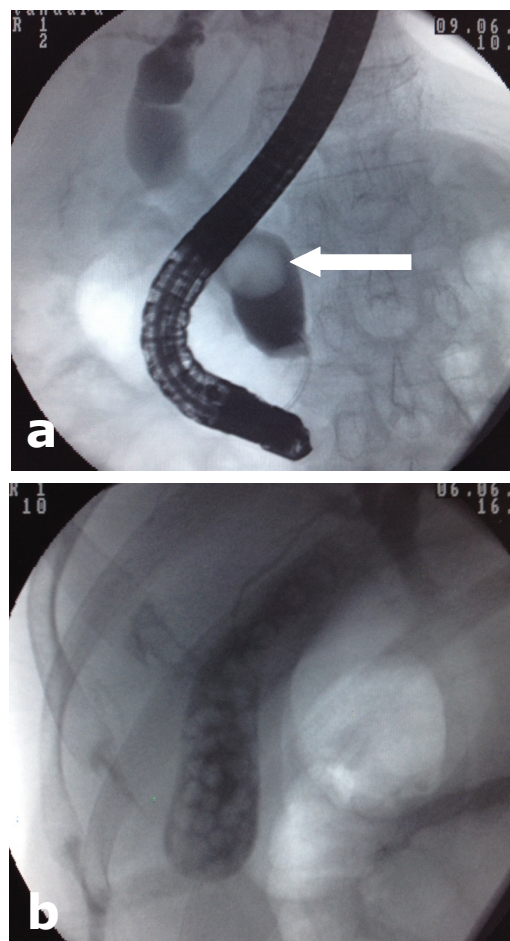


Fig. 1: a) Endoscopic retrograde cholangiography showing a dilated common bile duct and a large stone (arrow), and b) cholecystogram showing multiple gallstones in the gallbladder.

gallstones related disorders at the Endoscopy Unit, RIPAS Hospital from January 2007 to December 2008 were identified and retrospectively reviewed.

All patients who had ERC interventions during the study period were identified from the ERC Register of the Endoscopy Unit, RIPAS Hospital. The ERC register contains data of all patients including their medical record number and the date, indications and findings of the ERC interventions. Detailed case note reviews were conducted to identify if patients had proceeded to cholecystectomy. For patients who did not proceed to cholecys-

tomy, the underlying reasons for these were identified. The outcome data was then followed up until September 2009. Any readmissions with gallstones related conditions with or without subsequent interventions were considered as having recurrence of symptoms. The median time delay between the two procedures was also calculated based on the difference between the date the last ERC interventions and date of cholecystectomy.

Altogether, there were a total of 220 patients who had undergone ERC interventions during the two year study period. Of these 220 patients, 137 (67.3%) had intact gallbladder and had undergone ERC interventions for gallstones related disorders. Of the 137 gallstones related patients who were identified, 130 (94.9%) case notes were available for the study while the remaining seven case notes were not available.

The study was approved by the Medical Health and Research Ethics Commit-

tee, Ministry of Health.

The data were entered into the Statistic Package for Social Sciences programme (SPSS, version 10.0, Chicago, IL, USA) for analysis. Comparisons were made using Chi-square or Mann-Whitney tests where appropriate and a *p* value of less than 0.05 was taken as significant.

RESULTS

The demographics of the 130 patients are summarised in Table 1.

Seven patients were previously offered cholecystectomy, of which six declined and one who had previously agreed did not have the cholecystectomy. Five patients previously had ERC interventions and two were offered cholecystectomy, both of who declined.

Overall, 48 patients (36.9%) underwent cholecystectomy (LC, 87.5% and OC in 12.5% including two that was converted

Table 1. Demographics of patients, gallstones location and consequent sphincterotomy.

Parameters	Overall (n=130)	Cholecystectomy		<i>p</i>
		Offered (n=77)	Not offered (n=53)	
Mean age	48.4 (SD 18.4)	44.1 ± 14.9	54.7 ± 21.1	0.003
Mean follow up (months)	22.6 (SD 7.5)	22.5 ± 7.5	22.7 ± 7.5	0.941
Gender				
Male	56 (43.1%)	28 (50%)	28 (50%)	0.062
Female	74 (56.9%)	49 (66.2%)	25 (33.8%)	
Ethnicity				
Malay	113 (86.9%)	66 (58.4%)	47 (45.5%)	0.455 for trend
Chinese	11 (8.5%)	6 (54.5%)	5 (45.5%)	
Others	6 (4.6%)	5 (83.3%)	1 (16.7%)	
ERC interventions				
Sphincterectomy	107 (82.3%)	67 (87.0%)	40 (75.5%)	0.090
Follow up				
Symptoms recurrence	16 (12.3%)	9 (11.7%)	7 (13.2%)	0.796
Time to recurrence	186 ± 166.5	196.1 ± 209.5	170.8 ± 83.5	0.955
Repeat ERC interventions	16 (12.3%)	7 (9.1%)	9 (17.0%)	0.178

SD: Standard deviation

from LC). The median and mean time from the initial ERC interventions to cholecystectomy was 83 days (range 3 to 758) and 105 ± 119 days.

Cholecystectomy was offered to 59.2% (n=77) of the patients and the uptake was only 58.4% (n=45/77). Those not offered cholecystectomy were generally older (54.7 ± 21.1 vs. 44.1 ± 14.8 years old, $p=0.01$).

The most common reason for declining cholecystectomy was 'not keen' which accounted for 46.9% (n=15/32) of the patients who had refused cholecystectomy. Other reasons for refusal included patients' preference to have the cholecystectomy in another country (6.3%), too busy with their work commitments (6.3%), trying traditional and alternative medicines (6.3%), pregnancy (3.1%) and preference for repeated ERC (3.1%) interventions, in particularly those with large common bile duct stones. The

reasons were not stated in 28.1%. The number of patients offered and not offered cholecystectomy and their outcomes is summarised in Figure 2.

Among patients who agreed for cholecystectomy, 11.1% (n=5/45) failed to turn up for their scheduled surgery. Overall, 86.7% (n=39/45) had cholecystectomy (38 LC and one OC) at a median time of 74 days (range 3 to 385) from the initial ERC interventions.

Overall, symptoms recurrence was reported by 12.3%. Fewer patients with recurrence had endoscopic sphincterotomy performed during their index ERC interventions compared to those without recurrence (34.8% vs. 7.5%, $p<0.001$).

Three patients (6.7%) had symptoms recurrence at a median of 95 days (6 to 146) before their scheduled surgery. Two patients subsequently underwent cholecystectomy

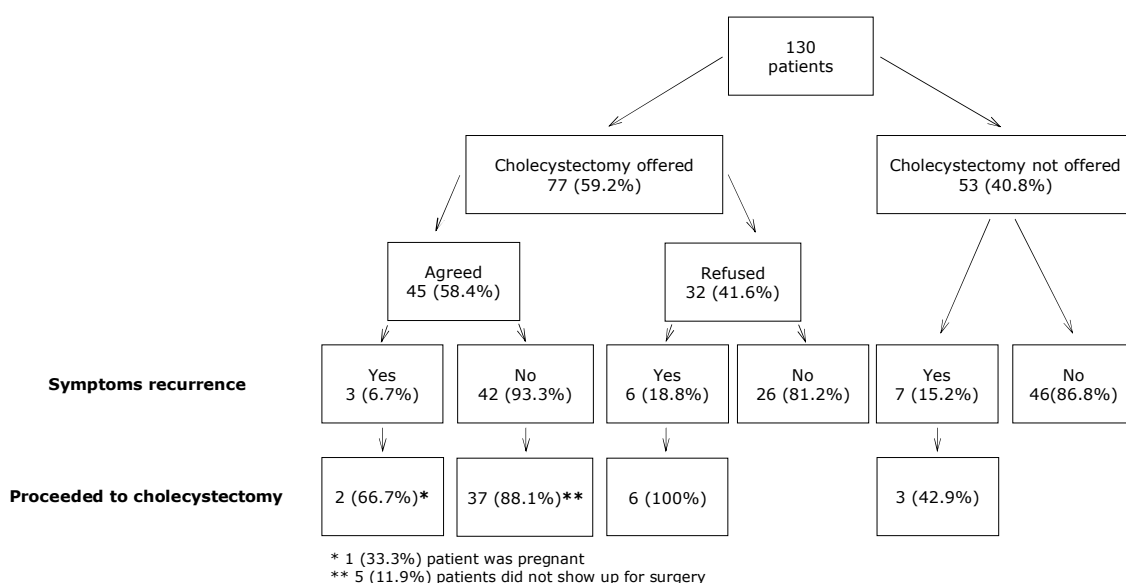


Fig. 2: Flow diagram showing the outcomes of patients with intact gallbladder who had endoscopic biliary interventions.

without any ERC interventions, four (LC converted to OC) and 16 (LC) days after symptoms recurrence respectively. One patient was pregnant and her symptoms settled with conservative management and did not proceed to cholecystectomy.

Among the patients who were offered but declined cholecystectomy, 18.8% (n=6/32) had symptoms recurrence at a median of 195 days (range 8 to 691). Four (66.6%) patients required repeat ERC interventions. All eventually had subsequent cholecystectomy (all LCs) at a median of 53 days (range 1 to 95) after symptoms recurrence.

Among the patients who were not offered cholecystectomy (n=53/130), symptoms recurrence occurred in 15.2% (n=7/53) at a median of 93.5 days (range 65 to 269). Four patients required repeat ERC interventions including placement of biliary stents in two patients. Overall, three (n=3/7, (42.9%)) patients subsequently underwent cholecystectomy (all LCs) at a median of nine days after symptoms recurrence (range 5 to 158).

DISCUSSION

Our study showed that among patients who have undergone ERC interventions for stones related complications, the uptake rates for cholecystectomy was only 58.4%. In our study, more than 40% of our patients were not offered cholecystectomy, the most common reason being old age. Presence of co-morbid conditions that may have increased the risk of operations was the next common reason. In our setting, all young patients are routinely offered cholecystectomy after ERC interventions. We were unable to make any

comparison with situation elsewhere as there is no data available in the literature on cholecystectomy rates after ERC interventions through literature searches.

Among patients who had been offered cholecystectomy, the most common reasons cited for declining cholecystectomy was 'not keen'. In most instances, post ERC interventions, patients symptoms would have settled and patients may not incline to undergo another procedures. This is also true in other situations where patient may not be willing to undergo an investigations once their symptoms have settled, especially in conditions that are not life-threatening. Other reasons cited included planning to have surgery in another country, too busy with work commitments and trying alternative treatment usually in the form of traditional medicines. One patient was pregnant and not offered cholecystectomy. One patient preferred repeated ERC interventions but declined surgical bile duct explorations. This patient had large common bile duct stones and was treated with long-term stenting. In 28.1%, no reasons were recorded down in their case notes as to why cholecystectomy was declined.

Among patients who had agreed to undergo cholecystectomy, 11.1% failed to come for surgery. In our study, we were unable to ascertain the exact reasons. Possible reasons include the patient having forgotten their appointments or changed their mind about proceeding with cholecystectomy. Another possible reason is that patients already had treatment elsewhere. However, it is less likely unless patients had treatment in the other two insitutions in the country or in

another country and had not come back for follow up or not informed their doctors of the surgery.

In general, after ERC interventions, patients are usually advised to undergo cholecystectomy to avoid symptoms recurrence.^{2, 3} Studies have shown that symptoms recurrence can occur if patients do not have cholecystectomy.^{7, 8} One study reported recurrence rate at one year was 47%, averaging almost four percent recurrence rate per month.⁷ However, analysis of three available studies showed that recurrence rate was 25% at two years.

Overall, 16 (12.3%) of our patients had symptoms recurrence over a mean follow up of 22.6 months: nine (11.7%) in those who had been offered cholecystectomy and seven (13.2%) in those not offered cholecystectomy. This is lower than 25% reported in the literature.⁸ In three patients (6.7%), the symptoms recurred before their scheduled surgery. All except the pregnant patient proceeded to cholecystectomy soon after symptoms recurrence. Among those who declined cholecystectomy, 18.8% had symptoms recurrence at a median of 195 days after their initial ERC interventions. Four (66.6%) required repeated ERC interventions and all eventually proceeded to cholecystectomy at a median of 53 days after symptoms recurrence. Among the seven patients not offered cholecystectomy, some of the recurrence was secondary to blocked stents needing repeated ERC interventions which consisted mainly of stent exchange. Interestingly, fewer patients with symptoms recurrence had ERC sphincterotomy performed. Spontaneous passage of stones have

been reported to range from 55 to 93%.^{9, 10} This is especially true for patients with small ones (less than five mm) and those with gallstones pancreatitis with the culprit stone located at the papilla. Therefore, sphincterotomy is a good option for those patients who declined or not offered cholecystectomy.¹¹

The waiting time for cholecystectomy is generally dependent on the workload of the respective surgical departments. Given that symptoms recurrence are unavoidable, our incidence rate of 6.7% can be considered acceptable given that symptom recurrences were mostly non-complicated. Others have advocated cholecystectomy in the same admissions of ERC interventions. However, this may not possible for all cases due to existing workload. In our study, the time to recurrence were between 170.8 ± 83.5 for those not offered cholecystectomy and 196.1 ± 209.5 days for those offered cholecystectomy and the time to interventions was a median 83 days (range 3 to 758) or mean of 105 ± 119 days. If the waiting time can be reduced, the incidence of symptoms recurrence may be further reduced.

There are several limitations with our study. First, our study was retrospective in nature and this could be associated with limitations such as incomplete data. Second, the sample size may be considered small. However, our sample is a reflection of the workload of the centre and the size of population catchment. Third, the duration of follow up may not be long enough. The main strength is that our centre covers almost three quarter of the national population in Brunei. Hence, our data is reflective and can be generalised to the whole country.

In conclusion, the uptake rate of cholecystectomy after biliary interventions in our setting was low. For patients who had declined cholecystectomy, the most common reasons included being asymptomatic post-ERC interventions. Almost half of our patients were not offered cholecystectomy as a result to perceived higher risk secondary to their age and co-morbid conditions. Recurrence of symptoms occurred in a small proportion of patients while waiting for cholecystectomy. Reducing the waiting time may reduce the rates of recurrence of symptoms. For patients who are not offered cholecystectomy for various reasons, they should be monitored for recurrence of symptoms and be managed accordingly.

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