Audit

A survey of the timing and approach to the surgical management of cholelithiasis in patients with acute biliary pancreatitis and acute cholecystitis in the UK

PSP Senapati, D Bhattacharya, G Harinath, BJ Ammori

Royal Gwent Hospital, Newport, Gwent, UK

Background: Recent management guidelines and randomised clinical trials have provided evidence-based guidance to the management of acute biliary pancreatitis and acute cholecystitis.

Methods: A questionnaire was sent to the 1086 members of the Association of Surgeons of Great Britain and Ireland. There were 583 responders (54%).

Results: A policy of cholecystectomy during the index admission or within 4 weeks in fit patients recovering from mild acute biliary pancreatitis was adopted by 58% of surgeons, and was significantly associated with an upper gastrointestinal and hepato-pancreato-biliary subspecialty interest and a volume of more than 50 cholecystectomies per annum (OR, 0.43; 95% CI, 0.26–0.72; $P = 0.001$; and OR, 0.46; 95% CI, 0.29–0.74; $P = 0.001$, respectively). A policy of urgent cholecystectomy for acute cholecystitis was adopted by 20% of surgeons, and was significantly associated with an upper gastrointestinal/hepato-pancreato-biliary subspecialty interest and the 'routine' adoption of laparoscopic approach to cholecystectomy (OR, 0.34; 95% CI, 0.19–0.60; $P < 0.001$; and OR, 0.51; 95% CI, 0.3–0.86; $P = 0.01$, respectively).

Conclusions: The management of cholelithiasis in patients with acute biliary pancreatitis in the UK remains suboptimal. Moreover, only a minority of surgeons offer patients presenting with acute cholecystitis the benefits of early laparoscopic cholecystectomy. The management of acute biliary disease may be improved if these cases were concentrated in the hands of surgeons with upper gastrointestinal/hepato-pancreato-biliary interest and those who perform laparoscopic cholecystectomy regularly.

Key words: Cholelithiasis – Acute biliary pancreatitis – Acute cholecystitis – Laparoscopic cholecystectomy – Management – Audit

Within the UK, gallstones represent the commonest cause of acute pancreatitis¹ and the largest preventable cause of attacks. To prevent a further attack of acute biliary pancreatitis with its antecedent 10% risk of mortality and 30–40% risk of major morbidity,¹ in 1998 the

British Society of Gastroenterology published UK guidelines for the management of acute pancreatitis,² and recommended that patients with mild acute biliary pancreatitis should have a definitive management of their cholelithiasis ideally within 2 weeks and no longer than 4

Correspondence to: Mr Basil J Ammori, Consultant Surgeon, Manchester Royal Infirmary, Oxford Road, Manchester M13 9WL, UK
Tel: +44 161 276 1234, Fax: +44 161 276 4530, E-mail: bammori@aol.com

weeks. This would take the form of a cholecystectomy (and bile duct clearance if necessary) in fit patients and an endoscopic retrograde cholangiopancreatography (ERCP) and endoscopic sphincterotomy in the unfit. Indeed the risk of recurrence of acute biliary pancreatitis in the presence of cholelithiasis could be as high as 60% within 6 months.³ Endoscopic sphincterotomy significantly reduces the risk of recurrent acute biliary pancreatitis in unfit patients to 2–5% at 2 years.^{4–6}

In the management of acute cholecystitis, the conventionally adopted approach of conservative treatment and interval cholecystectomy has its distinct disadvantages. Whilst the majority of patients respond to such treatment approach, up to one-fifth of patients fail to do so and require an urgent cholecystectomy.^{7–9} Moreover, up to one-quarter of patients who have recovered from acute cholecystitis relapse while awaiting an interval cholecystectomy.⁷ In a randomised controlled trial of early *versus* delayed open cholecystectomy for acute cholecystitis some 25 years ago, Lahtinen and colleagues⁷ found early surgery to be safe and associated with significantly shorter operating time, and had avoided the complications of failed medical treatment. A number of recent randomised clinical trials have addressed the timing and surgical approach to cholecystectomy in patients with acute cholecystitis,^{9–13} and demonstrated that laparoscopic cholecystectomy performed during the index admission with acute cholecystitis was associated with a shorter hospital stay,^{9,11–13} quicker recovery,⁹ and a reduction in the overall treatment cost when compared with open cholecystectomy during the index admission with acute cholecystitis¹² or interval laparoscopic cholecystectomy.^{9,11,13} Moreover, early laparoscopic cholecystectomy was safe, and earlier reports of increased risk of bile duct injuries¹⁴ were not substantiated by more recent experiences.^{9,11,13,15}

The aims of this study, therefore, were to survey the currently adopted practice of the UK surgeons in the surgical management of acute biliary pancreatitis and acute cholecystitis, to evaluate the impact of various subspecialty interests on the practice adopted, and to suggest pathways towards a better implementation of the guidelines and other evidence-based management approaches.

Materials and Methods

The names and addresses of the practising members of the Association of the Surgeons of Great Britain and Ireland were obtained from the Association's office, and a postal questionnaire was sent to its 1086 current members. The survey included a general questionnaire, as well as a questionnaire that addressed the current practice adopted by each surgeon in relation to the timing

and approach to the surgical management of acute biliary pancreatitis and acute cholecystitis (see Appendix). The reply to the questionnaire was anonymous.

Statistical analysis

The replies were compiled on a computer database for analysis. Data were analysed using SPSS software package (v. 10.0, Chicago, IL, USA). The ccc² test was employed to compare categorical data. Statistical significance was assessed at $P < 0.05$.

Logistic regression analysis was employed to determine the impact of variables on the management approach adopted. The factors considered in this analysis were the subspecialty interest, the number of cholecystectomies performed annually by each surgeon, the proportion of cholecystectomies performed laparoscopically as well as the number of years as a practising consultant. The odds ratio (OR) and its 95% confidence interval (CI) were assessed for each significant variable.

Results

There were 584 responders, yielding a response rate of 54%. Of these, 69 surgeons did not treat patients with biliary disease and were, therefore, excluded from subsequent analyses.

General results

Of the analysed responders ($n = 515$), 35% were surgeon with upper gastrointestinal and hepato-pancreato-biliary interests, and 56% performed more than 50 cholecystectomies per annum.

Some 10% of the surgeons performed cholecystectomy only by an open approach, 27% adopted the laparoscopic approach selectively, whilst the majority of surgeons (63%) performed cholecystectomy by the laparoscopic approach routinely (in more than 90% of their patients). A significantly greater proportion of upper gastrointestinal/ hepato-pancreato-biliary surgeons adopted the laparoscopic approach to cholecystectomy 'routinely' compared with surgeons with other subspecialty interests (75% *versus* 57%, $P < 0.001$). During a cholecystectomy, 12% of surgeons adopted a routine policy towards intra-operative cholangiography, whilst the remainder performed cholangiography selectively.

Management of mild acute biliary pancreatitis

A policy of cholecystectomy during the index admission with mild acute biliary pancreatitis or within 4 weeks in patients fit for surgery was adopted by 58% of surgeons

(24% and 34%, respectively), and by significantly greater proportion of upper gastrointestinal/hepato-pancreato-biliary surgeons compared with surgeons of other subspecialties (79% *versus* 49%, $P < 0.001$), surgeons who performed more than 50 cholecystectomies per annum compared with those who performed 50 or less operations per year (72% *versus* 42%, $P < 0.001$), and surgeons who adopted the laparoscopic approach to cholecystectomy routinely compared with those who did not (63% *versus* 53%, $P = 0.02$). Logistic regression analysis, however, identified the surgical subspecialty interest (upper gastrointestinal/hepato-pancreato-biliary) and the volume of cholecystectomies (more than 50 per annum) to be significantly associated with the above management policy (OR, 0.43; 95% CI, 0.26–0.72); $P = 0.001$: and OR, 0.46; 95% CI, 0.29–0.74; $P = 0.001$, respectively).

Management of severe acute biliary pancreatitis

A policy of cholecystectomy during the index admission with severe acute biliary pancreatitis or within 4 weeks in patients fit for surgery who have recovered from a severe attack or who were deemed fit for surgery was adopted by 42% of surgeons, and by significantly greater proportion of upper gastrointestinal/hepato-pancreato-biliary surgeons (54% *versus* 40%, $P = 0.004$), and surgeons who performed more than 50 cholecystectomies per annum (51% *versus* 36%, $P < 0.001$). Logistic regression analysis, however, identified no significant associations with this management policy. A further 12% of surgeons would only perform an endoscopic sphincterotomy in such patients to prevent recurrence of acute biliary pancreatitis and would leave an otherwise asymptomatic gallbladder *in situ*.

Secondary prevention of acute biliary pancreatitis in patients unfit for surgery

In patients unfit for surgery who have recovered from an attack of acute biliary pancreatitis, some 78% of surgeons recommended an endoscopic sphincterotomy. Logistic regression analysis identified the surgeons who adopted the laparoscopic approach to cholecystectomy routinely to be significantly associated with this policy (OR, 0.54; 95% CI, 0.34–0.84; $P = 0.006$). The remainder of surgeons carried out no preventive intervention in the unfit.

'Therapeutic' ERCP in acute biliary pancreatitis

Early ERCP and endoscopic sphincterotomy was the policy adopted by 35% of surgeons in patients with predicted severe attack and by a further 14% of surgeons in all attacks regardless of the predicted severity. A further

46% of surgeons would resort to an early ERCP and endoscopic sphincterotomy only if cholangitis is suspected. Some 22% of surgeons would recommend a therapeutic ERCP only if choledocholithiasis has been demonstrated by other imaging modalities (magnetic resonance cholangiopancreatography, computerised tomography cholangiography or endoscopic ultrasonography). Logistic regression analysis, however, identified no significant association with these management policies.

Diagnostic ERCP in acute biliary pancreatitis

In addition to the above-mentioned routine application of early ERCP and endoscopic sphincterotomy in all attacks of acute biliary pancreatitis by 14% of surgeons, a further 17% of surgeons resort to a routine diagnostic ERCP to detect choledocholithiasis in all patients with acute biliary pancreatitis.

Some 47% of surgeons, however, would resort to a diagnostic ERCP selectively to detect choledocholithiasis; this included some 9% of surgeons who considered an abnormal liver function test on admission as an indication for a diagnostic ERCP.

Management of acute cholecystitis

A policy of urgent cholecystectomy during the index admission with acute cholecystitis was adopted only by 20% of surgeons, and by a significantly greater proportion of upper gastrointestinal/hepato-pancreato-biliary surgeons compared with surgeons with other subspecialty interests (37% *versus* 13%, $P < 0.001$), surgeons who performed more than 50 cholecystectomies per annum compared with the less frequent operators (23% *versus* 11%, $P < 0.001$), and surgeons who adopted the laparoscopic approach to cholecystectomy 'routinely' compared with those who did not (26% *versus* 13%, $P < 0.001$). Logistic regression analysis, however, identified the surgical subspecialty interest (upper gastrointestinal/hepato-pancreato-biliary) and the 'routine' adoption of laparoscopic approach to cholecystectomy to be significantly associated with a policy of urgent cholecystectomy for acute cholecystitis (OR, 0.34; 95% CI, 0.19–0.60; $P < 0.001$: and OR, 0.51; 95% CI, 0.3–0.86; $P = 0.01$, respectively).

The open approach was adopted by 24% of surgeons for an urgent cholecystectomy for acute cholecystitis, whilst the majority attempted the cholecystectomy laparoscopically. Of surgeons who performed urgent cholecystectomy, 14% adopted a policy of routine intra-operative cholangiography, whilst the remainder performed cholangiography selectively. The theatre facility utilised for an urgent cholecystectomy was the CEPOD theatre (46%), out-of-hours emergency theatre (16%) and the earliest available elective list (38%).

Discussion

Management of acute biliary pancreatitis:

The current postal survey has revealed that three of five surgeons adopted the UK recommendations regarding the timing of cholecystectomy in patients recovering from mild acute biliary pancreatitis, and that the proportion of followers was significantly greater amongst surgeons with upper gastrointestinal and hepato-pancreato-biliary subspecialty interest compared with surgeons with other subspecialty interests. The majority of surgeons, however, embraced the preventive role of endoscopic sphincterotomy in unfit patients with acute biliary pancreatitis.

Whilst this survey revealed that the adoption of the UK recommendations remains suboptimal, replies to the questionnaire are likely to underestimate the true deficiency in practice. Indeed, in a recent prospective audit of the management of acute pancreatitis in the South of England, Toh and colleagues¹ found that only one-third of the patients with mild acute biliary pancreatitis had definite treatment of gallstones within 4 weeks. Two other recent local audits from UK hospitals revealed adoption rates of 6.6%¹⁶ and 20–22%¹⁷ with high rates of urgent re-admission with related acute biliary disease.^{16,18}

Nonetheless, the audit report by Norton and colleagues¹⁸ revealed a relatively higher rate of adoption of the BSG recommendations regarding the timing of surgery (70%) that was comparable to the results of the questionnaires of our study, but highlighted an unacceptably high rate of re-admission (one-third of patients) with recurrent acute biliary pancreatitis when definitive treatment of the biliary aetiology was delayed.

Reluctance to carry out a laparoscopic cholecystectomy during the index admission of patients who have recovered from mild acute biliary pancreatitis may, in part, be attributable to concerns regarding an increased operative difficulty and conversion rate in such patients.¹⁹ Some of the published series, however, do not support these concerns.^{20,21} Furthermore, there is no evidence to suggest that deferring the cholecystectomy in such patients reduces the operative difficulty.

Although the therapeutic role of ERCP in patients with acute biliary pancreatitis was well recognised by most, one-quarter of surgeons applied diagnostic ERCP inappropriately in patients with transient derangement in liver function tests and routinely to detect choledocholithiasis. A transient abnormality in liver function tests early in the course of the attack (serum transaminases and bilirubin) reflects the biliary aetiology of the acute attack of pancreatitis^{22,23} and is not an indication of persistent choledocholithiasis. Moreover, the culprit bile duct stones pass through spontaneously in the large majority of

patients, and the yield of a diagnostic ERCP in the absence of bile duct dilatation and/or persistent derangement of liver function tests is rather low²⁴ and declines rapidly with the time lapsed from onset of attack.²⁵ ERCP has its antecedent risk of major morbidity (10%) and mortality (1%),^{26,27} and its role as a diagnostic tool should be carefully advised.

Management of acute cholecystitis

Despite the increasingly available evidence of benefits to the patients and health economy for an early cholecystectomy over interval surgery, the adoption of early cholecystectomy for acute cholecystitis has remained an unpopular practice in the UK, and many patients continue to be denied the benefits of early surgery. In a previous postal questionnaire to the general surgeons who were thought to be involved in the general surgical on-call rota, Cameron and colleagues²⁸ reported that only 12% of the surgeons treated their patients by emergency cholecystectomy whenever possible. In the current survey, the proportion of early operators, albeit higher (20%), has remained low. The reply to the questionnaire suggested a favourable impact for the subspecialty interest on the management policy as early cholecystectomy for acute cholecystitis was adopted by a significantly greater proportion of hepato-pancreato-biliary and upper gastrointestinal surgeons, as well as surgeons who routinely undertook laparoscopic cholecystectomy. Nonetheless, those remained a minority amongst their subspecialty colleagues.

There are undoubtedly several factors that might have restrained surgeons from adopting an early surgical approach to acute cholecystitis. The emergency theatre facility was not available or accessible to all, particularly during sociable hours, and over a third of followers utilised the earliest available elective list that clearly has its associated logistical difficulties. A delay in confirming the diagnosis by ultrasonography and in gaining access to the operating room may heighten concerns amongst surgeons that the window for a relatively easier, or perhaps less difficult, laparoscopic cholecystectomy might have been missed.^{9,29} Our own experience, however, does not support this concern, as the delay in carrying out the urgent laparoscopic cholecystectomy beyond 96 h – caused by inaccessibility to the CEPOD theatre for such ‘non-emergency’ cases – was not associated with an increase in operating time or conversion rate (no conversions) when compared with surgery performed sooner, but considerably increased the pre-operative, and hence total, hospital stay.³⁰

There is clearly a need for the theatre and hospital managers to invest in what we propose as a 12-h urgent

theatre facility that is separate from the emergency CEPOD theatre and analogous to the 'trauma' theatre in order to facilitate surgery for non-emergency urgent cases. Whilst the data obtained from this study suggest that more patients with acute cholecystitis would benefit if they were managed by surgeons with subspecialty interest, there is a need for radiologists, anaesthetists and, most of all, specialist surgeons to take a more pro-active approach to the management of acute cholecystitis. The role of further education and training ought to be explored methodically, and training courses into laparoscopic cholecystectomy for acute cholecystitis should be invited.

Conclusions

The current survey indicates that the management of cholelithiasis in patients with acute biliary pancreatitis remains suboptimal. Moreover, the large majority of patients presenting with acute cholecystitis might be denied the benefits of early laparoscopic cholecystectomy. There is a need for the recommendations and the evidence from randomised clinical trials and other carefully conducted studies to be communicated more effectively to the practising surgeons. In addition, there is a need for a wider opportunity to treat complicated cholelithiasis in a proposed non-emergency urgent theatre facility. Albeit inconclusive, the evidence suggests that the management of acute biliary disease may be improved if these cases were concentrated in the hands of surgeons with upper gastrointestinal/hepato-pancreato-biliary interest and those who perform laparoscopic cholecystectomy regularly.

References

- Toh SKC, Philips S, Johnson CD. A prospective audit against national standards of the presentation and management of acute pancreatitis in the South of England. *Gut* 2000; **46**: 239–43.
- Anonymous. United Kingdom guidelines for the management of acute pancreatitis. *Gut* 1998; **42**: S1–13.
- Patti MG, Peligrini CA. Gallstone pancreatitis. *Surg Clin North Am* 1990; **70**: 1277–95.
- Welbourn CR, Beckly DE, Eyre-Brook IA. Endoscopic sphincterotomy without cholecystectomy for gall stone pancreatitis. *Gut* 1995; **37**: 119–20.
- Uomo G, Manes G, Laccetti M, Cavallera A, Rabitti PG. Endoscopic sphincterotomy and recurrence of acute pancreatitis in gallstone patients considered unfit for surgery. *Pancreas* 1997; **14**: 28–31.
- Hammarstrom LE, Stridbeck H, Ihse I. Effect of endoscopic sphincterotomy and interval cholecystectomy on late outcome after gallstone pancreatitis. *Br J Surg* 1998; **85**: 333–6.
- Lahtinen J, Alhava EM, Aukee S. Acute cholecystitis treated by early and delayed surgery. A controlled clinical trial. *Scand J Gastroenterol* 1978; **13**: 673–8.
- McArthur P, Cuschieri A, Sella RA, Shields R. Controlled clinical trial comparing early with interval cholecystectomy for acute cholecystitis. *Br J Surg* 1975; **62**: 850–2.
- Lo CM, Liu CL, Fan ST, Lai EC, Wong J. Prospective randomized study of early *versus* delayed laparoscopic cholecystectomy for acute cholecystitis. *Ann Surg* 1998; **227**: 461–7.
- Kiviluoto T, Siren J, Luukkainen P, Kivilaakso E. Randomised trial of laparoscopic *versus* open cholecystectomy for acute and gangrenous cholecystitis. *Lancet* 1998; **351**: 321–5.
- Lai PB, Kwong KH, Leung KL, Kwok SP, Chan AC, Chung SC *et al.* Randomized trial of early *versus* delayed laparoscopic cholecystectomy for acute cholecystitis. *Br J Surg* 1998; **85**: 764–7.
- Berggren U, Gordh T, Grama D, Haglund U, Rastad J, Arvidsson D. Laparoscopic *versus* open cholecystectomy: hospitalization, sick leave, analgesia and trauma responses. *Br J Surg* 1994; **81**: 1362–5.
- Chandler CF, Lane JS, Ferguson P, Thompson JE, Ashley SW. Prospective evaluation of early *versus* delayed laparoscopic cholecystectomy for treatment of acute cholecystitis. *Am Surg* 2000; **66**: 896–900.
- Kum CK, Eypasch E, Lefering R, Math D, Paul A, Neugebauer E *et al.* Laparoscopic cholecystectomy for acute cholecystitis: is it really safe? *World J Surg* 1996; **20**: 43–9.
- Benoit N, Didier M, Yves R, Michael V, Faek J, David L *et al.* Safety of laparoscopic approach for acute cholecystitis: retrospective study of 609 cases. *World J Surg* 2001; **25**: 1352–6.
- Sargen K, Kingsnorth AN. Management of gallstone pancreatitis: effects of deviation from clinical guidelines. *J Pancreas* 2001; **2**: 317–22.
- Dube MG, Lobo DN, Rowlands BJ, Beckingham JJ. Audit of acute pancreatitis management: a tale of two hospitals. *J R Coll Surg Edinb* 2001; **46**: 292–6.
- Norton SA, Cheruvu CVN, Collins J, Dix FP, Eyre-Brook IA. An assessment of clinical guidelines for the management of acute pancreatitis. *Ann R Coll Surg Engl* 2001; **83**: 399–405.
- Tate JJ, Lau WY, Li AK. Laparoscopic cholecystectomy for biliary pancreatitis. *Br J Surg* 1994; **81**: 720–2.
- Targarona EM, Balague C, Espert JJ, Perez Ayuso RM, Ros E, Navarro S *et al.* Laparoscopic treatment of acute biliary pancreatitis. *Int Surg* 1995; **80**: 365–8.
- Ammori BJ, Davides D, Vezakis A, Larvin M, McMahon MJ. Laparoscopic cholecystectomy: are patients with biliary pancreatitis at increased operative risk? *Surg Endosc* 2003; **17**: 777–80.
- Goodman AJ, Neoptolemos JP, Carr-Locke DL, Finlay DB, Fossard DP. Detection of gall stones after acute pancreatitis. *Gut* 1985; **26**: 125–32.
- Mayer AD, McMahon MJ. Biochemical identification of patients with gallstones associated with acute pancreatitis on the day of admission to hospital. *Ann Surg* 1985; **201**: 68–75.
- Lin G, Halevy A, Girtler O, Gold-Deutch R, Zisman A, Scapa E. The role of endoscopic retrograde cholangiopancreatography in management of patients recovering from acute biliary pancreatitis in the laparoscopic era. *Surg Endosc* 1997; **11**: 371–5.
- De Waele B, Peterson T, Smekens L, Willems G. Common bile duct stones in acute biliary pancreatitis: an endoscopic study. *Surg Laparosc Endosc* 1997; **7**: 248–50.
- Cotton PB. Endoscopic management of bile duct stones; (apples and oranges). *Gut* 1984; **25**: 587–9.
- Freeman ML, Nelson DB, Sherman S, Haber GB, Herman ME, Dorsher PJ *et al.* Complications of endoscopic biliary sphincterotomy. *N Engl J Med* 1996; **335**: 909–18.
- Cameron IC, Chadwick C, Philips J, Johnson AG. Current practice in the management of acute cholecystitis. *Br J Surg* 2000; **87**: 362–73.
- Schwesinger WH, Sirinek KR, Strodel 3rd WE. Laparoscopic cholecystectomy for biliary tract emergencies: state of the art. *World J Surg* 1999; **23**: 334–42.
- Bhattacharya D, Senapati PSP, Hurie R, Ammori BJ. Urgent *versus* interval laparoscopic cholecystectomy for acute cholecystitis: a comparative study. *J Hepatobiliary Pancreat Surg* 2002; **9**: 538–42.

APPENDIX

Survey of the surgical management of acute biliary pancreatitis and acute cholecystitis in the UK

General questionnaire

What is your surgical subspecialty of interest?

☐ Upper GI ☐ Hepato-pancreato-biliary ☐ Colorectal ☐ Vascular ☐ Breast ☐ Other

For how many years have you been a consultant surgeon?

☐ < 5 ☐ 5–10 ☐ 11–15 ☐ 16–20 ☐ > 20

Approximately, how many cholecystectomies do you perform per year?

☐ 0 ☐ < 20 ☐ 20–50 ☐ 51–100 ☐ > 100

Approximately, what proportion of the cholecystectomies do you carry out laparoscopically?

☐ 0% ☐ < 50% ☐ 50–75% ☐ 75–90% ☐ > 90%

If the answer is 0%, then you can ignore the following questions.

Do you perform intra-operative cholangiography during elective cholecystectomy?

☐ Rarely ☐ Selectively ☐ Almost always

Questionnaire relating to the management of acute biliary pancreatitis

What is your preferred timing for cholecystectomy in patients **fit** for surgery who have recovered from a **mild** attack of acute biliary pancreatitis?

- ☐ Cholecystectomy during the index admission with acute biliary pancreatitis
- ☐ Interval cholecystectomy within 4 weeks
- ☐ Interval cholecystectomy (time interval not specified)

What is your preferred definitive approach to cholelithiasis in patients **fit** for surgery who have recovered from a **severe** attack of acute biliary pancreatitis?

- ☐ Cholecystectomy during the index admission with acute pancreatitis
- ☐ Interval cholecystectomy within 4 weeks
- ☐ Interval cholecystectomy (time interval not specified)
- ☐ Endoscopic sphincterotomy

What is your preferred approach to cholelithiasis in patients **unfit** for surgery who have recovered from acute biliary pancreatitis?

- ☐ Endoscopic sphincterotomy
- ☐ No intervention

What is your approach regarding **early ERCP** and endoscopic sphincterotomy in patients **presenting** with acute biliary pancreatitis?

- ☐ Perform only if cholangitis is suspected
- ☐ Perform routinely in patients with predicted severe attack
- ☐ Perform routinely regardless of predicted severity of attack

What is your **usual** approach to **diagnostic ERCP** (to detect bile duct calculi) in patients **recovering** from acute biliary pancreatitis?

- ☐ Perform ERCP routinely
- ☐ Perform ERCP selectively
 - If CBD dilated
 - If LFT abnormal on admission
 - If LFT abnormality persists
 - If CBD is dilated and LFT abnormality persists
- ☐ Only perform **therapeutic** ERCP if duct calculi were detected on MRCP, EUS or CT cholangiography?

Questionnaire related to the management of acute cholecystitis

In patients presenting with acute cholecystitis, which of the following management options do you usually adopt?

- ☐ Conservative treatment followed by interval cholecystectomy at a later admission
- ☐ Urgent cholecystectomy (during same admission)

If you perform urgent cholecystectomy, which theatre facility is **usually** available to you?

- ☐ CEPOD theatre
- ☐ Out-of-hours acute theatre
- ☐ Earliest available elective list

What surgical approach do you **usually** adopt?

- ☐ Laparoscopic
- ☐ Open

Do you usually perform intra-operative cholangiography during urgent cholecystectomy?

- ☐ Rarely
- ☐ Selectively
- ☐ Almost always

Comments:

ERCP, endoscopic retrograde cholangiopancreatography.