STANDARD OPERATING PROCEDURE

Gallstones Management

Department of Health, Special Region (1)

Version: 1.0

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Approved by: Emergency Medicine Unit

1. Purpose

To standardize the diagnosis and management of gallstones (cholelithiasis) for timely symptom control, prevention of complications (biliary colic, acute cholecystitis, cholangitis, pancreatitis, gallstone ileus), and appropriate use of cholecystectomy.

2. Scope

Applicable to all healthcare providers managing patients with suspected or confirmed gallstones. Applicable roles include:

- Emergency physicians and medical officers
- General surgeons and surgical trainees
- Anaesthetists and ICU teams (for severe/complicated cases)
- Nursing staff (monitoring, medication, patient support)
- Radiology and laboratory staff

3. Definitions

> **Gallstones (Cholelithiasis):** Solid deposits formed from bile components (cholesterol or bilirubin) within the gallbladder. Gallstones may remain asymptomatic or cause biliary colic and complications when obstructing the cystic duct or common bile duct.

> **Biliary Colic:** Episodic right upper quadrant or epigastric pain caused by temporary cystic duct obstruction, typically triggered by fatty meals. Pain is dull, continuous, severe, and may radiate to the back or right shoulder.

> **Acute Cholecystitis:** Inflammation of the gallbladder, usually secondary to persistent cystic duct obstruction by a gallstone. Characterized by Murphy's sign, fever, elevated inflammatory markers, and gallbladder wall thickening on imaging.

> **High-Risk Features Requiring Urgent Intervention:** Empyema, perforation, ascending cholangitis, gallstone pancreatitis, and gallstone ileus. These conditions carry significant morbidity and mortality without prompt surgical or interventional management.

4. Initial Assessment

All patients presenting with suspected gallstone disease must undergo structured clinical assessment:

4.1 History

- **Pain character:** RHC or epigastric pain (biliary colic — dull, continuous, severe, radiating to back or right shoulder)
- **Associated symptoms:** Nausea, vomiting, fatty meal trigger
- **Complication markers:** Fever, rigors, jaundice (suggesting cholecystitis, cholangitis, or pancreatitis)
- **Duration and progression:** Time of onset, pattern of pain, prior episodes
- **Risk factors:** Female gender, obesity, pregnancy, rapid weight loss, haemolytic disorders, age > 40 years

4.2 Physical Examination

Table 1: Key Clinical Findings in Gallstone Disease

Sign	Description	Clinical Significance
RHC tenderness	Localized tenderness in the right hypochondrium	Suggests gallbladder inflammation or obstruction
Murphy's sign	Inspiratory arrest on palpation of the RHC	Highly suggestive of acute cholecystitis
Jaundice	Yellow discoloration of sclera and skin	Indicates bile duct obstruction or hepatic dysfunction
Fever	Temperature > 38.0°C	Suggests infection (cholecystitis, cholangitis)

Palpable gallbladder	Enlarged, tender gallbladder (Courvoisier's law)	Raise suspicion of malignancy if painless

5. Investigations

5.1 Laboratory Investigations

Table 2: Recommended Laboratory Tests

Test	Purpose	Abnormal Findings
FBC	Assess for infection (WCC) and anaemia	Leucocytosis in cholecystitis/cholangitis
CRP	Marker of inflammation	Elevated in acute cholecystitis
LFTs (Bilirubin, ALP, GGT, AST, ALT)	Assess biliary obstruction and hepatic function	Raised bilirubin/ALP/GGT suggest CBD stone
Amylase / Lipase	Exclude pancreatitis	Amylase > 3× normal or elevated lipase
Coagulation profile (INR/PT, APTT)	Preoperative assessment	Deranged if obstructive jaundice present
RFTs, Electrolytes	Baseline renal function and electrolytes	May be deranged in sepsis

5.2 Imaging

Table 3: Imaging Modalities in Gallstone Disease

Modality	Indication	Findings
Ultrasound abdomen (first line)	All suspected gallstone cases	Gallstones, wall thickening (>3 mm), pericholecystic fluid, CBD dilation

MRCP	Jaundice or deranged LFTs (suspected CBD stone)	CBD stones, biliary tree anatomy, strictures
CT abdomen	Perforation suspected, atypical presentation, complications	Perforation, abscess, pancreatitis, malignancy
HIDA scan	Equivocal ultrasound (suspected acalculous cholecystitis)	Non-visualization of gallbladder confirms cystic duct obstruction

6. Management

6.1 Asymptomatic Gallstones

Expectant management — no intervention required. Exceptions where prophylactic cholecystectomy is indicated:

- Stones > 3 cm in diameter
- Porcelain gallbladder (calcified wall)
- Gallbladder polyps > 1 cm
- Haemolytic disorders (e.g., sickle cell disease, hereditary spherocytosis)
- Planned bariatric surgery or organ transplantation

6.2 Symptomatic Gallstones

6.2.1 Initial Management

Table 4: Initial Conservative Management

Intervention	Details
NPO (Nil Per Os)	Rest the gallbladder; prevent stimulation of bile secretion
IV Fluids	Maintenance and rehydration; correct electrolyte imbalances
Analgesia	NSAIDs (first line for biliary colic); opioids if severe pain

IV Antibiotics	Indicated for acute cholecystitis/cholangitis (see Section 6.3)
Antiemetics	Metoclopramide or ondansetron for nausea/vomiting

6.2.2 Definitive Management — Cholecystectomy

Laparoscopic cholecystectomy is the preferred definitive treatment for symptomatic gallstones.

Table 5: Timing of Cholecystectomy

Clinical Scenario	Timing	Notes
Mild/Moderate acute cholecystitis	Early (within 5–7 days of presentation)	Reduced hospital stay, lower complication rates
Severe acute cholecystitis	Delayed (6 weeks after initial episode)	Allow inflammation to subside; interval cholecystectomy
Biliary colic (uncomplicated)	Elective (within reasonable timeframe)	Advise patient on risk of recurrence and complications

6.3 Complicated Gallstone Disease

Urgent surgical or interventional management is required for the following complications:

Table 6: Management of Complications

Complication	Management
Empyema of gallbladder	Emergency cholecystectomy; drainage if unfit for surgery
Perforation	Emergency laparotomy/laparoscopy; peritoneal lavage; cholecystectomy
Ascending cholangitis	Emergency ERCP with sphincterotomy and stone extraction; IV antibiotics; definitive cholecystectomy after resolution
Gallstone pancreatitis	Conservative management; early ERCP if obstructive jaundice/cholangitis; cholecystectomy during same admission

Gallstone ileus	Emergency laparotomy; enterolithotomy; cholecystectomy may be deferred
Unfit for surgery (any of above)	Percutaneous cholecystostomy drainage as bridge or definitive management

6.4 Antibiotic Regimens

Table 7: Recommended Antibiotic Regimens

Scenario	First-Line Regimen	Duration
Uncomplicated acute cholecystitis	Cefuroxime 750 mg TDS IV + Metronidazole 500 mg TDS IV	Until clinical improvement; typically 24–48 hours post-surgery
Severe/complicated cholecystitis	Piperacillin-Tazobactam 4.5 g TDS IV	5–7 days (longer if severe sepsis)
Cholangitis	Piperacillin-Tazobactam 4.5 g TDS IV or Meropenem 1 g TDS IV	7–10 days
Penicillin allergic (non-severe)	Ciprofloxacin 400 mg BD IV + Metronidazole 500 mg TDS IV	As per scenario above

7. Monitoring and Complications

All admitted patients require regular monitoring for:

- **Clinical deterioration:** Worsening pain, spreading peritonitis, increasing fever
- **Perforation signs:** Generalized abdominal tenderness, rigidity, absent bowel sounds
- **Sepsis:** Tachycardia, hypotension, altered consciousness, rising lactate
- **Jaundice progression:** Rising bilirubin, dark urine, pale stools
- **Pancreatitis:** Rising amylase/lipase, epigastric pain radiating to back

Admission criteria: All acute symptomatic cases, complicated gallstone disease, and patients requiring IV antibiotics/analgesia must be admitted. Uncomplicated biliary colic with resolved symptoms may be managed as outpatient with surgical follow-up.

8. Discharge and Follow-Up

8.1 Discharge Criteria

- Clinically stable with resolved symptoms
- Afebrile for at least 24 hours
- Tolerating normal diet without pain
- Adequate oral analgesia controlling any residual discomfort
- Postoperative: wound healthy, no signs of infection

8.2 Lifestyle Advice

- Low-fat diet; avoid fried and fatty foods
- Gradual weight reduction if overweight (avoid rapid weight loss)
- Regular meals; do not skip breakfast
- Return immediately if pain recurs, fever develops, or jaundice appears

8.3 Follow-Up Schedule

Table 8: Post-Discharge Follow-Up

Timing	Action	Responsible
1–2 weeks	Surgical OPD review (post-cholecystectomy wound check and assessment)	Surgical Team / GP
4–6 weeks	Elective cholecystectomy booking review (if delayed)	Surgical Clinic
6 weeks	Interval cholecystectomy (if delayed for severe cholecystitis)	Surgical Team
As needed	GP review for recurrent symptoms or concerns	General Practitioner

9. Documentation

Complete and accurate documentation is mandatory for all patients:

- **Admission notes:** Detailed history, examination findings, differential diagnosis
- **Investigation results:** All imaging and laboratory findings with dates
- **Procedure notes:** Operative findings, technique, specimens, intraoperative complications
- **Discharge summary:** Diagnosis, procedures performed, discharge medications, follow-up arrangements, return precautions

10. References

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