

INTRODUCTION

- Cholelithiasis affects approximately 6% of the global population. While most gallstones remain asymptomatic, up to 10% of cases eventually become symptomatic and require surgical intervention
- Endoscopic Retrograde Cholangiopancreatography (ERCP)** is the gold standard for both diagnosis and treatment of choledocholithiasis. However, ERCP carries inherent risks. Its use is therefore reserved for patients with a high pre-test probability of CBD stones
- Investigative modalities** such as Magnetic Resonance Cholangiopancreatography (MRCP), Intraoperative Cholangiogram (IOC) and Endoscopic Ultrasound (EUS) offer high diagnostic accuracy but carry no therapeutic benefit and necessitate further intervention if stones are identified
- This study aimed to:**
 - 1** Evaluate the **diagnostic accuracy** of American Society for Gastrointestinal Endoscopy (ASGE) and European Society of Gastrointestinal Endoscopy (ESGE) guidelines for detecting CBD stones in a single tertiary care center in Kuwait
 - 2** Assess the degree of **local institutional compliance** with guideline-recommended management pathways across all risk categories

RISK STRATIFICATION (ASGE / ESGE)

Two major evidence-based guidelines have been widely adopted to risk-stratify patients with suspected choledocholithiasis and limit unnecessary ERCP use:

LOW RISK	INTERMEDIATE RISK	HIGH RISK
CRITERIA	CRITERIA	CRITERIA
No high or intermediate risk predictors present	Any abnormal LFTs CBD >6mm on US *and/or age>55years for ASGE only	CBD stone on imaging Clinical cholangitis *Bilirubin >4 mg/dL + CBD dilation for ASGE only
RECOMMENDATION	RECOMMENDATION	RECOMMENDATION
No further investigation required Proceed to cholecystectomy if indicated	Further imaging required MRCP · EUS · IOC · ERCP	Direct ERCP Without prior additional imaging

PATIENT SELECTION FLOWCHART

ED Admissions — Suspected Acute Biliary Disease
Adults ≥ 18 years · Oct 2019 – Mar 2025 · Tertiary center, Kuwait

ELIGIBILITY SCREENING
Reviewed against predefined inclusion and exclusion criteria

EXCLUDED

- Elective admissions
- Ultrasound outside institution
- No ultrasound performed

ELIGIBLE STUDY COHORT (n = 856)
Emergency admissions with confirmed in-house ultrasound examination

RESULTS

856
Total Patients Included
Oct 2019 – Mar 2025

60%
Female
516 patients

39 years
Median Age
Range: 18–90+

Patient Demographics (Selected Comorbidities)

Characteristic	n	%	Characteristic	n	%
Female	516	60.3%	Diabetes Mellitus	136	15.9%
Age > 50 years	133	15.5%	Dyslipidaemia	78	9.1%
Hypertension	173	20.2%	History of Bariatric Surgery	218	25.5%
Obesity (BMI>30)	199	23.2%	Fatty Liver	268	31.4%

ESGE

Low risk

Intermediate risk

High risk

44%

52%

4%

ASGE

Low risk

Intermediate risk

High risk

43%

49%

8%

Table: Investigation Rates & CBD Stone Detection by Risk Category

Risk Group	Investigated n (%)	Not Investigated n (%)	CBD Stones Detected n (%)
Low Risk	19 (5.0%)	354 (95.0%)	0 (0%)
Intermediate	293 (66%)	151 (34%)	56 (19.1%)
High Risk	37 (95%)	2 (5%)	22 (60%)

Risk Group	Investigated n (%)	Not Investigated n (%)	CBD Stones Detected n (%)
Low Risk	28 (7.5%)	342 (92.5%)	0 (0%)
Intermediate	259 (61%)	163 (39%)	47 (18.1%)
High Risk	61 (95%)	4 (5%)	32 (53%)

Key Findings at a Glance

Low Risk

- 5–7.5% unnecessarily investigated despite guideline recommendations against further workup
- No CBD stones detected in any low-risk patient

Intermediate Risk

- Around 63% underwent investigation despite guideline recommendations
- 80% of those investigated were stone-free

High Risk

- 95% underwent investigation
- CBD stones confirmed in 53% (ASGE) and 60% (ESGE) — highest diagnostic yield

Compliance Gap

- 18% of high-risk patients had MRCP before ERCP — potentially avoidable delay
- Guideline adherence inconsistent across all risk groups

DISCUSSION

Guideline Adherence

ASGE and ESGE algorithms stratified patients effectively, but pathway deviations occurred. Notably, 18% of high-risk patients underwent MRCP before ERCP resulting in potentially avoidable diagnostic delays. Conversely, 5–7.5% of low-risk patients received unnecessary additional imaging, reflecting over-investigation at the lower end of the risk spectrum

Intermediate Risk — Over-Investigation

Both stratification systems showed modest diagnostic performance, particularly in intermediate-risk patients. Poor specificity resulted in many patients undergoing MRCP or EUS despite ultimately being stone-free, reflecting low diagnostic yield

Barriers to Compliance

Deviations from guideline-directed pathways are likely multifactorial, including reliance on clinical judgement in atypical cases, concerns about procedural risk, limited ERCP availability, and efforts to reduce hospital stay. Lack of guideline familiarity and resistance to established practice patterns may also contribute

International Context

These findings are consistent with prior audits demonstrating variable adherence to ASGE and ESGE guidelines, with the intermediate-risk category contributing to excessive advanced imaging and low diagnostic yield

Limitations

Two limitations should be acknowledged: real-world deviations from guideline-directed pathways may have influenced diagnostic accuracy, and frequent MRCP/EUS use in intermediate-risk patients reflects institutional practice patterns, limiting generalisability

CONCLUSION

Both ASGE and ESGE guidelines are applicable in Kuwait, particularly in excluding CBD stones among low-risk patients and identifying disease in high-risk patients. However, the high proportion of negative studies in intermediate-risk patients reflects over-investigation, while incomplete evaluation of many intermediate-risk cases and unnecessary testing in some high-risk cases highlight poor compliance with guideline-directed care

These findings underscore the need to refine local application of international guidelines to improve diagnostic accuracy and resource utilisation. Harmonising global evidence with local clinical realities — through targeted guideline adaptation and ongoing clinician education — is essential for improving patient outcomes in this setting

KEY REFERENCES

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Retrospective Cohort Study · Jaber AlAhmad Hospital, Kuwait · Oct 2019 – Mar 2025 · n= 856 patients · Applicability and Accuracy of ASGE and ESGE GUIDELINES