

Post cholecystectomy bile leak in resource limited setting-a 15 year retrospective study from rural and tribal India.

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Background: Biliary leakage remains one of the most clinically significant complications after cholecystectomy. Although the global incidence is low, ranging from 0.3–2%, the consequences can be severe if diagnosis and treatment are delayed. Rural and tribal healthcare settings face additional challenges including delayed patient presentation, limited diagnostic imaging, and restricted access to advanced endoscopic services.This study presents a 15-year single-surgeon experience from rural and tribal hospitals in India, analyzing the incidence, causes, clinical presentation, and management outcomes of bile leakage after cholecystectomy.

Methods

Study Design

A retrospective observational study was conducted including all patients undergoing cholecystectomy between January 2008 and December 2022 in rural and tribal hospitals managed by a single surgeon.

Patient data were retrieved from operative records, hospital registers, and postoperative follow-up notes.

Inclusion Criteria

- Patients undergoing open or laparoscopic cholecystectomy
- Patients with documented postoperative bile leakage

Exclusion Criteria

- Patients with pre-existing biliary fistula
- Patients undergoing hepatobiliary procedures other than cholecystectomy

Data Collected

The following parameters were analyzed:

- Demographic details
- Surgical approach
- Operative findings
- Time of leak presentation
- Etiology of bile leak
- Diagnostic investigations
- Management strategy
- Clinical outcome

Results

Surgical Volume

Table 1: Operative profile

The overall bile leak rate in this series was 0.9%, comparable to international reports ranging between 0.5–1.5%.

Parameter	Number	Percentage
Total surgeries	1071	100%
Laparoscopic cholecystectomy	1026	95.8%
Open cholecystectomy	45	4.2%
Conversion to open	7	0.6%
Postoperative bile leak	10	0.9%

Patient Demographics

Table 2: Demographic characteristics

Most patients had underlying comorbid conditions, which may contribute to delayed healing and increased susceptibility to postoperative complications.

Etiology of Bile Leak

Table 3: Causes of bile leak

Variable	Number	Percentage
Male	8	80%
Female	2	20%
Diabetes mellitus	6	60%
Hypertension	3	30%
Other comorbidities	3	30%

Cause	Number	Percentage
CBD injury	1	10%
Right sectoral duct injury	2	20%
Cystic duct stump leak	2	20%
Minor gallbladder fossa leak	2	20%
Bilioma formation	1	10%
CBD stones with leak	2	20%

Timing of Presentation

Table 4: Timing of bile leak

Delayed presentations were associated with bilioma formation or retained CBD stones.

Timing	Number
Intraoperative	3
Day 1	2
Day 2–7	2
>10 days	3

Management

Table 5: Treatment modalities

Treatment	Number
ERCP + stenting	4
Percutaneous drainage	2
Conservative management	1
Intraoperative repair	1

Conclusion

Biliary leakage following cholecystectomy remains an uncommon but clinically significant complication. In this 15-year single-surgeon experience from rural and tribal India, the overall incidence was low and comparable to international data.

The most common causes were cystic duct stump leaks and sectoral duct injuries. Early recognition, appropriate imaging, and timely ERCP-based intervention allowed successful management in most cases.

Improved surgical training, adherence to the critical view of safety, and better access to hepatobiliary diagnostic and endoscopic services are essential for reducing postoperative biliary complications in resource-limited settings.

Key References

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