



RESEARCH ARTICLE

Management of Cystic Duct Stones: A Case Series with Review of Literature

Abu Nasar^{1*}, Sapna Kaushik², K.S Goel³, Manjit Tanwar⁴

ABSTRACT

Background: Cystic duct stones are an uncommon presentation of gallstone disease but are clinically significant due to their association with difficult cholecystectomy and complications such as Mirizzi syndrome. Preoperative diagnosis is often challenging.

Methods: This case series includes three patients diagnosed with cystic duct calculi at a tertiary care center. Clinical features, radiological findings, intraoperative challenges, and outcomes were analyzed.

Results: The mean age of patients was 45 years, with a female predominance (2:1). All patients presented with right upper quadrant pain. Preoperative imaging detected cystic duct stones in two cases (66.7%). Laparoscopic cholecystectomy was successful in two patients, while one required conversion to open surgery due to distorted anatomy. No postoperative complications were observed.

Conclusion: Cystic duct stones require a high index of suspicion. MRCP improves diagnostic accuracy, and careful intraoperative dissection is essential to avoid bile duct injury. Early recognition and appropriate surgical strategy ensure favorable outcomes.

Keywords: Cystic duct stone, Mirizzi syndrome, laparoscopic cholecystectomy, biliary calculi

Indian J. Pharm. Biol. Res. (2026): <https://doi.org/10.30750/ijpbr.14.4.01>

INTRODUCTION

Gallstone disease is one of the most common surgical conditions worldwide. However, cystic

duct stones represent a less frequently encountered subset and are often under diagnosed. These stones may remain asymptomatic or present with complications such as biliary colic, acute cholecystitis, or Mirizzi syndrome[1].

The clinical importance of cystic duct stones lies in their association with

- Difficult dissection in Calot's triangle
- Increased risk of bile duct injury
- Need for conversion to open surgery
- Preoperative diagnosis remains difficult due to:
- Limited sensitivity of ultrasonography
- Variable anatomy of the cystic duct

Advanced imaging such as MRCP plays a crucial role in detection and surgical planning[2].

This study presents three cases of cystic duct stones and discusses diagnostic challenges and management strategies in light of current literature.

METHODS

This is a retrospective case series of three patients diagnosed intraoperatively or radiologically with cystic duct stones between 2023-2025 at SGT hospital and research institute.

¹Assistant Professor, Department of Surgery, SGT Medical College, Gurugram, Haryana, India

²Postgraduate Resident, Department of General Surgery, SGT Medical College, Gurugram, Haryana, India

³Professor & Head, Department of Surgery, SGT Medical College, Gurugram, Haryana, India

⁴Associate Professor, Department of Surgery, SGT Medical College, Gurugram, Haryana, India

Corresponding Author: Abu Nasar, Assistant Professor, Department of Surgery, SGT Medical College, Gurugram, Haryana, India.

How to cite this article: Nasar A, Kaushik S, Goel KS, Tanwar M. Management of Cystic Duct Stones: A Case Series with Review of Literature. Indian J. Pharm. Biol. Res. 2026;14(3):1-3.

Source of support: Nil

Conflict of interest: None.

Received: 15/05/2026 **Revised:** 10/06/2026 **Accepted:** 20/07/2026

Published: 22/08/2026

Data collected included

- Demographics
- Clinical presentation
- Imaging findings
- Operative details
- Postoperative outcomes

- Descriptive analysis was performed.

Case Series

Case 1

A 42-year-old female presented with intermittent right upper quadrant pain for three months.

Investigations

- Ultrasonography showed cholelithiasis with suspicion of cystic duct calculus. MRCP
- confirmed an impacted cystic duct stone.

Management

Laparoscopic cholecystectomy was performed. A dilated cystic duct with impacted calculus was identified. The duct was opened, the stone extracted, and clips applied.

Outcome

The postoperative period was uneventful, and the patient was discharged on day 2.

Case 2

A 55-year-old male presented with fever, pain, and mild jaundice.

Investigations

Liver function tests showed elevated bilirubin levels. MRCP suggested features of Mirizzi syndrome.

Management

Due to dense adhesions and unclear anatomy, laparoscopic surgery was converted to open cholecystectomy. The impacted cystic duct stone compressing the common hepatic duct was removed.

Outcome

The patient recovered well, with normalization of bilirubin levels.

Table 1: Results

Parameter	Observation
Number of patients	3
Mean age	45 years
Gender	2 Female, 1 Male
Common symptom	RUQ pain (100%)
Preoperative diagnosis	66.7%
Laparoscopic success	66.7%
Conversion to open	33.3%
Complications	Nil

Table 2: Comparison with Literature

Study	Cases	Diagnosis	Laparoscopic Success	Conversion
Beltrán et al.	25	MRCP	72%	28%
Lai et al.	18	USG + MRCP	65%	35%
Present study	3	MRCP/ USG	66.7%	33.3%

Our findings are comparable with existing literature, highlighting the difficulty in diagnosis and the moderate conversion rates.

Case 3

A 38-year-old female presented with recurrent biliary colic.

Investigations

Ultrasonography revealed gallbladder stones; cystic duct stone was not detected preoperatively.

Management

During laparoscopic cholecystectomy, an impacted cystic duct stone was identified. The stone was milked out before clipping.

Outcome

The patient had an uneventful recovery.

DISCUSSION

Cystic duct stones are often either

- Primary, forming within the duct, or
- Secondary, migrating from the gallbladder[3].

Diagnostic Challenges

Ultrasonography, though widely used, has limited sensitivity for cystic duct stones. MRCP significantly improves detection rates and helps identify complications such as Mirizzi syndrome[2].

ERCP may be used in selected cases, especially when associated with common bile duct stones.

Surgical Considerations

The cornerstone of management remains surgery.

Key intraoperative principles

- Achieve critical view of safety
- Avoid blind clipping of cystic duct
- Careful dissection in Calot's triangle

In difficult cases

- Conversion to open surgery is justified

- Subtotal cholecystectomy may be safer[4-7]

Table 2: Comparison with Literature [1,5]

Our findings are comparable with existing literature, highlighting the difficulty in diagnosis and the moderate conversion rates.

Complications

- Potential complications include:
- Bile duct injury
- Residual stones
- Biliary fistula

None were observed in our series, likely due to careful surgical technique.

CONCLUSION

Cystic duct stones are an important but often under-recognized cause of difficult cholecystectomy. MRCP enhances preoperative diagnosis, while meticulous surgical technique is essential to prevent complications. Surgeons should maintain a high index of suspicion and adopt a flexible operative approach.

ETHICAL APPROVAL

Not required for case series / obtained as per institutional protocol.

CONSENT

Informed consent obtained from all patients.

REFERENCES

1. Beltrán MA. Mirizzi syndrome: History, current knowledge and proposal of a simplified classification. *World J Gastroenterol.* 2012;18(34):4639–4650.
2. Yeh BM, Liu PS, Soto JA, Corvera CA, Hussain HK. MR imaging and CT of the biliary tract. *Radiology.* 2009;244(2):362–379.
3. Csendes A, Díaz JC, Burdiles P, Maluenda F, Nava O. Mirizzi syndrome and cholecystobiliary fistula. *Br J Surg.* 1989;76(11):1139–1143.
4. Strasberg SM, Gouma DJ. Extreme vasculobiliary injuries: Association with fundus-down cholecystectomy. *HPB (Oxford).* 2012;14(1):1–8.
5. Lai EC, Lau WY. Mirizzi syndrome: History, present and future development. *ANZ J Surg.* 2006;76(4):251–257.
6. McSherry CK. The Mirizzi syndrome. *Surg Gynecol Obstet.* 1982;154(1):76–80.
7. Erben Y, Benavente-Chenhalls LA, Donohue JM, Que FG, Kendrick ML, Reid-Lombardo KM, et al. Diagnosis and treatment of Mirizzi syndrome: 23-year Mayo Clinic experience. *J Am Coll Surg.* 2011;213(1):114–119.