



CASE REPORT

Non- or Low-Fluoroscopy ERCP in Pregnant Patients with Acute Cholangitis: Evidence-Based Insights into Maternal and Fetal Outcomes

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Abstract

Background: Acute cholangitis in pregnancy is a rare but life-threatening condition, where delays in source control may accelerate maternal sepsis and compromise fetal viability.

Objective: This study aimed to evaluate whether early endoscopic retrograde cholangiopancreatography (ERCP), performed with non- or low-fluoroscopy techniques, improves maternal stabilization and fetal outcomes compared with conservative or delayed intervention.

Methods: A systematic, evidence-based case review was conducted, combining a clinical vignette of a 28-week pregnancy complicated by severe cholangitis and sepsis with a focused literature search in PubMed, ScienceDirect, and ProQuest. Inclusion criteria followed the PICO framework, emphasizing pregnant patients with TG18-defined moderate-to-severe cholangitis, early ERCP (≤ 24 hours), and maternal and fetal outcomes. Critical appraisal was undertaken using the Oxford Centre for Evidence-Based Medicine methodology.

Results: Findings from two eligible studies—a systematic review of over 500 ERCPs in pregnancy and a single-center cohort of 24 cases—showed consistently high technical success rates and low maternal complication rates. Post-ERCP pancreatitis emerged as the most frequent adverse event but was significantly reduced in tertiary centers with skilled operators. Fetal outcomes were generally favorable when dose-reduction strategies and shielding were applied, with preterm birth and perinatal mortality remaining uncommon. Our case illustrates the risks of clinical deterioration when source control is deferred; earlier temporizing drainage could have provided stabilization without definitive sphincterotomy until postpartum.

Conclusion: Early therapeutic ERCP using radiation-sparing techniques appears safe and effective for managing severe cholangitis in pregnancy, balancing maternal survival with fetal safety.

Keywords: Early ERCP, acute cholangitis in pregnancy, non-fluoroscopy ERCP, maternal sepsis, fetal safety, Tokyo Guidelines 2018, evidence-based case review

INTRODUCTION

Acute cholangitis during pregnancy is uncommon but may result in severe maternal and fetal morbidity when biliary sepsis progresses to organ dysfunction. Choledocholithiasis is a major cause of biliary obstruction, although other obstructive lesions may also precipitate cholangitis. The Tokyo Guidelines 2018 (TG18) provide standardized diagnostic and severity criteria and emphasize early biliary drainage for moderate cholangitis and drainage as soon as possible after stabilization in severe disease.^{1–3} Delayed source control in critically ill patients has been associated with persistent organ failure and prolonged intensive care and hospital stays.^{4,5} Current guidelines therefore support endoscopic biliary drainage as an important component of definitive management, with ERCP generally preferred when endoscopic decompression is feasible.⁶

During pregnancy, ERCP provides an effective means of achieving biliary decompression while avoiding surgical exploration of the common bile duct. Available systematic reviews indicate that therapeutic ERCP can be performed with high technical success and generally favorable maternal and fetal outcomes when clinically indicated and undertaken by experienced operators.^{7–9} Radiation exposure remains an important consideration; however, fetal exposure can be minimized by limiting fluoroscopy time and dose, restricting the radiation field, and using non-fluoroscopic or ultra-low-fluoroscopy techniques when technically feasible.^{7–10} Importantly, the safety profile extends beyond radiation, as post-ERCP pancreatitis, bleeding, perforation, and pregnancy-related complications remain clinically relevant.^{7,11} Appropriate patient selection, experienced operators, multidisciplinary management, and contemporary preventive strategies are therefore essential.

In the general population, early ERCP has been associated with improved outcomes in acute cholangitis. ERCP within 24 hours has been associated with lower mortality in observational studies, while systematic reviews suggest potential benefits of early biliary drainage, particularly in patients with severe disease or organ dysfunction.^{4,12–14} However, the optimal timing remains uncertain. A recent randomized controlled trial found no superiority of ERCP within 24 hours compared with 24–48 hours in mild-to-moderate acute cholangitis, indicating that timing should be individualized according to disease severity, hemodynamic status, response to resuscitation, and urgency of source control.¹⁵ Evidence specifically addressing ERCP timing during pregnancy remains limited and is largely extrapolated from non-pregnant populations.^{7–9}

Against this background, we present an evidence-based clinical review informed by a case of 28-week pregnancy complicated by moderate-to-severe acute cholangitis and sepsis secondary to biliary obstruction. This review evaluates whether early ERCP, particularly when performed within 24 hours in appropriately selected patients using non-fluoroscopic or ultra-low-fluoroscopy techniques, may facilitate maternal recovery, reduce mortality and intensive care utilization, and optimize neonatal outcomes compared with conservative management or delayed biliary decompression.

METHODS

Case Illustration

A 28-week pregnant woman, gravida 2 para 1, presented with acute right upper quadrant pain radiating to the back that had persisted for three days. This was accompanied by intermittent low-grade evening fevers, one week of jaundice, poor appetite with nausea and vomiting, and the passage of dark, “tea-colored” urine. Interestingly, a previous ultrasound and MRI had already revealed multiple hepatic nodules, raising early concern for an underlying hepatobiliary disorder.

On admission, the patient appeared tachycardic and icteric, with irregular masses palpable in the right upper quadrant and epigastric area, in addition to splenomegaly. Laboratory findings were remarkable for leukocytosis, direct-predominant hyperbilirubinemia (total/direct 12.7/9.7 mg/dL), an AST/ALT ratio greater than one (152/49.7 U/L), and significant coagulopathy (PT nearly three times normal; aPTT 1.89 times normal). Alpha-fetoprotein was elevated at 259 ng/mL, whereas HBsAg and anti-HCV serologies were negative. Hepatology ultrasound further demonstrated hepatomegaly with multiple lesions and biliary dilatation. Meanwhile, Obstetric ultrasound demonstrated a viable singleton fetus at 28 weeks’ gestation, with estimated fetal weight ~ 1050 g, oligohydramnios (AFI 4.7 cm), and normal Doppler umbilical artery (S/D ratio 3.3, CPR > 1), consistent with fetal growth restriction but preserved perfusion.. Taken together, the working diagnoses were severe acute cholangitis with obstructive jaundice, most likely secondary to hepatic malignancy—either hepatocellular carcinoma or metastatic disease—complicating pregnancy.

Initial management consisted of broad-spectrum antibiotics (cefepime and metronidazole), vitamin K, analgesics, and supportive therapy, with ERCP scheduled once coagulation parameters had improved. However, the clinical course took an unexpected turn the following day when she developed preterm prelabor rupture of membranes with anhydramnios and breech presentation, necessitating an emergency cesarean section. A female neonate weighing 1005 g was delivered with Apgar scores of 4 and 7, and was subsequently admitted to the NICU.

Despite surgical delivery, the mother’s condition deteriorated rapidly. Postoperatively, the mother was transferred to the ICU for ongoing sepsis management. Despite escalation of care—including meropenem, albumin infusion, blood product transfusions, vasopressor support, and mechanical ventilation—she developed refractory septic shock with metabolic acidosis and multiorgan failure. She died approximately 20 hours after ICU admission (≈48 hours after hospital admission), before biliary drainage (ERCP/PTBD) could be performed.

Search Strategy

A comprehensive literature search was undertaken using three major databases: PubMed, ScienceDirect, and ProQuest. The search terms were designed to capture studies relevant to pregnancy, acute cholangitis, the Tokyo Guidelines (TG18), biliary obstruction—including choledocholithiasis, strictures, or malignancies such as hepatocellular carcinoma—and the role of

ERCP (distinguishing between early/urgent and delayed procedures). Additional filters included sepsis, maternal outcomes, and fetal or neonatal outcomes, with the use of MeSH terms and Boolean operators where appropriate. The complete search strings and results are summarized in **Table 1**.

Table 1. Keywords used for search strategy

Database	Kata Kunci	Hits	Selected
PubMed	((("Cholangitis"[Mesh] OR cholangitis[Title/Abstract]) AND ("Pregnancy"[Mesh] OR pregnant[Title/Abstract] OR gestation*[Title/Abstract]) AND (ERCP[Title/Abstract] OR "endoscopic retrograde cholangiopancreatograph*[Title/Abstract]) AND (biliar*[Title/Abstract] AND (obstruct*[Title/Abstract] OR stone*[Title/Abstract] OR choledocholithiasis[Title/Abstract] OR "common bile duct"[Title/Abstract] OR mass[Title/Abstract] OR tumor[Title/Abstract] OR HCC[Title/Abstract])) AND (TG18[Title/Abstract] OR "Tokyo Guideline*[Title/Abstract] OR sepsis[Title/Abstract] OR "septic shock"[Title/Abstract] OR moderate[Title/Abstract] OR severe[Title/Abstract]) AND (early[Title/Abstract] OR urgent[Title/Abstract] OR emergen*[Title/Abstract] OR "within 24 hour*[Title/Abstract] OR "24 h"[Title/Abstract]) AND ("Fluoroscopy"[Mesh] OR fluoroscop*[Title/Abstract] OR nonfluoroscop*[Title/Abstract] OR "low radiation"[Title/Abstract] OR "fetal shielding"[Title/Abstract] OR "radiation exposure"[Title/Abstract]))	29	1
Science Direct	Pregnancy AND acute cholangitis AND early ERCP AND late ERCP AND sepsis AND ERCP complication AND fetal outcomes	245	1
ProQuest	(TI(pregnan* OR gestation* OR gravid*) OR AB(pregnan* OR gestation* OR gravid*)) AND (TI(cholangitis OR "biliary sepsis" OR "acute cholangitis") OR AB(cholangitis OR "biliary sepsis" OR "acute cholangitis")) AND (TI(ERCP OR "endoscopic retrograde cholangiopancreatograph*") OR AB(ERCP OR "endoscopic retrograde cholangiopancreatograph*")) AND (TI(biliar* NEAR/3 (obstruct* OR stone* OR calcul* OR "common bile duct" OR choledocholithiasis OR mass OR tumor OR neoplasm OR HCC OR "hepatocellular carcinoma")) OR AB(biliar* NEAR/3 (obstruct* OR stone* OR calcul* OR "common bile duct" OR choledocholithiasis OR mass OR tumor OR neoplasm OR HCC OR "hepatocellular carcinoma"))) AND (TI(early OR urgent OR emergen* OR "within 24 hour*" OR "24 h" OR "first 24 hour*") OR AB(early OR urgent OR emergen* OR "within 24 hour*" OR "24 h" OR "first 24 hour*")) AND (TI(TG18 OR "Tokyo Guideline*" OR moderate OR severe OR sepsis OR "septic shock") OR AB(TG18 OR "Tokyo Guideline*" OR moderate OR severe OR sepsis OR "septic shock")) AND (TI(fluoroscop* OR nonfluoroscop* OR "low dose" OR radiation OR "fetal shield*") OR AB(fluoroscop* OR nonfluoroscop* OR "low dose" OR radiation OR "fetal shield*"))	0	0

The initial screening retrieved 29 records from PubMed, 245 from ScienceDirect, and none from ProQuest. Titles and abstracts were screened according to predefined inclusion and exclusion criteria, developed under the PICO framework. Eligible studies included pregnant patients diagnosed with moderate to severe acute cholangitis as defined by TG18, in whom early ERCP (≤ 24 hours) was compared with conservative therapy or delayed intervention (>24 –48 hours or postpartum). Outcomes of interest encompassed both maternal endpoints—such as sepsis resolution, mortality, ICU admission, and ERCP-related complications—and fetal or neonatal endpoints, including prematurity, distress, perinatal mortality, Apgar scores, and NICU stay.

Editorials, narrative reviews, and studies incorporated into prior systematic reviews or meta-analyses were excluded unless they contained new, extractable primary data. The methodological rigor of the included studies was assessed using the Centre for Evidence-Based Medicine (CEBM) framework from the University of Oxford, allowing structured evaluation of study design, risk of bias, and overall quality.

Ultimately, only two studies met the inclusion criteria: a systematic review by Cappell et al., and a single-center cohort study by Yang et al. Together, these provided the best available evidence regarding maternal and fetal outcomes following early ERCP in pregnancy. The search process and inclusion framework are illustrated in **Figure 1**.

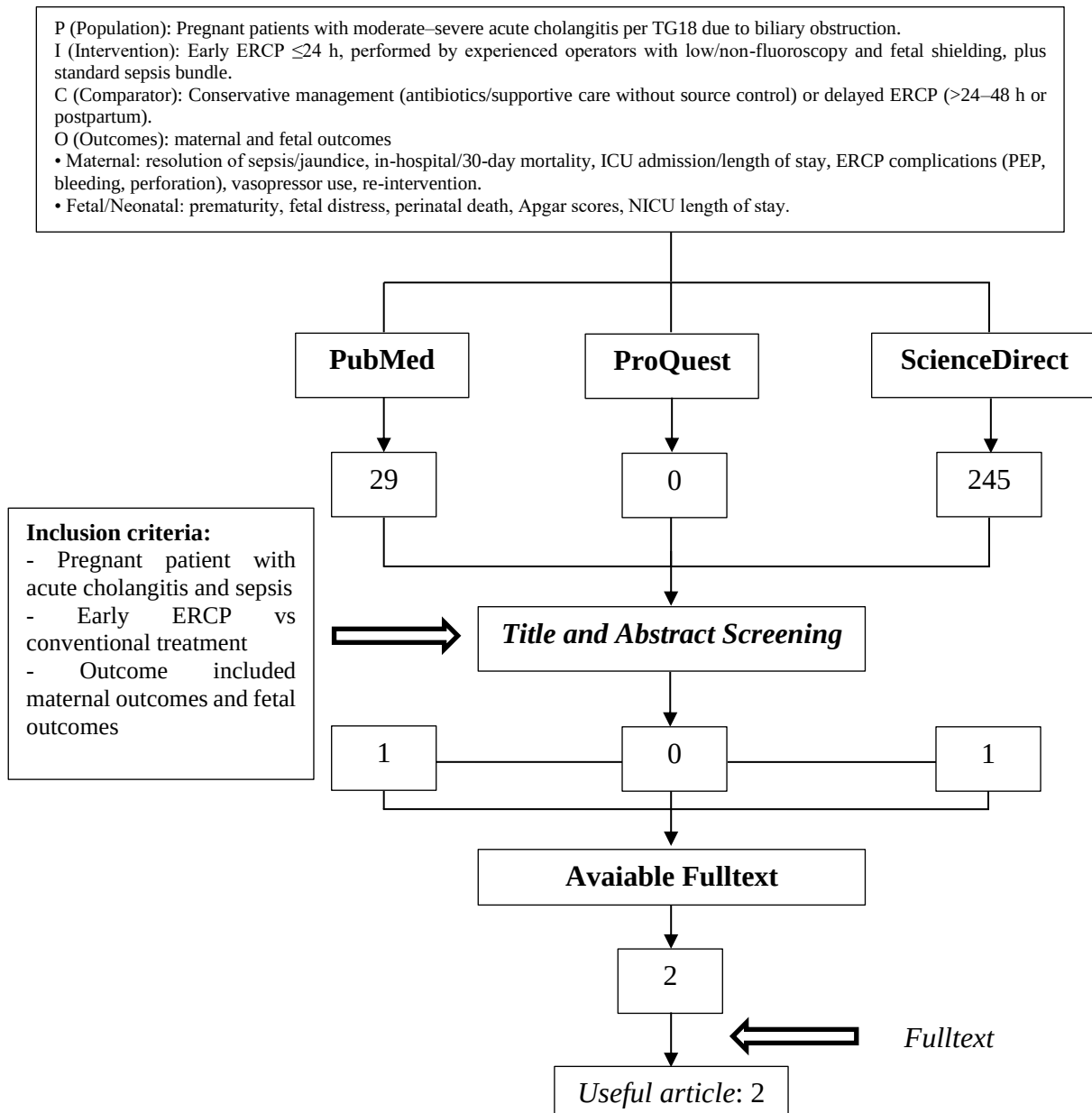


Figure 1. Search Strategy Framework

Critical Appraisal

From the literature search, three relevant articles were identified that addressed ERCP in pregnancy, although only two met the strict inclusion criteria. These consisted of a systematic review by **Cappell et al.** and a single-center cohort study by **Yang et al.** Together, they provide complementary insights into both the safety profile and therapeutic efficacy of ERCP during pregnancy, albeit with notable limitations.

The systematic review by Cappell and colleagues synthesized data from more than 500 therapeutic ERCPs performed in pregnant patients, supplemented by a national registry. The

methodology was rigorous, incorporating a multi-database search strategy, dual independent screening, and predefined inclusion criteria. Importantly, the review highlighted that maternal adverse events such as bleeding, perforation, or cholangitis were rare, with post-ERCP pancreatitis emerging as the most frequent complication. On the fetal side, adverse outcomes were uncommon when procedures were conducted by experienced operators using low- or non-fluoroscopy protocols and adequate shielding. However, as is typical of observational evidence, heterogeneity in indications, timing, and operator expertise limited the ability to derive precise risk estimates. Consequently, the review concluded that ERCP is feasible and relatively safe in pregnancy, provided meticulous dose-reduction techniques are employed.

In contrast, the cohort study by Yang et al. offered more granular clinical insights, though in a much smaller sample. Conducted at a single tertiary hospital, the study reported on 24 pregnant patients with severe acute biliary pancreatitis requiring urgent source control. All underwent emergency ERCP within 12–72 hours, performed without fluoroscopy through techniques such as nasobiliary drainage and transpapillary stenting. Maternal conditions stabilized within days, laboratory parameters improved within a week, and no procedure-related mortality was observed. Interestingly, although some women experienced preterm labor or cesarean delivery, all neonates survived, and no congenital anomalies were reported. The study, however, lacked a comparator group and did not extend follow-up beyond delivery, thereby limiting its generalizability.

Taken together, these two studies suggest that ERCP, when urgently indicated and performed with pregnancy-adapted techniques, is both feasible and generally safe. Nonetheless, the evidence remains largely observational, susceptible to selection bias, and constrained by small sample sizes. The absence of randomized trials understandably difficult in this population further underscores the need for cautious interpretation. Even so, the consistency of findings across different settings lends support to the principle that early therapeutic ERCP can stabilize maternal physiology while minimizing fetal risk, provided it is performed by skilled teams in appropriately equipped centers^{2,6}.

Table 2. Systematic review critical appraisal (Cappel, et al)

Parameter	Appraisal
PICO stated	P: pregnant patients with biliary disease undergoing ERCP I: ERCP (including low-/non-fluoroscopy with fetal shielding) C: often absent or heterogeneous O: maternal ERCP complications and fetal/neonatal outcomes.
Search strategy	Structured, multi-database search with predefined criteria; dual, independent screening and data extraction with adjudication reported.
Eligibility criteria	Clear inclusion of pregnancy ERCP studies; mix of case series and cohorts; RCTs not expected for this topic.
Risk of bias assessment	Study-level quality discussed; most evidence observational; operator experience and technique variability acknowledged.
Heterogeneity	Clinical and methodological heterogeneity (indications, timing, fluoroscopy use, shielding, expertise) — formal pooling limited; primarily qualitative synthesis.
Results (importance)	Post-ERCP pancreatitis reported as the most frequent maternal complication; overall maternal adverse events low; fetal events uncommon when shielding/low-fluoro techniques and experienced operators used.
Precision	Wide ranges due to small samples and observational designs; estimates interpreted cautiously.
Applicability	High relevance to pregnant patients needing biliary drainage; best applies to centers with experienced endoscopists, obstetric anesthesia, and fetal monitoring.
Overall judgment	Systematic review of observational evidence; supports feasibility and relative safety of ERCP in pregnancy when performed with dose-minimization strategies by experienced teams.
Level of evidence	Level 2a (systematic review of cohort/observational studies).

Table 3. Cohort studies critical appraisal (Yang et al)

Parameter	Yang et al.,
Design & setting	Single-center cohort of pregnant patients with severe acute biliary disease undergoing early ERCP in a tertiary hospital.
Population	Pregnant patients with severe biliary pancreatitis needing urgent source control; small sample.
Exposure / Comparator	Early ERCP (within roughly 12–72 h) using pregnancy-adapted technique; no formal conservative/delayed comparator arm.
Follow-up	In-hospital and to delivery where available; long-term maternal/neonatal follow-up not reported.
Outcome definition & measurement	Objective maternal ERCP complications (post-ERCP pancreatitis, procedure-related cholangitis/bleeding) and fetal outcomes (distress, preterm birth, loss).
Confounding control	Descriptive analysis; no multivariable adjustment, potential confounding by severity and indication.
Key maternal results	ERCP complications low (e.g., isolated mild post-ERCP pancreatitis or cholangitis); procedure feasible under pregnancy-adapted protocols.
Key fetal/neonatal results	Some fetal distress and preterm delivery in context of severe maternal illness; small numbers limit precision.
Applicability to PICO	Closest clinical analogue to early ERCP for sepsis-spectrum biliary disease in pregnancy, but condition is severe pancreatitis rather than cholangitis per TG18; small single-center sample.
Level of evidence	Oxford CEBM ≈ Level 2b (individual cohort).

RESULT

Two studies ultimately fulfilled the inclusion criteria for this evidence-based case review: one systematic review of therapeutic ERCP in pregnancy and one cohort study. Although limited in number, these studies provide complementary perspectives on maternal and fetal outcomes following early intervention.

In the single-center cohort study by **Yang et al.**, 24 pregnant women diagnosed with common bile duct stones underwent emergency ERCP within 12 to 72 hours of admission. Remarkably, the procedures were performed using radiation-free techniques such as nasobiliary drainage and transpapillary stenting. Maternal conditions stabilized within three days to two weeks, with normalization of serum amylase and bilirubin levels occurring in approximately one week. No maternal deaths were recorded, and none required surgical intervention. Adverse events were minimal, with only two cases of minor hemorrhage following a second, fluoroscopy-assisted ERCP performed for definitive stone removal. Fetal outcomes were also encouraging: among the nine women treated in early or mid-pregnancy, all carried to term, while in the late-pregnancy group, a mix of induced labor and cesarean delivery occurred, yet all neonates survived. Four preterm deliveries were noted, largely attributable to intrauterine distress during late gestation, but no developmental abnormalities were documented.

The systematic review conducted by **Cappell et al.** aggregated over 500 reported therapeutic ERCPs in pregnancy, supplemented by a registry of 58 additional cases. Across these studies, technical success rates were consistently high, while serious maternal complications such as perforation, bleeding, or cholangitis remained rare. The most frequent adverse event was post-ERCP pancreatitis, which appeared to occur more often in pregnant than in non-pregnant populations. Encouragingly, fetal outcomes were generally favorable when procedures were performed by experienced endoscopists using dose-minimization strategies and fetal shielding. Preterm birth and perinatal loss were uncommon, and no congenital anomalies were observed, though it is worth noting that long-term follow-up data were limited.

Taken together, these findings suggest that early ERCP—particularly when performed with radiation-sparing techniques—can stabilize maternal illness while preserving favorable fetal outcomes. Nevertheless, the available evidence is drawn primarily from observational studies with small sample sizes, and thus should be interpreted cautiously. Even so, the consistency of positive maternal and neonatal outcomes across different cohorts provides reassuring support for early therapeutic intervention in carefully selected pregnant patients.

DISCUSSION

This patient fulfilled the Tokyo Guidelines 2018 (TG18) diagnostic and severity criteria for acute cholangitis with sepsis during pregnancy, presenting with obstructive jaundice and progressive organ dysfunction. TG18 has improved the diagnostic accuracy and severity stratification of acute cholangitis and facilitates timely identification of patients requiring urgent

biliary drainage and source control.^{2,3,15} In patients with moderate-to-severe cholangitis, delayed biliary decompression has been associated with persistent organ failure, prolonged intensive care admission, and worse clinical outcomes.^{1,4,5}

ERCP is currently considered the preferred therapeutic modality for biliary decompression in pregnancy when clinically indicated. Systematic reviews and meta-analyses have demonstrated high technical success rates and generally favorable maternal and fetal outcomes, supporting its use when performed by experienced endoscopists within a multidisciplinary setting.^{6–8,20,21,23} Although maternal adverse events such as post-ERCP pancreatitis, bleeding, and perforation remain possible, their overall incidence is low.^{6,7,10,23} Pregnancy itself appears to increase the risk of post-ERCP pancreatitis compared with non-pregnant women, highlighting the importance of careful patient selection and contemporary preventive strategies.^{10,24}

Radiation exposure remains a major concern when ERCP is performed during pregnancy. However, available evidence indicates that fetal radiation exposure during ERCP is generally well below levels associated with fetal harm when modern dose-reduction techniques are used.^{6,7,20,21} Recommended strategies include minimizing fluoroscopy time, using low-dose settings, limiting image acquisition, maximizing collimation, and applying radiation-sparing technologies.^{20,21} In selected patients, non-fluoroscopic techniques using bile aspiration, transabdominal ultrasound, endoscopic ultrasound, intraductal ultrasound, or choledochoscopy may further reduce or eliminate radiation exposure.^{6,9,20} Real-time ultrasound-guided ERCP has been reported as a feasible alternative for achieving biliary drainage during pregnancy while avoiding fluoroscopy altogether.⁹

Prompt source control remains a cornerstone of management in severe biliary infection. TG18 recommends early biliary drainage in moderate cholangitis and urgent drainage following stabilization in severe cholangitis.^{1–3} Observational studies and meta-analyses in the general population have suggested that earlier ERCP is associated with lower mortality, reduced organ failure, and shorter hospital stays, particularly among critically ill patients.^{4,11–13,22} Nevertheless, the optimal timing remains controversial. A recent randomized controlled trial comparing ERCP within 24 hours versus 24–48 hours for mild-to-moderate cholangitis found no significant difference in mortality or organ failure, suggesting that clinical severity and physiological status may be more important determinants than an absolute time threshold.¹⁴

In pregnancy, temporary biliary drainage may represent an attractive strategy when definitive therapy is considered unsafe because of coagulopathy, hemodynamic instability, or imminent delivery. Yang et al. reported that emergency non-fluoroscopic ERCP with nasobiliary drainage in pregnant women with severe acute biliary pancreatitis resulted in rapid clinical improvement while allowing definitive treatment to be postponed until maternal stabilization or postpartum.¹⁷ Such a staged approach may be particularly relevant in patients with sepsis and evolving shock, where the immediate goal is source control rather than complete duct clearance.²¹

Applying these findings to the present case, the patient developed moderate-to-severe cholangitis with coagulopathy and progressive septic shock. The delay in achieving biliary source control may have contributed to continued infection, worsening cholestasis, and eventual

hemodynamic deterioration. Based on current evidence, earlier ERCP focused on temporary biliary drainage rather than definitive intervention could have been considered. Non-fluoroscopic or ultra-low-fluoroscopy drainage using a biliary stent or nasobiliary catheter may have provided earlier source control while avoiding sphincterotomy in the setting of coagulopathy. Definitive intervention could then have been deferred until coagulation parameters and maternal physiology improved or until after delivery.

The patient's preterm prelabor rupture of membranes and anhydramnios were more likely related to severe maternal systemic inflammation and critical illness than to any endoscopic intervention, since ERCP was not performed. Nevertheless, causal relationships cannot be established from a single case. Recent population-based data suggest that outcomes of biliary disease during pregnancy continue to improve with multidisciplinary care and appropriate use of endoscopic interventions, although increasing maternal comorbidities may contribute to more complex clinical presentations.¹⁸

Several limitations should be acknowledged. The available evidence regarding ERCP during pregnancy remains largely observational and is characterized by small sample sizes, heterogeneous methodologies, and limited long-term neonatal follow-up.^{6-8,20,21,23} Furthermore, most published studies involve choledocholithiasis rather than malignant biliary obstruction, limiting direct applicability to the present case. Although evidence supports early biliary drainage in severe cholangitis, robust pregnancy-specific data regarding the optimal timing of ERCP remain lacking. Therefore, management decisions should continue to be individualized according to disease severity, maternal condition, gestational age, local expertise, and procedural risk.

Overall, current evidence supports timely, expert-guided biliary drainage for pregnant patients with moderate-to-severe acute cholangitis complicated by sepsis or persistent biliary obstruction. Early source control, multidisciplinary management, and consideration of radiation-sparing techniques may help optimize maternal and fetal outcomes in these high-risk clinical situations.

CONCLUSION

For pregnant patients with TG18 criteria for moderate to severe cholangitis with sepsis, prompt therapeutic ERCP performed by skilled teams, utilizing non- or ultra-low fluoroscopy with shielding, is the preferred approach for primary source management. The overall maternal procedural risks are minimal; the primary additional risk is post-ERCP pancreatitis, which is diminished in high-volume clinics and with careful cannulation. A structured plan (immediate drainage for stabilization, followed by definitive clearance post-delivery or physiological recovery) reconciles maternal resuscitation with fetal safety.

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