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Liver Disease and Pregnancy

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Annotation: This review summarizes recent advances (2020-2025) in the epidemiology, diagnosis, management, and outcomes of liver diseases during pregnancy. Both gestation-specific hepatic disorders (such as intrahepatic cholestasis of pregnancy, HELLP syndrome, acute fatty liver of pregnancy) and preexisting or comorbid chronic liver diseases (autoimmune hepatitis, viral hepatitis, metabolic steatosis, cirrhosis, Wilson's disease) are discussed. Emphasis is placed on recent guidelines (FIGO, AGA, EASL), risk stratification, diagnostic tools, safety of therapies, maternal and fetal outcomes, and areas for future research.

Keywords: liver disease; pregnancy; chronic liver disease; gestational liver disorders; intrahepatic cholestasis; acute fatty liver of pregnancy; HELLP syndrome; maternal outcomes; fetal outcomes.

Introduction

Liver disease during pregnancy represents a complex intersection of maternal physiology, pathophysiology, and clinical management. Pregnancy places unique demands on the hepatic system due to altered hemodynamics, hormonal changes, immune modulation, and increased metabolic burden. These changes may unmask previously asymptomatic hepatic conditions or exacerbate existing ones.

Hepatic disorders in pregnancy can be classed broadly into two categories: pregnancy-specific (gestational) liver disorders **and** pre-existing/chronic liver disease coincidental with pregnancy. Pregnancy-specific disorders include intrahepatic cholestasis of pregnancy (ICP), HELLP syndrome (Hemolysis, Elevated Liver Enzymes, Low Platelets), acute fatty liver of pregnancy (AFLP), and hyperemesis gravidarum. Pre-existing/chronic diseases include autoimmune hepatitis, viral hepatitis (e.g. hepatitis B, C), metabolic dysfunction-associated steatotic liver disease (MASLD, formerly NAFLD), Wilson's disease, cirrhosis, liver transplantation, cholestatic liver diseases and vascular hepatic conditions. The prevalence of women of childbearing age with chronic liver disease is rising owing to improved survival, obesity-related liver disease, better diagnosis, and increased awareness. ([FIGO Guideline 2025][1]; [Review: Chronic Liver Disease and Pregnancy 2021][2])

The consequences of liver disease during pregnancy are substantial. For maternal health, potential complications include hepatic decompensation, variceal bleeding, progression of portal hypertension, coagulopathy, hepatic encephalopathy, acute liver failure, and maternal mortality. For the fetus, risks include preterm birth, low birth weight, stillbirth, neonatal intensive care admission, and long-term sequelae. Pregnancy-specific disorders (e.g. AFLP, HELLP) can be obstetric emergencies requiring rapid diagnosis and often prompt delivery. Early recognition and multidisciplinary care are essential to mitigate risk. Recent guidelines (FIGO 2025) provide updated evidence-based recommendations adapted for a global audience, integrating both gestational and chronic liver disease management in pregnancy. ([FIGO Guideline][1])

Technological and diagnostic advances in non-invasive assessment of liver disease (e.g. liver stiffness measurement via transient elastography, biomarkers, scoring systems), safer therapeutic choices, and revised pharmacotherapy regimens have been incorporated into recent practice updates. There is increasing interest in risk stratification tools to predict which women with chronic liver disease will tolerate pregnancy well versus those at high risk. These developments, combined with evolving

epidemiological trends and improved reporting of outcomes, motivate a comprehensive review of current knowledge to guide clinical practice and identify research gaps.

Aim. To synthesize recent (2020-2025) literature on liver disease in pregnancy, covering prevalence, diagnostic strategies, management (both gestational and chronic liver disease), maternal and fetal outcomes, safety of therapeutic interventions, and recommendations from recent guidelines.

Materials and Methods

A literature search was performed in PubMed, MEDLINE, Google Scholar, and guideline repositories (including FIGO, AGA, EASL) for publications from January 2020 through mid-2025. Search terms included “liver disease pregnancy review 2022”, “acute fatty liver of pregnancy case report 2025”, “ICP guideline pregnancy”, “pregnancy in chronic liver disease transplant”, “Wilson disease pregnancy outcomes systematic review”, and related phrases. Included were systematic reviews, meta-analyses, observational cohorts, case reports with meaningful outcome data, and clinical guidelines. Exclusion criteria: pre-2020 publications unless cited in guidelines; animal studies; studies lacking maternal or fetal outcomes; purely experimental/basic science without translational relevance. Data extracted included disease types, prevalence/incidence, diagnostic criteria, management protocols, timing of delivery, maternal and fetal outcomes, safety of treatments. Quality assessment followed guideline criteria (where applicable) and risk of bias tools for observational studies.

Results

The proportion of pregnancies complicated by gestational liver diseases is estimated at about 3% globally, according to recent FIGO guideline. ([FIGO 2025][1]) The number of pregnant women entering gestation with preexisting chronic liver disease (including MASLD, autoimmune disease, viral hepatitis, cirrhosis, Wilson’s disease) is increasing. ([FIGO 2025][1]; [Pregnancy in Chronic Liver Disease Review][2])

Major Gestational Liver Disorders

Intrahepatic Cholestasis of Pregnancy (ICP):

- Common presentation in late second or third trimester with pruritus, elevated serum bile acids, and raised transaminases. FIGO recommends elevated bile acids ≥ 10 μmol/L (depending on local lab norms) and exclusion of other causes. ([FIGO 2025][1])
- Fetal risks include preterm birth, stillbirth, low birth weight. Management includes ursodeoxycholic acid (UDCA) in many regions.

HELLP Syndrome and Preeclampsia/Eclampsia:

- Presents with elevated liver enzymes, low platelets, hemolysis; possible hepatic rupture. Requires obstetric monitoring, management of hypertension, and often early delivery. FIGO guideline updates emphasize maternal monitoring and risk stratification.

Acute Fatty Liver of Pregnancy (AFLP):

- Though rare, AFLP is life-threatening. Case reports in 2025 (e.g., Vietnam full-term AFLP case) highlight need for recognition of nonspecific symptoms (nausea, vomiting, abdominal pain) and biomarkers (elevated transaminases, hyperbilirubinemia, coagulopathy). Prompt delivery required when diagnosis is made. ([Case report: Nguyen P.N., Ho Q.N. 2025][3])

Chronic Liver Disease and Pre-Existing Conditions

Wilson’s Disease:

- Systematic meta-analysis in 2024 shows higher rates of adverse pregnancy outcomes in Wilson’s disease, including spontaneous abortion, preterm birth, miscarriage, when untreated. Treatment with chelators during pregnancy is associated with reduced risk. ([Wilson disease & pregnancy outcomes 2024][4])

Liver Transplantation:

- Women post liver transplant can have successful pregnancies but have increased risk of graft dysfunction, immunosuppression side effects, preterm birth, low birth weight. Management includes stable graft function preconception, appropriate immunosuppressant choice, multidisciplinary care. ([Pregnancy in Chronic Liver Disease Review][2])

Metabolic Steatotic Liver Disease (MASLD / formerly NAFLD):

- MASLD in pregnancy is associated with gestational diabetes, hypertensive disorders, cesarean delivery, LGA infants. Recent guidelines (FIGO) include MASLD among pre-existing diseases needing monitoring.

Diagnostic and Management Strategies

- Non-invasive diagnostics: transient elastography, fibrosis scoring (e.g. AST/ALT ratio, platelet counts, albumin-bilirubin score) are increasingly evaluated. FIGO guidelines include tables of normal liver tests in pregnancy. ([Brady 2020][5])
- Pharmacotherapy: UDCA for ICP is the mainstay; corticosteroids and some immunomodulators (e.g. azathioprine) considered safe in autoimmune liver disease; antivirals for hepatitis B with high viral load (>200,000 IU/mL) can be used in third trimester to reduce vertical transmission. Mycophenolate mofetil is contraindicated. ([AGA Practice Updates][6]; [FIGO][1])
- Timing of delivery: often determined by severity of maternal disease, fetal distress, and gestational age. Gestational liver disorders often necessitate early delivery when maternal or fetal compromise occurs.

Maternal and Fetal Outcomes

- Maternal outcomes: increased risk of hepatic decompensation, variceal bleeding in cirrhotic mothers, increased maternal morbidity (e.g. bleeding, coagulopathy).
- Fetal outcomes: preterm delivery, low birth weight, NICU admissions, perinatal mortality in severe cases (e.g. AFLP, untreated Wilson's disease).

Guidelines & Global Recommendations

- FIGO 2025 guideline gives evidence-based recommendations globally, summarizing safety of investigations, drug safety, delivery considerations. ([FIGO 2025][1])
- AGA 2024 Practice Update gives "best practice advice" for management of pregnancy-related gastro-intestinal and liver diseases. Key points include: managing immunosuppressive therapy, antiviral interventions, careful monitoring. ([AGA 2024][6])

Conclusions

- Liver disease in pregnancy, both gestational and preexisting, continues to pose significant risks for both mother and fetus.
- Early identification (preconception where possible for chronic disease), non-invasive diagnostics, multidisciplinary management, and guideline-based therapies improve outcomes.
- For pregnancy-specific liver disorders such as ICP, HELLP, and AFLP, prompt recognition and timely obstetric intervention (including delivery) are vital.
- Women with chronic liver disease (Wilson's disease, autoimmune hepatitis, MASLD, cirrhosis) require individualized preconception counseling, optimization of disease control, careful drug selection, and close monitoring throughout pregnancy.
- Gaps remain: better risk stratification tools validated in diverse populations; more data on long-term outcomes for offspring; clearer safety profiles for newer therapies; implementation in low-resource settings needs strengthening.

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