Beyond the Gut: Hepatobiliary Involvement in Pediatric IBD

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Disclosures

- None

Objectives

- Recognize the spectrum and frequency of hepatobiliary involvement in pediatric IBD
- Differentiate key features of pediatric vs adult PSC and understand the significance of PSC–AIH overlap
- Identify other hepatic manifestations — including drug-induced, metabolic, and autoimmune etiologies
- Outline a practical approach to evaluating abnormal liver tests in children with IBD
- Apply principles for transition of care and long-term surveillance as patients move to adult practice

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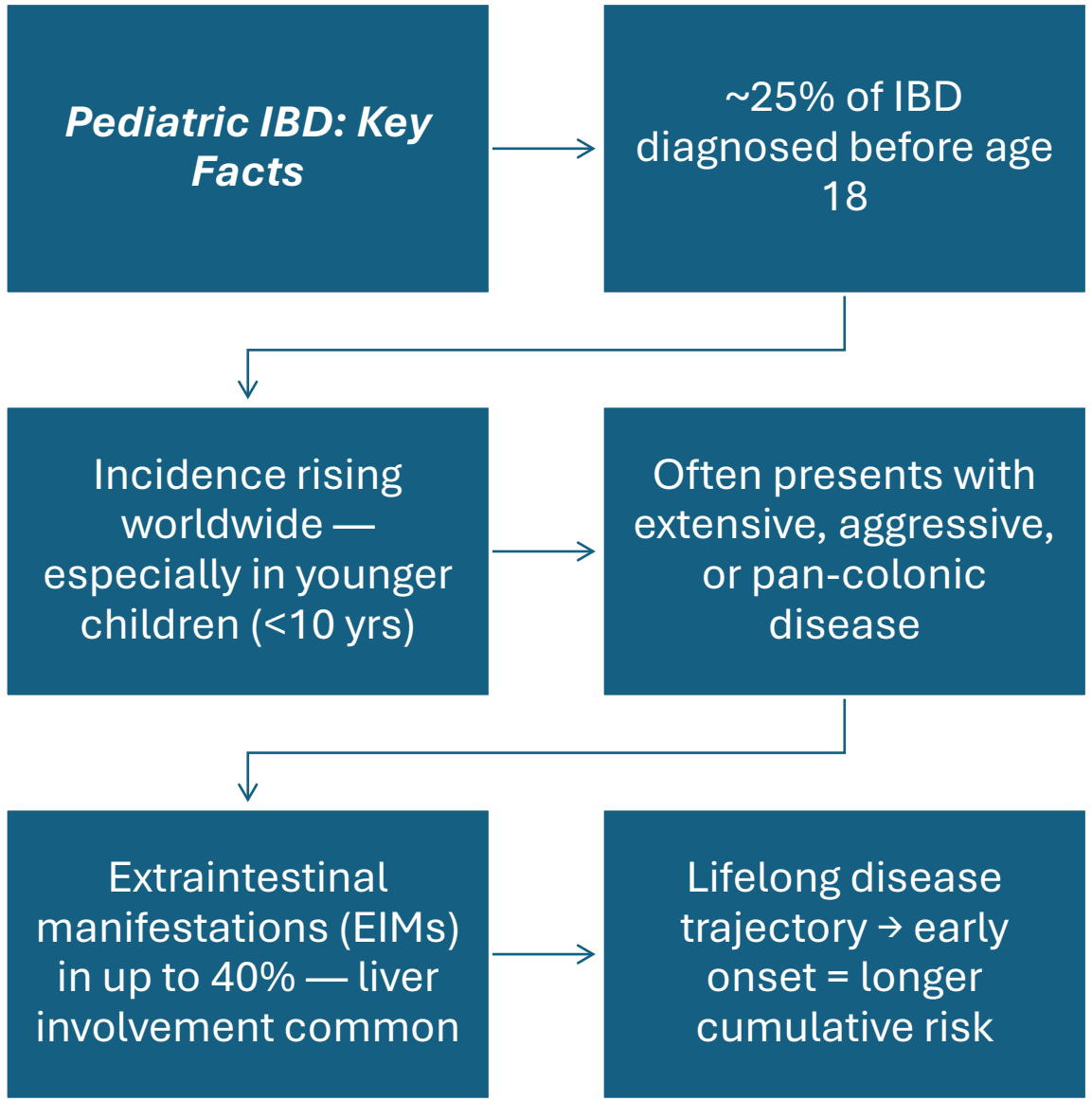
Introduction



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Epidemiology & Spectrum of Hepatobiliary Manifestations

- Primary sclerosing cholangitis (PSC)
- Autoimmune hepatitis (AIH) and overlap syndromes
- Metabolic associated steatotic disease (MASLD)
- Drug-induced liver injury (DILI)
- Gallstones and cholecystitis
- Portal vein thrombosis and other vascular issues (rare)

Epidemiology & Spectrum of Hepatobiliary Manifestations

Category	Prevalence in Pediatric IBD	IBD Association	Key Features / Clues
Primary Sclerosing Cholangitis (PSC)	1–5%	Mostly UC / Indeterminate colitis	May precede IBD; high overlap with AIH; cholestatic labs
Autoimmune Hepatitis (AIH) or PSC–AIH Overlap	~2–5%	UC ≈ CD	Elevated ALT/AST, positive autoantibodies, steroid responsive
Drug-Induced Liver Injury (DILI)	5–15%	Any	Thiopurines, MTX, biologics; monitor 3–6 mo
MASLD	8–10%	Any; obesity, steroids	Mild ALT elevation, steatosis on imaging
Gallstones / Cholecystitis	Up to 30% post-ileal resection	Crohn's	Bile acid malabsorption; usually asymptomatic
Portal Vein Thrombosis / Others	Rare	Crohn's, post-surgery	Hypercoagulable or postoperative complication

NASPGHAN IBD Committee 2021; JPGN 2023; J Pediatr Gastroenterol Nutr 2020)

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PSC

Feature	Pediatric PSC	Adult PSC	Key Takeaway
Prevalence	1–5% of pediatric IBD	2–7% of adult IBD	Small but important subset
IBD Association	70–90% have IBD (often UC/indeterminate)	~75% have IBD (mostly UC)	PSC may precede or outlast IBD in children
Overlap with AIH	25–30% (PSC–AIH overlap common)	<10%	Unique pediatric feature
Presentation	Often asymptomatic with cholestatic labs; may be discovered incidentally	Fatigue, pruritus, jaundice	Screen regularly even if asymptomatic
Cholangiographic Pattern	More small-duct disease, less dominant strictures	More large-duct disease	Better prognosis in small-duct PSC
Progression	Variable; slower progression overall but unpredictable	More linear progression to cirrhosis	Early recognition = chance to modify
Malignancy risk	Very rare in children	High (CCA, colon CA)	Still monitor long term
Transplantation	10–30% may eventually need LT	40–50% over time	Pediatric transplant outcomes excellent (90% 10-yr survival)

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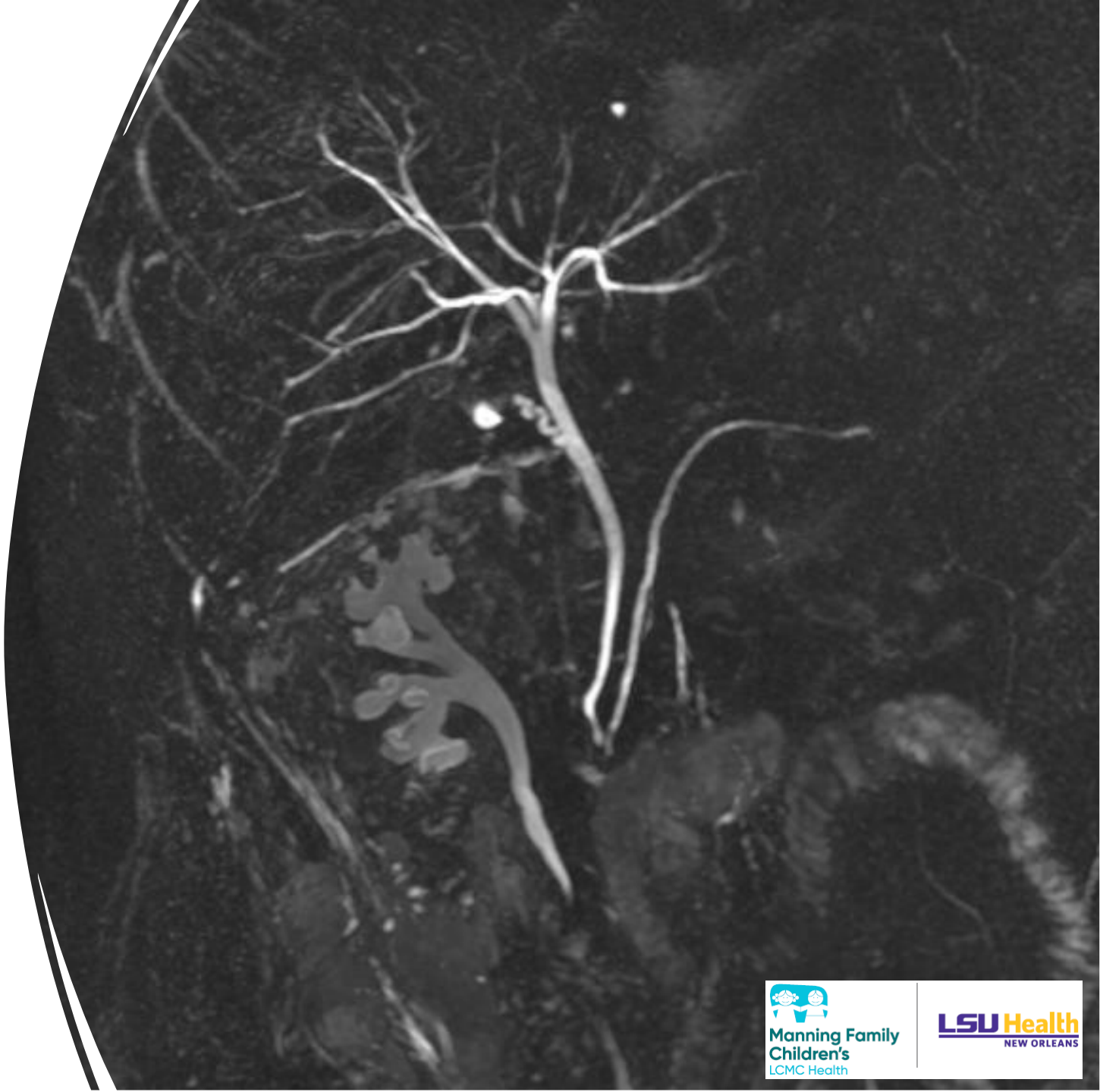
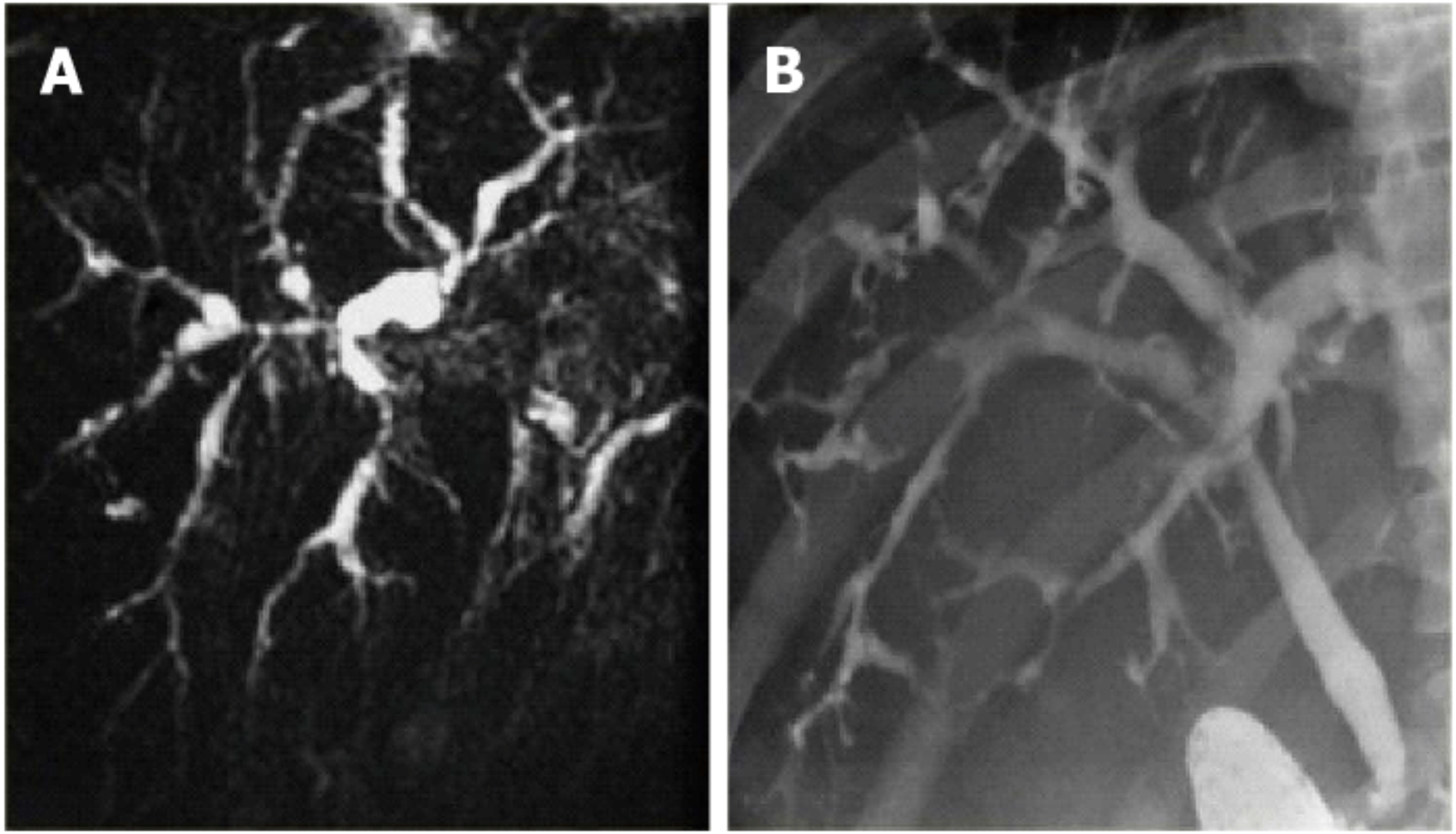
Normal Biliary Anatomy



PSC



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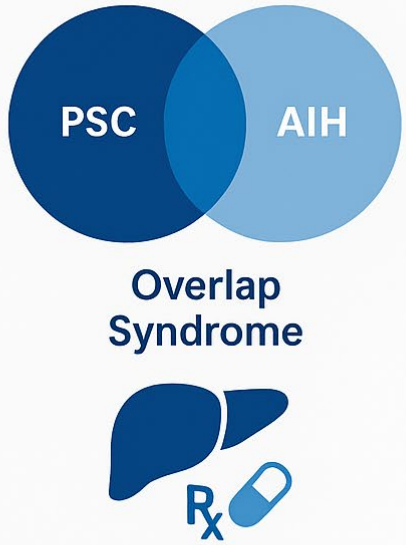
AIH/PSC-AIH Overlap

Autoimmune Hepatitis (AIH) and PSC–AIH Overlap in Pediatric IBD

Feature	Pediatric AIH / Overlap	Adult AIH / Overlap
Prevalence in IBD	~2–5%	Rare, <1–2%
Sex	Predominantly female (≈ 70%)	Female > Male
Typical IBD type	UC ≈ CD; overlap often with indeterminate colitis	Mostly UC
Presentation	Elevated ALT/AST >> ALP/GGT; may follow	Similar but often more symptomatic
Autoantibodies	ANA, SMA, anti-LKM1, anti-	Same spectrum
Histology	Interface hepatitis, plasma cells, rosetting; periportal	Similar
Treatment response	Excellent with cortico-steroids ± azathioprine	Variable in overlap
Prognosis	Good if recognized early; relapse common if therapy	Similar



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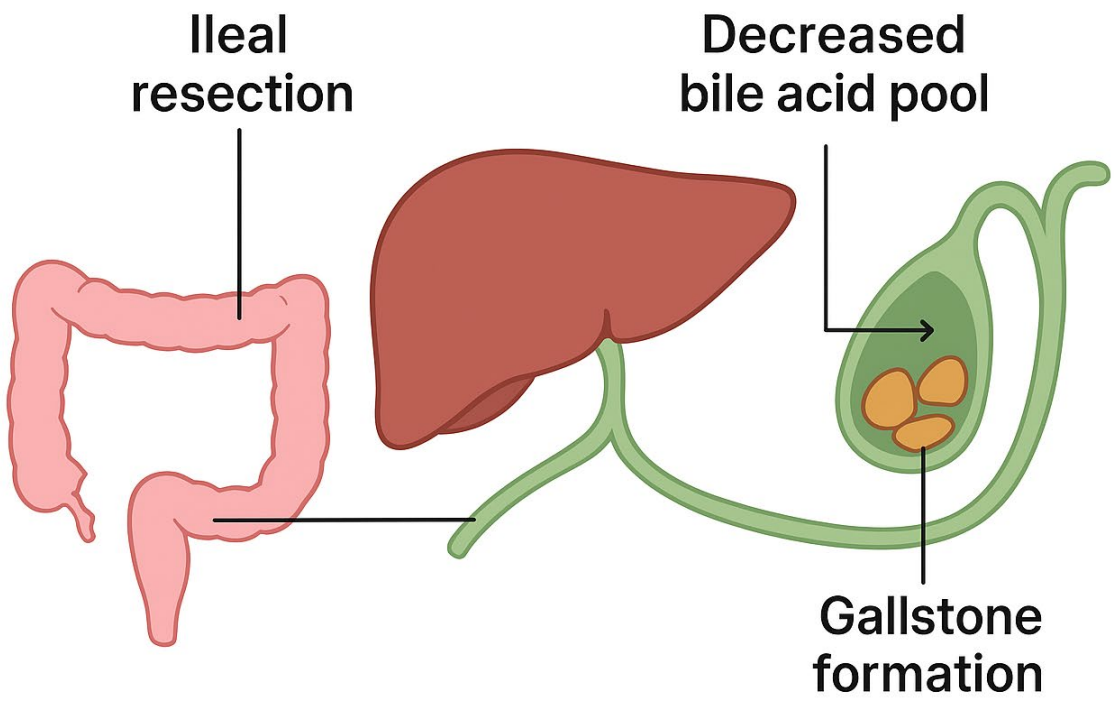
DILI

- About **5–15%** of children with IBD will develop some degree of medication-related transaminitis
- The classic offenders are the **thiopurines** — azathioprine and 6-MP
- **Methotrexate** toxicity is cumulative and more insidious
- Biologics like **infliximab and adalimumab** can rarely trigger **immune-mediated hepatitis**, which looks like AIH on biopsy
- Steroids

Gallstones & Cholecystitis

- Prevalence can reach **up to 30%** in children with ileal disease or resection, compared to 1–2% in healthy peers
- In ulcerative colitis, it's closer to 2–4%, slightly above baseline
- **Pigment stones** predominate due to increased unconjugated bilirubin in bile -- CD



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MASLD

- MASLD = hepatic steatosis + metabolic dysfunction
- Prevalence rising: affects ~4-14% of children/adolescents, higher in overweight/obese
- Emerging evidence of increased risk in IBD patients: gut–liver axis, inflammation, steroid exposure
- Clinical implications: progression to steatohepatitis (MASH), fibrosis, cirrhosis, cardiovascular disease

Risk Factors in Pediatric IBD

- Obesity/visceral adiposity, dyslipidemia, hypertension
- Prolonged disease duration, frequent flares, corticosteroid use

Arch Clin Cases 2025 Aug 4;12(3):102–109. doi: 10.22551/2025.48.1203.10321

MASLD

Clinical Approach

- Screen ALT/AST + metabolic markers in IBD patients with risk factors
- Consider hepatic ultrasound or CAP/FibroScan if steatosis suspected
- Focus on lifestyle (weight, diet, exercise), control of IBD inflammation, minimize steroid exposure
- Multidisciplinary follow-up with hepatology for steatohepatitis/fibrosis

So what drives MASLD in IBD? Two broad pathways:

1. **Metabolic pathway** – obesity, insulin resistance, dyslipidemia, visceral adiposity.
2. **IBD-specific pathway** – chronic gut inflammation, increased intestinal permeability ("leaky gut"), microbiome alterations, steroid exposure. These converge on the "gut–liver axis," leading to hepatic fat accumulation and inflammation.

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Vascular Complications

Rare but serious hepatobiliary complication in pediatric IBD

Most common sites:

- Portal vein thrombosis (PVT)
- Mesenteric vein thrombosis
- Hepatic vein thrombosis (Budd–Chiari, extremely rare)

Often peri-operative (esp. after colectomy or severe colitis flare)
May occur **at IBD diagnosis** before therapy initiation

Labs: CBC, coagulation profile, inflammatory markers, thrombophilia screen (if idiopathic)
Imaging: Doppler US → confirm with CT or MR venography
Treatment: Anticoagulation

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Take Home Points

Hepatobiliary disease is common in pediatric IBD

- Seen in up to **30%** of children at some point.
- Most are mild/transient, but a subset develop chronic or progressive disease.

Primary sclerosing cholangitis (PSC) dominates the spectrum

- Strongly linked to **ulcerative colitis**.
- Pediatric cases often have **PSC–AIH overlap** — check serologies and histology.

Autoimmune hepatitis, DILI, MASLD, and vascular events

- All may coexist or mimic one another — think broadly when LFTs rise.
- **Drugs**, **metabolic dysfunction**, and **IBD inflammation** all contribute.

Early detection and multidisciplinary care are key

- Involve **hepatology**, **nutrition**, and **radiology** early.
- Many hepatic issues evolve slowly — early recognition can alter long-term outcomes

Plan for transition to adult care

- PSC, AIH, and MASLD have lifelong implications.
- Adult providers should know these children's hepatic histories before transfer

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THANK YOU

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