Current Perspectives

Cholelithiasis and Bariatric Surgery

Litíase Biliar e Cirurgia Bariátrica

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Rapid weight loss after metabolic and bariatric surgery (MBS) poses a clinical paradox: while increasing gallstone formation risk, most patients remain asymptomatic during follow-up. This demands an individualized, evidence-based approach encompassing observation, selective surgery, and ursodeoxycholic acid (UDCA) prophylaxis during the early post-MBS vulnerability window.

This dissertation integrates scientific evidence with high-volume center experience, synthesizing data on incidence, pathophysiology, and practical criteria for cholecystectomy in routine clinical practice and decision-making in this clinical context.

Gallstone disease represents a public health problem, affecting 10%–20% of adults, with higher prevalence in people with obesity. MBS is the most effective intervention for sustained weight loss and metabolic comorbidity control. When performed in experienced centers, it has low morbidity and has become one of the most commonly performed surgical procedures worldwide.

The convergence of obesity and gallstone disease raises perioperative questions: how to manage the gallbladder, whether preexisting lithiasis exists, safely and cost-effectively?

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Gallstone incidence after MBS is clinically relevant, though available data show considerable heterogeneity. Talha *et al* documented that approximately 20% of patients develop new lithiasis postoperatively,[1] a finding subsequently confirmed by Nogueiro *et al*, which identified that about 8% of these cases evolve to symptomatic disease during follow-up.[2]

The Bayesian meta-analysis provided additional clarity by demonstrating that risk concentrates markedly in the first 6-12 months, coinciding precisely with the most pronounced weight loss period.[3] However, and this is fundamental for clinical decision-making, the proportion of truly symptomatic patients in the first year remains low, not exceeding 2% according to aggregated data from multiple series.[1,3-9] This discrepancy between imaging incidence and clinical manifestation constitutes the central argument for questioning universal prophylactic approaches.

Across common procedures, discreet nuances emerge. Amorim-Cruz *et al*, in their systematic review, demonstrated that sleeve gastrectomy (SG) and Roux-en-Y gastric bypass (RYGB) present globally similar risk for new lithiasis development after adjusting for patient characteristics and percentage excess weight loss [3]. However, available data for other procedures, one-anastomosis gastric bypass (OAGB) and single anastomosis duodeno-ileal bypass (SADI), suggest potentially higher risk, but though comparable to RYGB.[1-3,8,9]

A particularly relevant observation emerges from comparison with the general population: lithiasis arising in obesity contexts or after MBS tends to manifest symptomatically more frequently. More concerning, several authors report that preoperative calculi presence may be associated with a higher probability of biliary complications during follow-up, including choledocholithiasis and acute pancreatitis.[3,8] In an international expert survey, Kermansaravi *et al*, highlight that biliary pancreatitis risk may increase substantially in the first years post-MBS, advocating more interventional management in high-risk subgroups.[6]

Together, these elements support adopting a selective expectant strategy in asymptomatic patients, reserving surgical intervention for symptomatic cases or particularly high clinical risk situations.

Understanding the mechanisms is essential for therapeutic decisions. Risk increases via two synergistic processes: more lithogenic bile and a hypokinetic gallbladder during rapid weight loss. Accelerated mobilization of adipose cholesterol supersaturates bile combined with gallbladder stasis, this promotes crystal nucleation and subsequent stone formation. Hormonal and metabolic shifts after surgery, together with features of metabolic syndrome, further aggravate risk.[3,8] Obesity's chronic inflammation, insulin resistance and dyslipidemia, creates a metabolic milieu that paradoxically turns therapeutic weight loss into a catalyst for gallstones in many susceptible patients today.
Let us focus now on the two main questions:

1. CONCOMITANT CHOLECYSTECTOMY VERSUS UDCA PROPHYLAXIS

This topic has been extensively debated. Two recent meta-analyses converge on a consistent conclusion: adding laparoscopic cholecystectomy (CCY) to MBS increases complications with an odds ratio 1.2-1.7,[4] reinforced by Soares et al.'s updated analysis that identified no clear benefit in mortality or reinterventions without previous symptomatic disease.[5] This aggregated evidence is complemented by Metabolic and Bariatric Surgery Accreditation and Quality Improvement Program (MBSAQIP) database analysis, spanning 2015-2021, revealing surprisingly low concomitant CCY rates, only 1.0% in SG and 1.6% in RYGB.[9] These numbers likely reflect greater technical difficulty imposed by visceral fat and hepatomegaly characteristic of these patients, plus justified concern about prolonging operative time. The same study documented a modest absolute increase in superficial surgical site infections when procedures are combined.

Conversely, pharmacological prophylaxis is robust and consistent. Talha *et al* and Amorim-Cruz *et al* demonstrate that UDCA administered for 6 months dramatically reduces calculus formation, from 22% to 6%-10%, during the most rapid weight loss window.[1,3] Benefit is consistent across studies, tolerability is excellent, and access is easy in most clinical contexts. Most utilized doses range 300-600 mg/day, though some centers adopt schemes near 10 mg/kg/day based on pharmacokinetic evidence. However, adoption is not universal despite clear evidence.

Although clinicians unanimously recognize UDCA prevents calculus formation, reduces symptomatic disease, and decreases subsequent CCY need, prescription in real clinical practice does not reach 20%.[6] This evidence-practice gap suggests implementation barriers, possibly related to costs, adherence concerns, or clinical inertia. Pragmatically, consider UDCA for 6 months post-MBS, ideally starting from the first postoperative month, especially in higher-risk patients: very rapid weight loss, sludge/calculi history, female sex, and unfavorable metabolic profiles.

The practical conclusion is clear: avoid prophylactic CCY without lithiasis or in asymptomatic patients, opting instead for reducing the development of new lithiasis with UDCA.

2. MANAGEMENT OF PREEXISTING SYMPTOMATIC LITHIASIS

Facing documented preoperative symptomatic lithiasis, manifested by biliary colic, cholecystitis, acute pancreatitis, jaundice, or cholestasis, laboratory alterations, multiple guidelines converge on intervention recommendations.[4,5,8,9] Kermansaravi *et al*, synthesizing international expert opinion, argue CCY should also be considered in higher recurrence or complication risk situations, including persistent symptomatic biliary sludge or previous choledocholithiasis history.[6] Regarding optimal intervention timing, concomitant CCY is acceptable with careful selection based on multiple criteria: ultrasound documentation of calculi or sludge, favorable anatomy, clearly associated symptoms, technically linear MBS procedure, and availability of an experienced team with adequate resources.[3,5,9]

Kumar *et al*, in recent SAGES guidelines, recommend that absence of some favorable conditions, it is sensible to defer cholecystectomy to 12 weeks-6 months post-MBS.[7] This strategy leverages improved local conditions, namely reduced hepatomegaly and visceral fat, resulting from initial weight loss, substantially facilitating subsequent surgical procedures.

Biliary tract management deserves particular attention in surgically altered anatomies, namely after RYGB, OAGB or SADI procedures, where conventional endoscopic access to the main biliary tract is substantially hindered.

Recent systematic reviews and guidelines converge on recommending intraoperative cholangiography when performing cholecystectomy in these patients.[7,8] This approach leverages the opportunity for transcystic exploration if studies identify biliary tract calculi, avoiding technically complex subsequent endoscopic procedures. The surgeon must be prepared both in technical competence and instrumentation availability to treat findings during exploration. Transgastric endoscopic retrograde cholangiopancreatography (ERCP) is also possible and frequently utilized in centers with specific technique experience, though more technically demanding and not universally available.

SYNTHESIS AND PRACTICAL RECOMMENDATIONS

Gallstone disease remains a current and clinically challenging topic in patients with obesity undergoing MBS. Contemporary evidence from controlled trials, meta-analyses, and large population registries converges on practical recommendations synthesized in Table 1.

The present strategy favors a selective expectant approach in most asymptomatic patients, reserving surgery for clinically justified situations. UDCA prophylaxis is a simple, safe, cost-effective measure deserving broader adoption, while concomitant CCY is reserved for well-selected cases, when appropriate, with experienced teams. This nuanced strategy, informed by the best evidence and tempered by clinical experience, balances benefit, safety, and cost in gallstone management after metabolic and bariatric surgery.

Table 1 – Recommendations for gallstone disease management in metabolic and bariatric surgery

Phase	Recommendations	Evidence Level
Preoperative	Routine ultrasound to assess gallstone disease; Reserve concomitant CCY for documented symptomatic lithiasis; Avoid prophylactic CCY in asymptomatic patients	Meta-analyses[4,5]
Intraoperative (if concomitant CCY)	Careful selection: symptoms, documentation, favorable anatomy; Intraoperative cholangiography in RYGB/OAGB/SADI; Prepare resources for transcystic exploration	Guidelines[7,8]
Postoperative (months 1-6)	UDCA 300-600 mg/day for 6 months (start month 1); Prioritize high risk: female sex, rapid loss, lithiasis history; Assess adherence and tolerance regularly	RCT and Meta-analysis[1,3]
Follow-up	Mandatory ultrasound if biliary symptoms; Selective CCY: symptomatic or high risk; Plan biliary tract approach in altered anatomies	Cohorts[2,6,9]

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Mesquita I, conceptualized the work; Mesquita I, wrote the main manuscript text and prepared the table.
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Mesquita I, estruturou o trabalho; Mesquita I, fez pesquisa bibliográfica, escreveu o manuscrito e preparou a tabela.
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