Incidence of Cholecystitis in Patients Undergoing Different Types of Bariatric Surgery: A Systematic Review

Incidência de Colecistite em Pacientes Submetidos a Diferentes Tipos de Cirurgia Bariátrica: Uma Revisão Sistemática
Incidencia de Colecistitis en Pacientes Sometidos a Diferentes Tipos de Cirugía Bariátrica: Una Revisión Sistemática

RESUMO
Objetivo: Avaliar a incidência de colecistite em pacientes submetidos a diferentes técnicas de cirurgia bariátrica, identificando fatores de risco e estratégias de prevenção. **Método:** Revisão sistemática da literatura nas bases PubMed, SciELO, BVS, ScienceDirect e Cochrane Library, utilizando descritores DeCS e MeSH "Bariatric Surgery", "Cholecystitis" e "Postoperative Complications". Seleção de estudos publicados nos últimos dez anos com dados quantitativos sobre colecistite pós-operatória. Triagem em três fases segundo as diretrizes do PRISMA. **Resultado:** Sete estudos associaram a gastrectomia vertical a maiores taxas de colecistite, especialmente no primeiro ano pós-cirurgia. Intervenções profiláticas com ácido ursodesoxicólico reduziram significativamente a formação de cálculos. Fatores como perda ponderal rápida e sexo feminino aumentaram o risco. **Conclusão:** A incidência de colecistite varia conforme a técnica bariátrica e aspectos individuais. A profilaxia farmacológica e o monitoramento personalizado podem otimizar os desfechos clínicos.
DESCRITORES: Cirurgia Bariátrica; Colecistite; Colelitíase; Complicações Pós-Operatórias.

ABSTRACT
Objective: To evaluate the incidence of cholecystitis in patients undergoing different bariatric surgery techniques, identifying risk factors and preventive strategies. **Method:** Systematic review of the literature in PubMed, SciELO, BVS, ScienceDirect, and Cochrane Library using DeCS and MeSH descriptors "Bariatric Surgery", "Cholecystitis", and "Postoperative Complications". Selection of studies published in the last ten years reporting quantitative data on postoperative cholecystitis. Screening in three phases according to PRISMA guidelines. **Results:** Seven studies associated vertical gastrectomy with higher rates of cholecystitis, especially in the first postoperative year. Prophylactic interventions with ursodeoxycholic acid significantly reduced gallstone formation. Factors such as rapid weight loss and female sex increased risk. **Conclusion:** Cholecystitis incidence varies by bariatric technique and individual factors. Pharmacological prophylaxis and individualized monitoring may optimize clinical outcomes.
DESCRIPTORS: Bariatric Surgery; Cholecystitis; Cholelithiasis; Postoperative Complications.

RESUMEN
Objetivo: Evaluar la incidencia de colecistitis en pacientes sometidos a diferentes técnicas de cirugía bariátrica, identificando factores de riesgo y estrategias preventivas. **Método:** Revisión sistemática de la literatura en PubMed, SciELO, BVS, ScienceDirect y Cochrane Library, utilizando descriptores DeCS y MeSH "Bariatric Surgery", "Cholecystitis" y "Postoperative Complications". Selección de estudios publicados en los últimos diez años con datos cuantitativos sobre colecistitis postoperatoria. Cribado en tres fases según PRISMA. **Resultado:** Siete estudios asociaron la gastrectomía vertical con mayores tasas de colecistitis, especialmente en el primer año postoperatorio. Intervenciones profilácticas con ácido ursodesoxicólico redujeron significativamente la formación de cálculos. Factores como pérdida de peso rápida y sexo femenino aumentaron el riesgo. **Conclusión:** La incidencia de colecistitis varía según la técnica bariátrica y factores individuales. La profilaxis farmacológica y el monitoreo individualizado pueden optimizar los resultados clínicos.
DESCRIPTORES: Cirugía Bariátrica; Colecistitis; Colelitiasis; Complicaciones Postoperatorias.

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INTRODUCTION

Obesity is a growing chronic condition globally, associated with a series of comorbidities such as type 2 diabetes, hypertension and dyslipidemia. As this prevalence has increased, bariatric surgery has emerged as one of the main therapeutic strategies for treating severe obesity and associated conditions [1]. Among the most common procedures are the Y-de-Roux gastric bypass and vertical gastrectomy, both widely used due to their effectiveness in promoting sustained weight loss and improving metabolic control [2,3].

Although bariatric surgery brings significant benefits, it is also associated with a series of post-operative complications, among which cholecystitis occupies a relevant position. This acute or chronic inflammation of the gallbladder occurs in many cases due to rapid weight loss, which promotes metabolic changes responsible for the formation of gallstones, the main cause of cholecystitis [4,5]. In addition, vitamin deficiency, which is common after these procedures, also contributes to the development of biliary complications [4].

Studies indicate that 7% to 15% of patients undergoing bariatric surgery require cholecystectomy at some point after the procedure, and lack of compliance with post-operative follow-up can increase the likelihood of these complications [6,7]. However, there is still controversy in the literature about which surgical technique has the highest incidence of cholecystitis, and what specific risk factors are involved for each procedure [2].

Among the different bariatric techniques, gastric bypass seems to promote more profound changes in bile flow, which may increase the predisposition to gallstone formation, compared to vertical gastrectomy, which preserves more of the original gastrointestinal anatomy. These anatomical and functional differences may explain the variations in cholecystitis rates between patients who undergo these two interventions [8,9].

In terms of prevention, the use of ursodeoxycholic acid has been explored as a strategy to reduce gallstone formation in patients undergoing bariatric surgery, especially after vertical gastrectomy. A recent study showed that prophylaxis with this drug significantly reduces postoperative gallstone formation, suggesting a promising intervention [10]. However, the efficacy of this preventive approach is not yet fully agreed upon, requiring further comparative studies to assess its applicability in different patient populations [11].

Given this context, a systematic review comparing the incidence of cholecystitis among the main bariatric techniques is essential. Therefore, the aim of this review is to analyze in detail the prevalence of cholecystitis in patients undergoing these surgeries, identifying the specific risk factors and evaluating the best strategies for preventing and managing this complication, with the aim of optimizing post-operative care and improving the clinical outcomes of bariatric patients.

METHOD

The research in question took place through a systematic review of the literature, the aim of which was to investigate the incidence of cholecystitis in patients undergoing different bariatric surgery techniques, such as gastric bypass, vertical gastrectomy, one-anastomosis gastric bypass (OAGB) and duodenal switch (DS). A systematic review is the type of study best suited to compiling, evaluating and synthesizing published scientific evidence in a specific area, ensuring a rigorous and reproducible approach [12].

The systematic review was conducted using the methodology proposed by Donato and Donato [13] following strict criteria to ensure the transparency and reproducibility of the study. The guiding question was structured according to the PICO strategy, and was defined as follows: the population of interest included patients undergoing different types of bariatric surgery; the intervention analyzed corresponded to the various surgical techniques used on these patients; the comparison involved the incidence of cholecystitis between the different bariatric procedures; and the outcome evaluated was the frequency of the postoperative complication. Thus, the research question formulated for this systematic review was: "In obese patients undergoing different types of bariatric surgery, what is the incidence of cholecystitis?".

The protocol for this review was registered on the Open Science Framework (OSF) platform, DOI 10.17605/OSF.IO/RDJAH, ensuring greater transparency for the study and making it possible for other researchers to monitor the methodological process. The selection of

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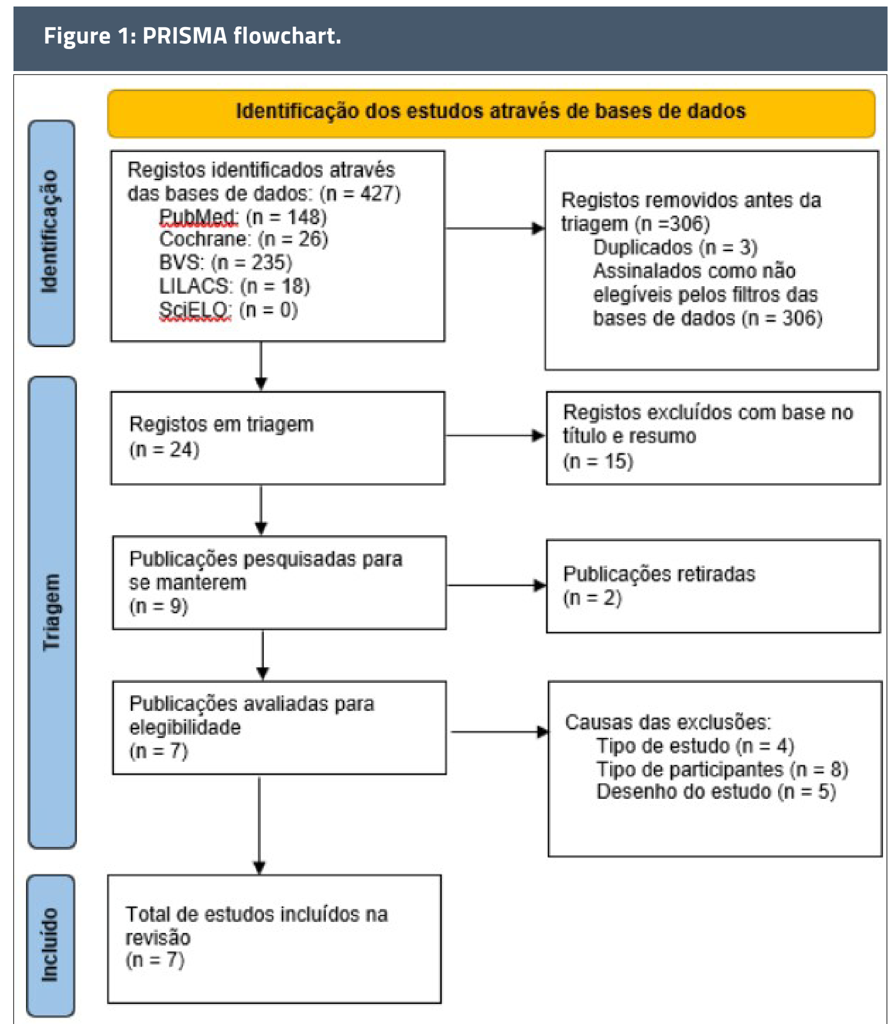
studies followed previously established inclusion and exclusion criteria. Eligible studies were those which investigated the incidence of cholecystitis after bariatric surgery and which were available in any language and published in the last 10 years. Only studies that presented clear quantitative data on the incidence of this complication or that compared at least two bariatric techniques were included. On the other hand, other reviews, isolated case studies and articles that did not present quantitative data were excluded. In addition, studies that analyzed very specific populations whose health conditions could interfere with the evaluation of cholecystitis, such as patients with previous liver diseases unrelated to obesity, were also disregarded.

The search for studies was carried out virtually, using the main scientific databases recognized by the academic community: PubMed, Virtual Health Library (VHL), Scientific Electronic Library Online (SciELO), ScienceDirect and Cochrane Library. These databases were chosen due to their wide coverage of peer-reviewed articles, which are of high relevance and quality in the area of health sciences. The search strategy was based on the use of Health Sciences Descriptors (DeCS) and Medical Subject Headings (MeSH), with the terms "Bariatric Surgery", "Cholecystitis" and "Postoperative Complications". These descriptors were combined with the Boolean operator AND and searched in English, ensuring a comprehensive and sensitive search for studies relevant to the topic.

The studies were selected in three different stages. In the first stage, the database filters were used: last 10 years and full article available in all databases. In the second stage, the titles and abstracts of the articles retrieved in the search were examined to check that they met the inclusion criteria and to remove duplicates. For this initial screening, the Rayyan platform was used, which allowed for an efficient organization of the articles and facilitated the analysis of the articles. Studies that did not meet the criteria were excluded at this stage. In the last stage, the articles that passed the initial screening were evaluated in full text to confirm their eligibility, the exclusions were described and the final sample was selected, according to the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines [14], ensuring transparencyand reproducibility of the study.ensuring transparency and reproducibility of the study. A PRISMA flowchart was drawn up to clearly illustrate the process of selecting studies, from initial identification to final inclusion in the review (Figure 1).

Figure 1: PRISMA flowchart.



Source: Own authorship, 2025.

The methodological quality of the clinical trials included was assessed using the Jadad scale, a widely used tool for critical analysis of this type of publication. The scale considers factors such as the adequacy of randomization, the use of blinding and the description of participant losses, allowing an objective assessment of the methodological rigor of the studies analyzed [15]. In addition, assessed the risk of bias of the two non-randomized studies using ROBINS-I

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(Risk Of Bias In Non-randomized Studies of Interventions), considering the following domains: confounding, selection of participants, classification of interventions, deviations from intended interventions, missing data, measurement of outcomes and selection of reported results [16].

Data extraction was carried out in a standardized way, ensuring that relevant information was collected from each study. Characteristics of the study population, details of the interventions carried out, protocols adopted, comparators, outcomes assessed and main results obtained were extracted. This information was organized into descriptive tables, making it easier to compare the findings between the different studies.

Data analysis was predominantly qualitative, focusing on assessing the incidence of cholecystitis among the different types of bariatric surgery. The results were presented in narrative form, emphasizing the main findings and identifying consistent patterns in the available evidence. In addition, the heterogeneity of the studies, both in terms of intervention protocols and the characteristics of the populations analyzed, was discussed in detail in order to contextualize the findings and their practical implications. In the final stage, the results discussed were presented in the form of this article.

Chart 1: General characterization of the articles selected to make up the SR.

Authors (Year)	Title	Language	Journal	Type of Study
Anveden *et al.* (2020)	Long-term incidence of gallstone disease after bariatric surgery	English	Surgery for Obesity and Related Diseases	Prospective study
Habeeb *et al.* (2022)	Sleeve Gastrectomy and Cholecystectomy are Safe in Obese Patients with Asymptomatic Cholelithiasis. A Multicenter Randomized Trial	English	World J Surg	Randomized Clinical Trial
Hernández *et al.* (2023)	Causes of revisional surgery, reoperations, and readmissions after bariatric surgery	Spanish	Revista de Gastroenterología de México	Retrospective study
Mohammed (2020)	Reduction of Cholelithiasis after Bariatric Surgery	English	Med. J. Cairo Univ.	Randomized Clinical Trial
Sakran *et al.* (2020)	The use of Ursolit for gallstone prophylaxis following bariatric surgery: a randomized-controlled trial	English	Updates in Surgery	Randomized Clinical Trial
Talha *et al.* (2016)	Cholelithiasis after Weight Loss Surgery: Challenge and Prophylaxis	English	Ain-Shams J Surg	Randomized Clinical Trial
Talha *et al.* (2019)	Cholelithiasis after bariatric surgery, incidence, and prophylaxis: randomized controlled trial	English	Surgical Endoscopy	Randomized Clinical Trial

Source: Research data, 2025.

Table 2 summarizes the main methodological characteristics of the studies. The samples ranged from 92 to 1,755 patients, and follow-up times ranged from 6 months to 20 years. The interventions analyzed included a comparison between surgical procedures (such as concomitant cholecystectomy versus procedures with delayed cholecystectomy) and prophylactic administration of UDCA (500 or 600 mg/d) compared to placebo. The evaluation methods included quantitative measurements such as EWL, BMI and cholesterol levels, as well as the use of abdominal ultrasound to identify gallstone formation.

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Quadro 2: Características metodológicas dos estudos incluídos na revisão sistemática

Authors (Year)	Sample	Interventions	Follow-up time	Evaluation method	Clinical Outcome
Anveden *et al.* (2020)	n = 1.755	Bariatric surgery (gastric bypass, vertical banded gastroplasty and gastric banding) vs. conventional treatment	Up to 20 years (median ~21.2 years)	Prospective follow-up with periodic clinical evaluations and data from the Swedish National Patient Register	Incidence of symptomatic gallstone disease and need for cholecystectomy - increased risk, especially in the first few years after surgery
Habeeb *et al.* (2022)	n = 222	SG with concomitant cholecystectomy vs SG alone (with late LC)	Up to 24 months	Clinical follow-up, ultrasound, assessment of %EWL, BMI and cholesterol	Incidence of cholecystitis and need for cholecystectomy
Hernández *et al.* (2023)	n = 776	Primary bariatric surgery (predominantly RYGBP and SG) - retrospective analysis of revisional surgery, reoperation and readmission	Variable interval: average of 47.2 months (revision), 17.4 months (reoperation) and 7.4 months (readmission)	Review of medical records with collection of demographic, anthropometric and perioperative data	Incidence of revision surgery (1.2%), reoperation (5.6%) and readmission (5.8%); cholecystitis accounted for 38.6% of reoperations
Mohammed (2020)	n = 120	Protocol divided into: Control group, UDCA, Ezetimibe and combined therapy (after LSG)	12 months	Abdominal ultrasound visits at 3, 6 and 12 months	Incidence of gallstone formation (lower in treatment groups)
Sakran *et al.* (2020)	n = 92	UDCA 600 mg/d vs Placebo after bariatric surgery	6 months	Abdominal ultrasound	Rate of gallstone formation
Talha *et al.* (2016)	n = 108	UDCA 500 mg/d for 6 months vs Placebo after LSG or LGCP	≥ 12 months	Abdominal ultrasound and EWL assessment	Incidence of general and symptomatic cholelithiasis
Talha *et al.* (2019)	n = 1432	UDCA 500 mg/d for 6 months vs Placebo after bariatric surgery	Minimum 12 months	Abdominal ultrasound, clinical and EWL assessment	Incidence of gallstone formation and symptomatic cholelithiasis

Source: Research data, 2025.

According to Chart 3, the included clinical trials obtained high scores on the Jadad scale and were described as randomized, with adequate randomization, appropriate comparisons and losses or exclusions duly reported. All the studies scored 5 on this scale. This consistent methodological standard ensures the robustness of the evidence presented and reinforces the validity of the results included in this systematic review.

Chart 3: Analysis of the methodological quality of the articles included in the systematic review according to the Jadad scale

Authors	The study was described as randomized?	Has the randomization been described and is it adequate?	Have there been comparisons and results?	Have the comparisons and results been described and are they adequate?	Have losses and exclusions been described?	Total
Habeeb *et al.* (2022)	1	1	1	1	1	5
Mohammed (2020)	1	1	1	1	1	5
Sakran *et al.* (2020)	1	1	1	1	1	5
Talha *et al.* (2016)	1	1	1	1	1	5
Talha *et al.* (2019)	1	1	1	1	1	5

Source: Research data, 2025.

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With regard to the risk of bias of the two non-randomized studies, the analysis using the ROBINS-I instrument considered aspects such as confounding, selection of participants, classification and deviations of interventions, missing data, measurement of outcomes and selection of reported results, and the final classification of each study was determined by the domain with the highest level of risk identified. As a result, both studies were assessed with an overall risk of bias classified as moderate (Chart 4).

Quadro 4: Análise do risco de viés dos artigos não randomizados.

Bias risk domain	Anveden *et al.* (2020)	Hernández *et al.* (2023)
Bias due to confusion	Moderate	Moderate
Selection of participants	Moderate	Moderate
Classification of interventions	Bass	Moderate
Deviations from intended interventions	Bass	Bass
Missing data	Moderate	Moderate
Measuring outcomes	Moderate	Moderate
Selection of reported results	Bass	Moderate
Risk of global bias	Moderate	Moderate

Source: Research data, 2025.

DISCUSSION

Incidence of cholecystitis according to the type of bariatric surgery

When evaluating the incidence of cholecystitis in obese patients undergoing different bariatric surgery techniques, it can be seen that both the type of procedure and the patient's metabolic profile directly interfere with the risk of developing this complication. Among the techniques evaluated, vertical gastrectomy (SG) has been consistently associated with higher rates of cholelithiasis and cholecystitis, especially in the first few months after surgery, when weight loss is more rapid. One study reported a 55% incidence of symptomatic biliary complications after SG, with 42.7% corresponding to acute cholecystitis [17].

Similar data indicate an incidence of cholelithiasis in 36% of patients and chronic cholecystitis in more than 70% of cases, particularly in individuals who lose more than 25% of their body weight in the first six months [18]. This pattern of gallbladder hypomotility and bile supersaturation, associated with rapid lipid mobilization, creates an environment conducive to lithogenesis. Corroborating these observations, another study showed that accelerated weight loss in the postoperative period is one of the main risk factors for stone formation, reinforcing the vulnerability of patients undergoing SG and gastric plication [19].

In comparison, other techniques such as the Roux-en-Y gastric bypass (RYGB) present a variable risk. It was observed that 64.7% of cases of cholelithiasis occurred after SG, compared to 28.1% in one-anastomosis gastric bypass (OAGB) and only 7.2% in gastric plication [20]. Another study identified cholecystitis as the main cause of reoperation after RYGB (38.6%) [21].reinforcing that the anatomical modification of the technique does not eliminate the risk, but only redistributes it temporally and metabolically. Longitudinal data with a follow-up of up to 26 years showed that patients who underwent surgery, regardless of the technique, had a higher incidence of cholelithiasis and cholecystectomy than the control group, especially in the first two years, with a relative risk for cholelithiasis of 1.84 [22].

Although a recent study found no statistically significant association between the type of surgery and the incidence of stones, female gender and Caucasian ethnicity were identified as independent risk factors [23]. These findings suggest that surgical technique, although relevant, acts in synergy with individual characteristics. Other studies reinforce that SG, by inducing more intense changes in biliary motility and mucin levels, favors a more pronounced lithogenic environment [24,25].

Therefore, in light of the available evidence, the incidence of cholecystitis in patients undergoing bariatric surgery is not uniform between the techniques. SG stands out as the approach with the highest risk, especially in the short term, while RYGB maintains a considerable rate of biliary complications, albeit with a different pathophysiological profile. Thus, the choice of technique should consider the individualized risk of cholecystitis, particularly in patients with additional risk factors such as female gender, high body mass index (BMI) and a history of dyslipidemia, in order to guide more effective prevention and postoperative monitoring strategies.

Factors influencing the formation of cholelithiasis/cholecystitis after bariatric surgery

The incidence of cholecystitis in patients undergoing bariatric surgery depends not only on the technique used, but on a combination of physiological, metabolic and individual factors that act interdependently. Among the most relevant is the magnitude and speed of weight loss in the postoperative period, which promote changes in the composition of bile

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and in gallbladder motility, favoring the formation of stones, a precursor to cholecystitis. This association was observed in several studies in the sample. A direct relationship was found between higher percentages of excess weight loss (%EWL) and the development of cholelithiasis, especially in the first year after surgery [19,20,26]. These findings are compatible with other data describing a common pathophysiological pattern: rapid cholesterol mobilization, vesicular hypomotility and mucin accumulation, elements that converge towards a lithogenic biliary environment [24,27].

This dynamic is also confirmed in population data. A longitudinal study with more than 20 years of follow-up showed that the risk of cholelithiasis and cholecystectomy is highest in the first few years after surgery, precisely when weight loss is most intense [22]. Other authors point out that this risk is especially high after techniques such as Roux-en-Y gastric bypass (RYGB) and vertical gastrectomy (SG), with an incidence of chronic cholecystitis in up to 70.2% of patients, reinforcing the vulnerability of the metabolic adaptation period [18]. In addition to weight loss, clinical and demographic factors also modulate this risk. A meta-analysis identified female gender and Caucasian ethnicity as independent risk factors, suggesting a hormonal and genetic influence on biliary motility and bile composition [23]. On the other hand, factors such as preoperative body mass index (BMI), diabetes, dyslipidemia and smoking showed no consistent statistical association, although they may act as contextual cofactors.

The presence of asymptomatic cholelithiasis before surgery also stands out as a relevant risk factor. Patients with this condition are more likely to develop symptoms or complications after surgery, even when treated with ursodeoxycholic acid (UDCA) [6]. From a therapeutic point of view, the use of UDCA has proved to be a promising tool. Although some studies have found only marginally significant results with UDCA alone, the combination with statins robustly reduced the incidence of lithiasis (odds ratio [OR] = 0.42), especially in groups at high metabolic risk [28]. This approach gains relevance as evidence shows that surgical technique alone is not enough to predict the risk of biliary complications [21].

In summary, the formation of cholelithiasis and its progression to cholecystitis in the post-bariatric context is the result of a multifactorial process, in which accelerated weight loss acts as a central triggering factor. However, the presence of genetic predispositions, pre-existing conditions and adherence (or not) to preventive pharmacological measures modulate this risk. Individualized assessment and preventive planning are essential to reduce the burden of postoperative biliary complications, going beyond isolated technical choice.

Strategies for the prevention and management of cholecystitis after bariatric surgery

The formation of gallstones after bariatric surgery is a predictable complication, especially in patients with rapid weight loss. For this reason, strategies to prevent and manage post-operative cholecystitis should be part of therapeutic planning. Ursodeoxycholic acid (UDCA) prophylaxis is one of the most established approaches. A significant reduction in the incidence of cholelithiasis has been reported with the use of UDCA for six months, from 22% to 6.5% [19,20]. Similar results have been confirmed in patients undergoing vertical gastrectomy (SG) and Roux-en-Y gastric bypass (RYGB) [24]. However, adherence to treatment is a challenge, with more than half of patients discontinuing use before completion due to mild adverse effects, such as diarrhea, and postoperative drug overload [24].

Prophylactic cholecystectomy concomitant with bariatric surgery is indicated in cases of asymptomatic cholelithiasis identified preoperatively. Studies have shown that this practice reduces future reoperations without increasing morbidity, and is considered safe even in centers with high demand [17,29]. However, its universal adoption is contested. One analysis suggests that the risk of additional surgery may outweigh the benefits in patients without confirmed lithiasis, especially in the presence of conditions such as hepatic steatosis or visceral obesity, which make the procedure difficult [23].

The combined use of UDCA with statins has emerged as a promising alternative. Evidence indicates that this combination offers superior protection to monotherapy, especially in patients at high metabolic risk [28]. This approach can be useful in the first six months, when the risk of lithogenesis is highest. The most balanced approach tends to be selective: UDCA for all patients in the first few months and cholecystectomy only when there are additional risk factors, such as previous stones or mild symptoms. In addition, structured clinical follow-up, with periodic ultrasound and dietary guidelines, is essential for early detection and management of possible complications.

Therefore, the prevention of postoperative cholecystitis should be personalized, based on risk factors and supported by clear institutional protocols. The integration of pharmacological strategies, preoperative assessment and multidisciplinary follow-up is the safest and most effective way to reduce the incidence of biliary complications after bariatric surgery.

LIMITATIONS OF THE STUDY

This study has important limitations that impact on the interpreta-

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tion of the results. Despite the methodological rigour of the systematic review, the small number of studies included restricts the generalization of the findings. There was also considerable heterogeneity between the studies analyzed in terms of follow-up time, surgical techniques used and diagnostic criteria for cholelithiasis and cholecystitis, making direct comparisons and data standardization difficult. The lack of meta-analysis limits the quantification of the relative risk between surgical approaches. In addition, behavioral factors, such as adherence to treatment and variations in clinical follow-up, could not be systematically evaluated, although they may directly influence outcomes. Future studies with larger samples, more homogeneous methodology and prolonged follow-up are needed to strengthen the available evidence.

CONCLUSION

The results of this systematic review confirm that the occurrence of cholelithiasis and cholecystitis after bariatric surgery is a multifactorial phenomenon, influenced by the surgical technique, the intensity of weight loss and individual clinical characteristics. Vertical gastrectomy stood out for its consistent association with a higher incidence of biliary complications, especially in the first year, when weight loss is more pronounced. Among prevention strategies, the early use of ursodeoxycholic acid has shown significant efficacy in reducing stone formation, especially in high-risk patients, and is a low-cost intervention with a good safety profile. Prophylactic cholecystectomy, on the other hand, should be carefully indicated, based on clinical and ultrasound findings and an assessment of surgical risk.

Thus, the management of cholecystitis in the post-bariatric context should be based on individualized protocols that balance the risks and benefits of each intervention. The incorporation of preventive measures and continuous clinical follow-up by a multidisciplinary team are essential to reduce the incidence of biliary complications and optimize the metabolic results of patients who

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