



“One-day, one-stay, and one-step” lessons from the Danish guidelines for the treatment of gallstone disease

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Introduction

Gallstone disease is prevalent worldwide, and the incidence in Europe increased over the last decades. The median prevalence ranges from 5.9% to 21.9%, with the highest rates seen in Norway (21.9%) and the eastern part of Germany (19.7%) and the lowest rates in Italy (<7%) (1). In The Netherlands, over 100,000 patients are diagnosed with symptomatic gallstones annually, costing around 250 million euros, ranking gallstones disease in the top 10 of the most prevalent and costly gastrointestinal disorders (2). Because symptomatic gallstones are common and are driving healthcare costs over the last decades, evidence-based guidelines are elementary to provide good and cost-effective care. In 2017, a systematic review assessed the evidence and quality of guidelines on gallstone disease (3). The authors included 13 guidelines and reported on sixteen recommendations with a high level of evidence and international consensus. However, ten topics were reported with a low level of evidence or topics with a lack of consensus. The review highlighted significant deficiencies in the evidence-base of gallstone disease. Four years later, the Danish Surgical Society developed their guidelines on gallstone disease and reported seven recommendations, including three strong recommendations based on high-grade evidence. The Danish guideline is a significant contribution to better clinical decision-making and let us review the recommendations of this guideline against

the most up-to-date literature. The recommendations in the guideline describe the treatment of patients with uncomplicated gallstone disease, acute cholecystitis, and common bile duct stones. Although not explicitly noted, the guideline recommends a one-day, one-stay, and one-step strategy for patients with symptomatic gallstone disease.

Symptomatic gallstone disease: shared decision over time, surgery in one-day

The first question answered in the guideline is: should patients with uncomplicated symptomatic gallstone disease be offered observation or laparoscopic cholecystectomy? This question is increasingly relevant due to the many patients presenting with gallstones and abdominal pain. Still, several studies showed a lack of consensus regarding selecting those who do or do not benefit from surgery. After all, 10–40% of patients have persistent abdominal pain after surgery, mainly due to poor patient selection and underlying functional gastrointestinal disorders (4). After reviewing the available randomized controlled trial (RCT)'s, the guideline restricts observation in the presence of non-severe symptoms or in case of a long interval between pain attacks, or are elderly or multimorbid (5,6). The guideline advocates a shared decision holding, which implies decisions on surgery should not be made during one consultation, but after a follow-up appointment for evaluation of symptoms.

In the end, the recommendations are considered weak due to the low quality of evidence. Hopefully, results from the C-Gall trial may provide more evidence for the benefit of a more conservative strategy. In the UK, this trial compares laparoscopic cholecystectomy with observation for preventing recurrent symptoms and complications in over 400 patients with uncomplicated symptomatic gallstones (7). Finally, the guideline does not address the advantages and disadvantages of one-day surgery compared with an overnight stay in patients undergoing elective surgery. While safety and cost-effectiveness is established, this strategy is not yet widely implemented (8).

Cholecystitis in one-stay, do not delay

Cholecystitis is the most common presentation of complicated gallstone disease and can be approached via different treatment options. This guideline recommends acute laparoscopic cholecystectomy for treating cholecystitis, including in high-risk patients. The literature on gallbladder drainage as a bridge to surgery is reviewed, but a significant hurdle when interpreting the literature is the wide variation in the definition of 'high risk' patient. The perceived high risk can be abdominal (i.e., liver cirrhosis with ascites, metastasized malignancy) or related to the risks of anaesthesia, cardiopulmonary status etc. The guideline illustrates the considerable differences per study in case definition, which makes interpretation and comparison of outcomes difficult. Defining a high-risk patient should be a priority for the surgical community. As eluded by the authors, at present, the most used drainage route is percutaneous. Percutaneous gallbladder drainage is technically highly successful (>90%), but plagued with local complications, drain dysfunction and readmissions (9). endoscopic ultrasound (EUS)-guided gallbladder drainage is, as stated in the guideline, a potentially valuable alternative with similar high technical success rates but a much lower risk for adverse events (10). Another option not discussed in the guideline is trans papillary drainage of the gallbladder during endoscopic retrograde cholangiopancreatography (ERCP) (11). Although associated with a technically lower success rate, this route might be preferable in patients with ascites, coagulation disorders, or a temporarily increased risk but wish for future cholecystectomy. Importantly, and contrary to percutaneous drainage, for EUS-guided and trans papillary drainage, moderate to deep sedation is necessary. In summary, there are three drainage routes once the decision has been made not to operate but drain:

percutaneous, EUS-guided or trans papillary. The present literature does not allow us to conclude which modality is optimal. Probably, there is no 'best' technique. Factors that should be included in a multidisciplinary decision process should be comorbidity, local availability and expertise and wish for future cholecystectomy or only drainage as destination therapy (12).

Choledocholithiasis in one step

Finally, the guideline addresses the treatment pathway for choledocholithiasis. As mentioned in several sections of this guideline, ERCP should not be used for diagnostic purposes. The risk of complications during and after ERCP and the availability of other diagnostic modalities are two critical reasons to agree with the guideline authors. As the authors conclude, both magnetic resonance cholangiopancreatography (MRCP) and EUS are modalities with good performances, which was recently confirmed by the RCT from India, which enrolled 244 patients randomised to either EUS or MRCP (13). Whether all patients undergoing surgery for symptomatic gallstone disease should undergo preoperative MRCP or EUS as stated in recommendation seven, is debatable. The studies analysed by the authors focus on patients with an intermediate risk of common bile duct stones, not on all patients. In patients without any features suggestive of common bile duct stones (CBDS) (biochemical, on ultrasonography, etc.), the chance of finding CBDS is low at approximately 3%, and most of these stones will also pass spontaneously (14). Therefore, we question the universal usefulness of bile duct imaging in patients with symptomatic gallstone disease without cholecystitis or features suggestive of CBDS.

We should probably have a higher threshold for ERCP than used in current guidelines. A clinical diagnosis of cholangitis or dilated bile duct with markedly increased bilirubin is considered a criterion that allows ERCP without prior visualisation of choledocholithiasis. However, recent work has shown that when performing ERCP in patients fulfilling these criteria, you may perform ERCP in a significant proportion of patients without bile duct stones. In some, because stones passed spontaneously, in some because there was an alternative diagnosis (15). As always, a hurdle to optimal patient care is the sensitivity and specificity of our current diagnostic criteria, as stated by the guideline authors in their introduction. Depending on local availability, one should proceed to ERCP only if a stone has

been clearly visualised. EUS-first strategy before ERCP for suspected choledocholithiasis could well be the most cost-effective way to provide such care (16).

The authors discuss and advocate to treat choledocholithiasis in one step and provide the strong evidence for a one-stop-shop for treating common bile duct stones during cholecystectomy. A patient group for which this strategy might well be particularly beneficial, is patients with acute cholecystitis and increased liver enzymes. Cholecystitis and elevated liver enzymes are common, as liver enzymes increase in 30–60% of patients with acute cholecystitis. However, ‘only’ 10–20% of patients actually have choledocholithiasis. Performing intraoperative cholangiography in these patients with either laparoscopic or endoscopic treatment in the same session could be a patient-friendly and cost-effective alternative leading to a lower risk of post-operative bile duct injury (17). In a healthcare setting where this expertise is not available, in patients with increased liver enzymes and acute cholecystitis, there should be a low threshold for performing preoperative MRCP or EUS. Importantly, the ‘usual’ criteria used to decide on ERCP are not helpful in the setting of acute cholecystitis, and specific criteria should be used to determine whether to proceed directly to ERCP or prefer preoperative imaging (18).

Another factor that should be considered is surgical expertise in managing common bile duct stones. The expertise differs markedly per country and centre. Differences in expertise influence patient outcomes (19).

In conclusion, the current Danish guideline is a welcome addition to the literature. It also highlights our lack of solid evidence in treating symptomatic gallstone disease. Gallstones will only become more common in the years ahead. This is a space where more high-quality studies are particularly welcome to determine which patients with symptomatic cholelithiasis benefit most from surgery, what the best diagnostic pathway is in those with possible choledocholithiasis with or without cholangitis or cholecystitis, and finally the best placement of non-surgical treatment of acute cholecystitis.

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