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REVIEW

Can abdominal surgical emergencies be treated in an ambulatory setting?

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Summary
Introduction: The performance of emergency abdominal surgery in an outpatient setting is increasingly the order of the day in France. This review evaluates the feasibility and reliability of ambulatory surgical treatment of the most common abdominal emergencies: appendectomy for acute appendicitis and cholecystectomy for acute complications of gallstone disease (acute cholecystitis and gallstone pancreatitis).
Methods: This study evaluates surgical procedures performed on an ambulatory basis according to the international definition (admission in the morning, discharge in the evening with a hospital stay of less than 12 hours). Just as for elective surgery, eligibility of patients for an ambulatory approach depends on the capacities of the surgical and anesthesia team: to manage the risks, particularly the risk of deferring surgery until the morning); to prevent or treat post-operative symptoms like pain, nausea, vomiting, re-ambulation in order to permit rapid post-operative discharge.
Results: Recent studies have shown that appendectomy for non-complicated acute appendicitis can be deferred for up to 12 hours without any increase in danger. Many other studies have shown that early discharge after appendectomy for acute non-complicated appendicitis is feasible and safe. Nonetheless, there is only one published series of truly ambulatory appendectomies. The results were excellent. Patients who presented in the afternoon were brought back for operation the following morning. The appropriate timing for performance of cholecystectomy in patients with acute calculous cholecystitis or gallstone pancreatitis has not been well defined, but is always somewhat delayed relative to the onset of symptoms. To minimize operative complications, cholecystectomy for acute calculous cholecystitis should probably be performed between 24 and 72 hours after diagnosis. Cholecystectomy for gallstone pancreatitis should probably not be delayed longer than a week; the need to keep the patient hospitalized during the interval has not been demonstrated. Early discharge after cholecystectomy was usually possible, even in series where acute cholecystitis was diagnosed intra-operatively. Cholecystectomy for acute cholecystitis and gallstone pancreatitis seems to be feasible but no reports specifically support this approach.

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Conclusions: Emergency abdominal surgery seems to be feasible on an ambulatory setting for non-complicated acute appendicitis, acute calculous cholecystitis and gallstone pancreatitis. Only a single French series on ambulatory appendectomy for acute appendicitis has been reported.
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Introduction

Since 2009, the Ministry of Health has implemented public policy requiring the Regional Health Agencies, hospital directors, the National Health Insurance and the French comptroller-general to move toward development and implementation of ambulatory surgery in France. Up to the present time, these policy efforts have been applied only to elective surgery.

The extension of ambulatory surgical management to include certain abdominal emergencies has become a topic of increasing interest [1—3].

While for abdominal surgery, such emergencies as acute intestinal obstruction or ischemia have not been considered suitable for ambulatory surgery, the ambulatory approach has been successfully applied to urgent surgery for acute abdominal infectious diseases such as acute appendicitis, acute calculous cholecystitis and acute gallstone pancreatitis.

Methods

International definition of ambulatory surgery

The international definition of ambulatory surgery includes surgical interventions with a total hospital stay of less than 12 hours without an overnight stay [4].

This study therefore only considered studies of urgent abdominal surgery performed within these parameters. Cases with a hospital stay of less than 12 hours but including an overnight stay were not considered to be ambulatory surgery. Series reporting ''day case'', ''outpatient'', or ''same day discharge'' surgeries with a stay between 12 and 24 hours (a possible source of confusion) were not considered to fall within the definition of ambulatory surgery.

Conditions for ambulatory surgical treatment of abdominal emergencies

Whether an elective surgical intervention can be considered for ambulatory management depends on the capabilities of the surgical, anesthesia, and paramedical care team to control post-operative symptoms such as pain, nausea and vomiting so that patient discharge can be achieved within an interval of 6 hours post-operatively and to manage post-operative surgical and anesthesia risks. Proper management of post-operative risks implies a full evaluation of potential post-operative complications (frequency, gravity, risk factors, and arrangements for identification and treatment post-discharge, if necessary) to enable discharge within six hours of surgery, with risk management in the home setting.

In the context of emergency surgery, management of post-operative risks also includes the risk of delaying surgery, if necessary, until the following day. Indeed, if the patient presents in emergency too late in the afternoon to allow his discharge home the same day, he or she should return home in the interval prior to the scheduled hour of surgery on the following morning.

Ambulatory surgical management implies that the patient will be admitted early enough the following day to allow surgery with sufficient time post-operatively to permit same day discharge.

At the present time, acute abdominal surgical infections such as appendicitis and cholecystitis (except for cases presenting with signs of generalized peritonitis) often undergo surgery more than 12 hours after their initial presentation; studies have demonstrated the absence of impact of this operative delay on the severity of findings at surgery [5—7].

In this study, we have tried to determine:

- if data in the literature can demonstrate whether appendectomy for acute appendicitis and cholecystectomy for acute calculous cholecystitis or gallstone pancreatitis are suitable for ambulatory management (semi-elective procedure the following morning, management of post-operative risks, control of post-operative symptoms and enhanced recovery);
- if studies have been reported of ambulatory appendectomy for acute appendicitis and cholecystectomy for acute calculous cholecystitis or gallstone pancreatitis and with what results.

A separate chapter has been devoted to acute sigmoid diverticulitis.

Results

Acute appendicitis

Can conditions be met to allow ambulatory appendectomy for acute appendicitis?

Numerous publications over the last 10 years have shown that appendectomy for *non-complicated* acute appendicitis fulfilled all the necessary conditions for performance in an ambulatory setting and that, even in some cases of *perforated* acute appendicitis (as long as there was only a localized peritonitis), surgery could be delayed for several weeks, allowing it to be performed as a scheduled ambulatory procedure.

Thus, the data demonstrating that ambulatory surgery was possible were progressively accumulated in the setting of *non-complicated* acute appendicitis. Firstly, epidemiological studies and multiple successive series showed that a 6—12-hour delay prior to surgery was not dangerous, particularly since CT scanning could select patients with no signs of perforation. Subsequent studies showed that the post-operative hospital stay could be reduced to less than 3—4 hours when a coordinated approach to the control of pain, nausea and vomiting and to early post-operative ambulation was instituted.

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