The Group A was composed of 15 males (30%) and 35 females and B of 50 patients each:

- The 100 patients (31 male, 69 female) were divided in two groups A and B. The differences between group A and B were the incidence of laparotomic conversion (22% in the group A vs 10% in the group B) and the operating time (110' group A vs 75' group B). Time of hospitalization was shorter in patients undergone to early surgery (5 days) compared to patients undergone to delayed surgery (8.5 days). Postoperative complications rate was of 10% in group A and 6% in group B. 
- The Group A was composed of 15 males (30%) and 35 females (70%). The average age was 58 years (range 45-82 year).
- The group B was composed of 16 males (32%) and 34 females (68%). The average age was 58 years (range 45-82 year). In this group were included patients treated with delayed laparoscopic cholecystectomy; these patients were accepted from PS and first treated with conservative medical therapy and, after approximately 40 days, with elective laparoscopic cholecystectomy.

Laparoscopic surgery represents gold standard in the acute cholecystitis treatment. In our experience, delayed surgery showed a lower rate of conversion and morbidity.

Materials and methods: A monocentric retrospective study was performed on 100 patients affected by acute cholecystitis. The group A, consisting of 15 males (30%) and 35 females (70%) was treated with early laparoscopic cholecystectomy. The group B, consisting of 16 males (32%) and 34 females (68%), was undergoing delayed laparoscopic cholecystectomy approximately after 40 days.

Results: The differences between group A and group B were the incidence of laparotomic conversion (22% in the group A vs 10% in the group B) and the operating time (110' group A vs 75' group B). Time of hospitalization was shorter in patients undergone to early surgery (5 days) compared to patients undergone to delayed surgery (8.5 days). Postoperative complications rate was of 10% in group A and 6% in group B. Cases of mortality were not reported. Factors that influenced conversion to laparotomic surgery were: belonging to male sex, leukocytosis (>18000 WBC) and PCR (>20 MG/DL). In acute forms edema and tissues friability were common causes that hindered the dissection of the concerning structures. Instead, the new formed adherences observed in patients undergone to delayed surgery has not been an obstacle to dissection.

Conclusions: Laparoscopic surgery represents gold standard in the acute cholecystitis treatment. In our experience, delayed surgery showed a lower rate of conversion and morbidity.

KEYWORDS: Cholecystitis, laparoscopy, laparotomy.
UI/L); GOT (79-231 IU/L); total bilirubin (1.9-3.4 mg/dL); direct bilirubin (0.60-1.3 mg/dL); PCR ≥11.5 mg/dL;

- Ultrasound showing gallbladder wall thickness greater than 4 mm, gallbladder distension, inflammatory pericholecystic liquid, positive Murphy, presence of stones in the infundibulum.

We have registered age, weigh, sex, tobacco and alcohol usage, preoperative comorbidities (diabetes mellitus, liver disease, COPD, heart disease, cancer), ASA scale, previous abdominal surgery, time between onset of symptoms and surgery (timing), operative time, hospital stay and total hospital stay.

Patients excluded from the study were those with: emphysematosis cholecystitis; Mirrizi Syndrome; ASA IV; septic shock; pregnancy; severe cardiopathy; patients entered group B after stabilization who presented resumption of symptomatology within the time between discharge and second hospitalization.

Patients affected by cirrhosis (child-Pugh C) and in therapy with oral anticoagulants derived from coumarin assigned to B group. All the remaining patients were randomized using sealed envelopes (flow Diagram). Cholecystectomy was performed by the same operator, with the same technique and working tools. Surgical times followed to perform urgency laparoscopic cholecystectomy were those developed for elective surgery. Only in a presence of a marked distension of the gallbladder was performed a puncture from outside (fig.1).

The data obtained were analysed with “statistica v.10” software.

![Fig.1 – gallbladder drainage](image)

**Results**

In group A, 50 patients undergone to early cholecystectomy surgery between the 10° and the 72° hour following the hospitalization; cholangiopancreatography RM was not performed. The mean operating time was 110 minutes (from 70 to 150 minutes). The time limit for conversion in case of intraoperative technical issues were 60-90 minutes. In the 22% of patients (11/50 of which 7 M and 4 F) was necessary to perform conversion to laparotomy; of these conversion, 6 were decided to convert when reached the 50 minutes, despite the range limit for conversion in case of intraoperative technical issues were 60-80 minutes. In 8 patients of group A the hospital stay was 2 days longer than in the other 3 who stayed for the same time of those undergone to laparoscopic cholecystectomy, while in group B only 1 hospitalization lasted 2 days longer.

The hospital stay was significantly longer in the second group B (P <0.01). The hospital stay was significantly longer in the second group B (P <0.01). The hospital stay was significantly longer in the second group B (P <0.01).

The average intervention time between group A and group B does not show significant differences (P <0.01). In the acute phase, males show an increased conversion rate (9/50); 5 of these have presented a leucocytosis ≥18.000 mm3 and PCR ≥20mg/dl.

The operating time in patients undergone to conversion was extended to 60-80 minutes. In 8 patients of group A the hospital stay was 2 days longer than in the other 3 who stayed for the same time of those undergone to laparoscopic cholecystectomy, while in group B only 1 hospitalization lasted 2 days longer.

The hospital stay was significantly longer in the second group B (P <0.01) (result from the sum of two admissions).

**Discussion**

The 2-20% of the world population has gallstones and 15% of these develop acute cholecystitis with a mortality rate of 0-10%.

The therapeutic approach of acute cholecystitis has been modified in recent times.

The concept of "cooling" acute cholecystitis and treating it later, after the complete resolution of the acute event is a source of debates:

1) Every flogistic event that affects the gallbladder causes a fibrotic reaction;
2) 26% of patients with acute empyetic or gangrenous cholecystitis does not respond to conservative therapy and require surgical treatment in acute phase.

Also, a review of the literature on comparative studies on early or delayed laparoscopic cholecystectomy reveals that:

- there is no statistically significant difference in biliary tract lesions (0.5% in patients undergoing early cholecystectomy vs 1.4% delayed);
- there is no difference in morbidity and mortality between the two groups;
- the global and post-operative hospital stays are lower in patients undergoing early cholecystectomy;
- advanced age does not preclude the indication for laparoscopic cholecystectomy.

The Socieété FranCaise de Chirurgie Digestive defines early surgery less than 7 days from hospitalization and delayed after 6-12 week interval. According to other studies, the interval between admission and intervention varies from: 5 Days, 11, 12 hours, 24 hours or 24 hours. In fact in the first 48 hours, the inflammation increases the...
parietal edema that facilitates the dissection of the gallbladder from liver bed; after this period, the inflammation induces parietal alterations (necrosis, fibrosis and parietal abscesses) and tenacious adhesions of the bowel to the surrounding structures.

Although initially it was considered a contraindication, today Laparoscopic cholecystectomy is considered the treatment of choice for acute cholecystitis (EAES Consensus Conference 2006) 1-5.

Despite the surgeon’s experience, compared to uncomplicated, today the conversion rate in acute cholecystitis is still high (from 10% to 21.7%); the wall edema and inflammatory adhesions make difficult the identification and isolation of the structures, increasing surgical risk (hemorrhage, lesion of the main bile duct). 6

Many studies have been conducted to identify the risk factors responsible for conversion: belonging to male sex 2.3, age 2.4, obesity 2.5, previous surgeries 2.6, increased wall thickness of the gallbladder, increased CRP levels (CRP ≥ 3 mg/dL), white blood cells and alkaline phosphatase ≥ 1.5 UL, onset ≥ 72 hours symptoms, acute cholecystitis 3.6, portal hypertension 7, Mirizzi syndrome, cancer of the gallbladder 8, and experience of the surgeon 1.6. However, the increased CRP ≥ 3 mg/dL, the duration of preoperative symptoms, the male and increased white blood cell count ≥ 180.000/mm³ seems to be the most important risk factors for conversion 1.6. Rattner divides a series of laboratory factors (leukocytosis ≥ 14.000/mm³, increased alkaline phosphatase) 1.6 to the predictive of conversion laparotomy 1.6.

These data were confirmed by Lapaorte in a review of 246 patients from 4 controlled clinical trials 5-8; in this study were found a series of laboratory risk factors predictive of conversion laparotomy and divided into preoperative factors (over 65 years of age, leukocytosis ≥ 13.000/mm³ and gangrenous cholecystitis) and intraoperative factors (hydrops or empyema of the gallbladder, gangrenous cholecystitis) 5. All these criteria are variable depending on the experience of several teams; in fact, the value of WBC oscillates between 13.000/mm³-14.000/mm³ and 17.000/mm³-18.000/mm³ and CRP ≥ 20 mg/dL. These factors does not induce the surgeon to choose laparotomy, but the possibility of conversion is only determined during surgery, considering the value of these risk factors relative to absolute value 5. Our approach has changed, giving more value to these predictive factors.

We also considered the conversion an event to decide during the surgery if there are obvious difficulties. In our experience we have found more conversions, in Group A, due to edema, increasing the caliber of the cystic and nearby structures. Conversion to open surgery is not specifically a disadvantage for the patient but rather an act of safety to prevent complications. If the anatomy is unclear, the surgeon should never hesitate to convert 1. The laparoscopic surgery is converted into open surgery if you encounter difficulties in organ dissection. For this reason, we placed a time limit (30-60 min) for conversion, if there is any difficulty in displaying the calot triangle. Instead, we proceed directly to open surgery if the patient has leukocytosis ≥ 18.000/mm³, PCR ≥ 20 mg/dL and fever.

Currently many surgeons believe that the incidence of laparotomy conversions, in early laparoscopic cholecystectomies, for acute cholecystitis, is greater than those performed after conservative medical treatment. These data are a source of controversy, in fact, other authors have shown a higher conversion rate in delayed surgery 9. The SociétéFrançaise de Chirurgie Digestive and meta-analysis of controlled clinical trials; in this study were found a series of preoperative factors (over 65 years of age, leukocytosis ≥ 13.000/mm³ and CRP ≥ 20 mg/dL, open surgery is performed directly. In our opinion it is necessary to expand the number of cases to study for data collection with national trial to test the complications and therefore patient safety.

The surgeon should never hesitate to convert when the anatomy of Calot triangle and adjacent structures is unclear.

References


