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Original research

Which differences do elderly patients present in single-stage treatment for cholecysto-choledocholithiasis?

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ABSTRACT

Patients with symptomatic gallstones present common bile duct stones in approximately 10% of cases. It is possible to resolve both gallbladder and bile duct stones with a single procedure. The aim of this study is to determine the effectiveness of a single stage procedure for gallbladder and bile duct stones in the elderly patients and to expose the differences between the various techniques. From January 2008 to December 2013, we treated 1540 patients with gallbladder stones. In 152 cases, we also found bile duct stones. 150 of these were treated in a single stage procedure. We divided our patients into 2 groups: Group A was younger than 65 (104 patients); Group B was 65 or older (46 patients). We retrospectively compared sex, ASA score, conversion rate, success rate, post-operative complications, hospital stay, and treatment method. We had no intra-operative mortality. 1 patient in Group B, heart condition (ASA 4), died with multiple organ failure (MOF) 10 days after his operation. ASA score: 3.5 ± 0.5 in A vs 2 ± 0.9 in B (*P* 0.001), post-operative complications 6% in A vs 18.1% in B (*P* 0.0325) and hospital stay 4.1 ± 2.3 in A vs 9.5 ± 5.5 in B (*P* 0.0001) were significantly higher in Group B. No differences were found in term of success rate: 94% in A vs 90% in B (*P* 0.4944). The procedure used to obtain the clearance of the bile duct showed a different success rate across the two groups: for the patients under 65 years old, trans-cystic clearance (TC-CBDE) was successful in 90% of cases, and only 51% for those older than 65, where we had to recall 49% for laparo-endoscopic rendez-vous (RV-IOERC) (*P* 0.0014). In conclusion, single stage treatment is safe and effective also to elderly patients. The methods used in patients being younger than 65 years old is what appeared to be significantly different.

1. Introduction

The incidence of gallbladder stones increases with age and after 65 between 12 and 20% of the population show symptoms that require surgical intervention [1]. Generally the elderly patient shows more advanced symptoms which coexist with other pathologies [2]. For these patients, the probability of contemporaneous bile duct stones is higher and it is essential to select the appropriate treatment.

While laparoscopic cholecystectomy (CL) is accepted as the treatment of choice for simple gallbladder stones [3], the preferred treatment in the 10% of cases in which common bile duct stones are also present is still debated [4–6]. During the first decades of the era of laparoscopic treatment of common bile duct stones, treatment was almost entirely endoscopic and Retrograde Cholangiopancreatography (ERCP) was proposed pre- or post-cholecystectomy [7]. Despite the good results obtained, several issues did present drawbacks: the number of unnecessary stages (10%) [8]; a non-negligible complication rate between 0.8 and 11.1% [9]; a mortality rate between 0.1 and 3.3% [10].

The development of laparoscopic techniques also demonstrated that it was possible to resolve both gallbladder and bile duct stones

Abbreviations: ASA, American society of anesthesiologists; MOF, multiple organ failure; TC-CBDE, trans-cystic common bile duct extraction; RV-IOERC, rendezvous-intraoperative endoscopic retrograde cholangiopancreatography; ERCP, endoscopic retrograde cholangiopancreatography; CL, laparoscopic cholecystectomy; CBD, common bile duct.

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with a single stage procedure [11]. Therefore, the current treatment options to address the gallbladder and common bile duct stones are two: treatment in either one or two stages. Several studies have shown that both methods are equivalent in terms of efficacy, morbidity, and mortality [12].

But it is now accepted that treatment with a single stage lowers costs and is generally more accepted by the patient, who undergoes fewer hospital admissions [13]. Therefore treatment in a single stage permits the resolution of pre-operatively unsuspected common bile duct stones [14].

The aim of this study is to determine the effectiveness of a single stage procedure for gallbladder and bile duct stones in the elderly patients and to expose the differences between the various techniques.

2. Methods

From January 2008 to December 2013, we treated 1540 patients with gallbladder stones. In 152 cases, we also found bile duct stones. 150 of these were treated in a single stage procedure. Of these patients, 46 were 65 years old or older. We employed a flow cart to treat the gallbladder and bile duct stones together, in which we assess the degree of complexity of the methods (Fig. 1). Firstly, we attempted a trans-cystic clearance (TC-CBDE) and, if this failed, we performed a laparo-endoscopic procedure (RV-IOERC). We divided our patients into 2 groups: Group A was younger than 65 (104 patients); Group B was 65 or older (46 patients). We retrospectively analyzed each group on the basis of sex, ASA score, conversion rate, success rate, post-operative complications, hospital stay, and treatment method.

Continuous variables were compared using the Mann–Whitney *U* test. Categorical variables were compared using the Fisher exact probability test or the chi-square test, when appropriate. Differences with a *P* value of less than 0.05 were considered statistically significant. Analysis was performed with Graphpad Quickcalcs or Graphpad Prism version 5.

3. Results

We had no intra-operative mortality. 1 patient in Group B, heart condition (ASA 4), died with multiple organ failure (MOF) 10 days after his operation.

The results showed no significant differences between the two groups regarding sex. However, the ASA score was significantly higher for patients older than 65 (3.5 ± 0.5) than for those under 65 (2 ± 0.9) (*P* 0.001) (Table 1).

The conversion rate was similar across the two groups: 3.8% (4 patients) and 4.3% (2 patients) respectively. The causes of the conversions were: local inflammation (3 patients); indistinct anatomy (2 patients); impossibility of obtaining an adequate clearance (3 patients). The success rate of the single stage method was not deferred for the patients older than 65, obtaining a complete resolution in 90% of cases compared to 94% for those younger than 65.

The rate of complication was higher in Group B (18.1%) compared to Group A (6%) (*P* 0.0325). It is noticeable how the rate of a specific complication, bile leakage, was the same, while the rate of general complication was much higher (Table 2).

Table 1
Variables Group A and Group B.

Variables	Group A (<65 aa) 104 pt	Group B (>65 aa) 46 pt	*P*
Gender (male)	49 (47%)	26 (57%)	0.3761
ASA score, mean ± DS	2.0 ± 0.9	3.5 ± 0.5	0.001
Conversion rate	4 (3.8%)	2 (4.3%)	1.0000
Success rate	94 (94.0%)	40 (90.0%)	0.4944
Complications	6 (6.0%)	8 (18.1%)	0.0325
Hospital stay (days), mean ± DS	4.1 ± 2.3	9.5 ± 5.5	0.0001
Treatment	TC-CBDE 90% (90 pt) RV-IOERC 10% (10 pt)	TC-CBDE 51% (29 pt) RV-IOERC 49% (15 pt)	0.0014

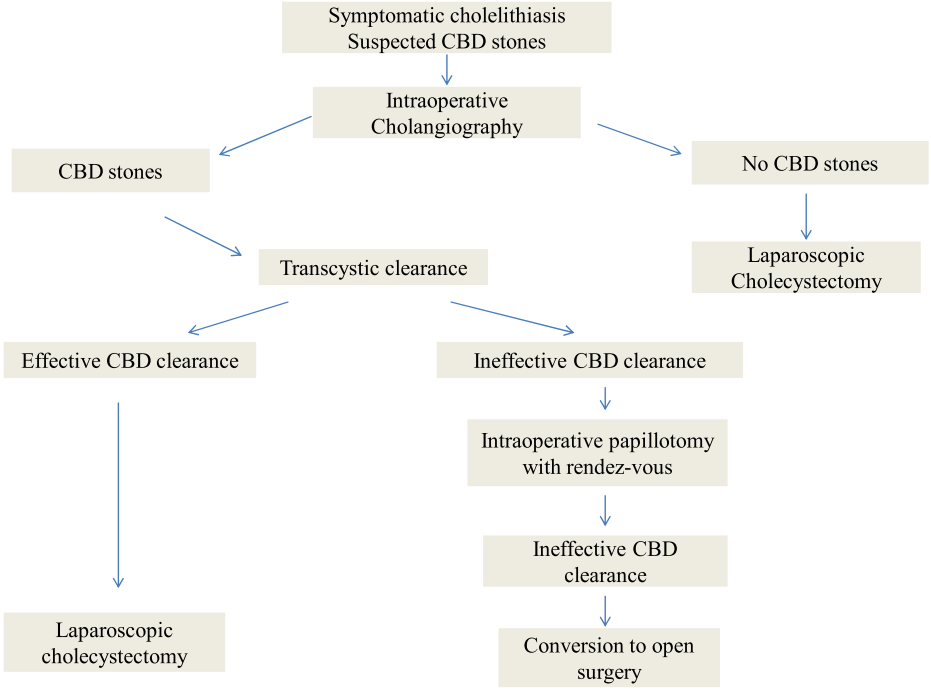

Fig. 1. Flow chart in the treatment of cholecysto-choledocholithiasis.