ORIGINAL ARTICLE

Does the subtotal cholecystectomy rate for acute cholecystitis change with previous endoscopic retrograde cholangiopancreatography?

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ABSTRACT

BACKGROUND: Acute cholecystitis is one of the most common emergent surgeries. As a safe alternative in challenging operations, laparoscopic subtotal cholecystectomy (LSC) is widely used. We questioned whether the results in acute cholecystitis cases changed with a history of endoscopic retrograde cholangiopancreatography (ERCP). When we searched the literature, we could not find a study focusing on the subtotal cholestectomy results in acute cholecystitis. In our study, we aimed to investigate whether the history of ERCP affects the rates of subtotal cholecystectomy (SC) in acute cholecystitis.

METHODS: The results of patients (n=470) who underwent surgery for acute cholecystitis at our clinic between 2016 and 2019 were retrospectively evaluated. The patients were divided into two groups according to their history of ERCP. The primary outcome was the SC rate. The secondary outcomes were conversion to open, postoperative complications, serious complications, operative duration, and length of hospital stay.

RESULTS: The standard group included 437 patients, whereas the ERCP group included 33 patients. A total of 16 patients underwent SC, with 15 in the standard group and 1 in the ERCP group. There was no significant difference in terms of SC rates between groups (P=0.902). While four cases of operation were completed with conversion to open in the non-ERCP group, no conversion was seen in the ERCP group (P=0.581). No significant differences were detected between the groups in terms of complications, serious complications, operation duration, length of hospital stay, and mortality.

CONCLUSION: The results of this study showed that ERCP is not related to an increased rate of SC and conversion in patients with acute cholecystitis. Laparoscopic cholecystectomy for acute cholecystitis can be safely performed in patients with a history of ERCP. LSC is a safe procedure in challenging patients, and fenestrating SC can be preferred to avoid hazardous consequences in such cases.

Keywords: Acute cholecystitis; endoscopic retrograde cholangiopancreatography; laparoscopic cholecystectomy; laparoscopic subtotal cholecystectomy.

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INTRODUCTION

Laparoscopic cholecystectomy (LC) is indicated and practiced as the gold standard treatment modality for gallstone disease worldwide. Although initially thought to be relatively contraindicated, randomized studies and meta-analyses have demonstrated that LC for acute cholecystitis is safe over time.[1-5] Although most cholecystectomies are completed laparoscopically in acute cholecystitis, an open approach may be needed as an alternative procedure in some challenging cases. However, conversion to open surgery does not always guarantee better visualization of the gallbladder and bile ducts, nor does it guarantee a safer operation. In addition, it may not guarantee a total cholecystectomy and it has been reported that it may lead to more serious bile duct complications.[6] In that context, laparoscopic subtotal cholecystectomy (LSC) has been accepted as a safe alternative to conversion in several studies and meta-analyses, since its first report in 1993.[6-10]

The number of studies on subtotal cholecystectomy (SC) in the literature is limited, although it has largely replaced the conversion to open in surgical practice.[11] Acute cholecystitis is one of the most commonly reported indications for emergency surgery, and we submit that it is also a neglected clinical situation in the way it is affected by endoscopic retrograde cholangiopancreatography (ERCP). Therefore, we conducted a new study involving these two neglected clinical conditions.

The aim of this study was to determine whether a history of ERCP is associated with SC rates in patients who underwent LC with a diagnosis of acute cholecystitis.

MATERIALS AND METHODS

With approval from the institutional ethics committee of the University of Health Sciences, Bakırköy Dr. Sadi Konuk Health Research and Application Center (2022/399), the hospital's software system was used for the data collection and analysis. The study was also registered with the Clinical Trials Protocol Registration and Results System (Trial ID: NCT05728073). The study also followed the guidelines of The Strengthening the Reporting of Observational Studies in Epidemiology" statement and complied with the principles of The Code of Ethics of the World Medical Association (Declaration of Helsinki).

The results of patients who underwent surgery for acute cholecystitis at a single center between January 2016 and December 2019 were retrospectively evaluated. Patients aged ≥18 years were included in this study. Despite being diagnosed with acute cholecystitis, some patients were excluded for the following reasons.

• Initial and direct preference for open method

• Being diagnosed with malignity after histopathological evaluation

• Being operated on just before 1 week after ERCP or after more than 6 weeks after ERCP.

In our clinical protocol, early LC is preferred for all patients who have right upper quadrant pain for 7–10 days and are diagnosed with acute cholecystitis, except for patients with American Society of Anesthesiologists (ASA) scores greater than III or a need for postoperative ICU. This timing approach has also taken its place among the recommendations in the World Society of Emergency Surgery (WSES) 2020 guidelines for the diagnosis and treatment of acute cholecystitis.[12]

The primary outcome was the SC rate, while the secondary outcomes were conversion to open surgery, complications, and serious complications. In examining demographic findings, operative records (rates for SC and conversion to open surgery, operative duration) and follow-up results (postoperative complications, serious complications, length of hospital stay, and mortality) for all cases were investigated. A Clavien–Dindo score ≥3 was considered a serious complication. Intraoperative detection of gallbladder perforation was also noted and was included in the comparison. Any biliary tract complication that required a percutaneous or endoscopic intervention, was identified as a "biliary leak" in the study.

Operative Technique

All surgeries were performed for the initial purpose of total removal of the gallbladder. The standard technique with four ports and American position was used. Mid-to senior-level residents performed most of the operations with a percentage of 94%, under the supervision of experienced specialists. The others are completed directly by specialists in case of need. All decisions for conversion or SC were taken by specialists. The hepatobiliary surgeon or a second specialist, if possible, was consulted during working hours for the decision to convert or SC. After performing the SC, a decision was given by the specialist regarding fenestrating or reconstituting SC, depending on the conditions around the remnant gallbladder portion.

Endoscopic Technique

All ERCP procedures were performed under general anesthesia. A Fujinon duodenoscope and imaging system (© FUJIFILM Corporation, Tokyo, Japan) were used for the procedures. After controlling the system and equipment, the procedures were started with the left lateral position of the patient, and the endoscope was advanced from the incisors to the duodenum in an appropriate manner. After localizing the papilla, the patient was placed in the prone position for cannulation. Because ERCP procedures are mostly performed for therapeutic purposes, cannulation with a guidewire-loaded sphincterotome was more frequently preferred. Cannulation was performed with a needle-knife pre-cut sphincterotomy when required. Following selective bile duct cannulation, the common bile duct was evaluated and treatment was planned. Stone extraction was performed using a balloon and a bas-

ket catheter. Mechanical lithotripsy was also performed when deemed appropriate by the endoscopist. Complete blood count and laboratory tests, including amylase and lipase values, were routinely performed 3 h and 24 h after the procedure to detect complications.

Statistical analyses were evaluated with the help of the SPSS 22 package programs (Statistical Package for the Social Sciences; SPSS Inc., Chicago, IL, USA). In this study, descriptive data are shown as n and % values in categorical data, mean ± standard deviation ,and median interquartile range (IQR) (25–75 percentile values) in continuous data. Chi-square analysis (Pearson's Chi-square) was used to compare categorical variables between the groups. The normality of continuous variables was evaluated using the Kolmogorov–Smirnov test. The Mann–Whitney U test was used to compare the two independent groups. The statistical significance level was set at $P<0.05$.

RESULTS

Initially, 503 operated patients were retained in the study interval, however, four patients that were operated on for the diagnosis of acute cholecystitis in the study period were excluded. The first two patients had a pathology report of malignancy, and the other two patients had an operation started directly with the open method. Patients who underwent surgery in the 1st week after ERCP or more than 6 weeks after ERCP were excluded from the study. After these exclusions, the first group included patients who did not have a previous ERCP before the operation (Group 1, n=437), and the second group included patients who had undergone a previous ERCP (Group 2, n=33). The results were compared according to the flowchart as shown in Figure 1.

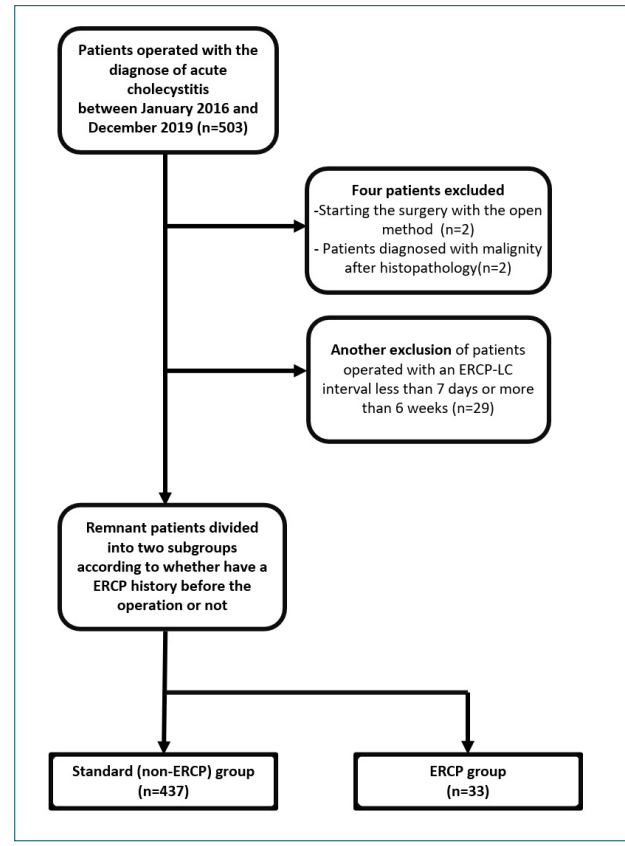

Figure 1. Flowchart diagram of the study

The median age in the standard group (non-ERCP) was 47 years, whereas the median age was 46 years in the ERCP group, and no statistically significant difference was detected in terms of age (P=0.242). While 48.7% of those who did not undergo ERCP were female and 51.3% were male, 69.7% of those who underwent ERCP were female and 30.3% were male. There was a significant difference between the groups

Table 1. Baseline characteristics of the groups

Variables	Non-ERCP (n=437), n (%)	ERCP (n=33), n (%)	P-value
Age			
Mean±SD	48.5±14.1	44.9±14.2	0.242*
Median (IQR)	47 (37–57)	46 (34–55)	
Male	224 (51.3)	10 (30.3)	0.02**
ASA			
I	58 (13.3)	9 (27.3)	0.183**
II	332 (75.9)	22 (66.7)	
III	47 (10.7)	2 (6.1)	
CCI			
Mean±SD	1.0±1.4	0.8±0.9	0.783*
Median (IQR)	0.0 (0.0–1.0)	1.0 (0.0–1.0)	

*Mann–Whitney U-analyse, **Chi-square analyse; ASA: American Society of Anesthesiologists; CCI: Charlson Comorbidity Index; ERCP: Endoscopic retrograde cholangioretropancreatography; IQR: Interquartile range; SD: Standard deviation.

Table 2. Comparison of operative and postoperative data between groups

Operative variables and postoperative outcomes	Non-ERCP (n=437), n (%)	ERCP (n=33), n (%)	P-value
Subtotal Cholecystectomy	15 (3.4)	1 (3.0)	0.902
Conversion to open	4 (0.9)	0	0.581
Complication	12 (2.7)	0	0.335
Serious complication	11 (2.5)	0	0.356
Gallbladder perforation	28 (6.4)	0	0.246
Duration of operation (min)			
Mean±SD	95.7±31.1	100.5±28.6	0.209**
Median (IQR)	90 (74–110)	95 (85–110)	
Length of hospital stay, (days)			
Mean±SD	2.1±3.2	2.6±4.2	0.412**
Median (IQR)	2 (1–2)	1 (1–3)	

*Mann–Whitney U-analyse, **Chi-square analyse; ERCP: Endoscopic retrograde cholangioretropancreatography; IQR: Interquartile range; SD: Standard deviation; TC: Total cholecystectomy.

in terms of sex (P=0.02). The groups were also similar in terms of both ASA and Charlson Comorbidity Index CCI scores. Comparison of preoperative data is shown in Table 1.

Median period for the ERCP-LC interval in the ERCP group was 15 days (IQR=10–25.5). The mean ERCP-LC interval was found to be 18.2±9.5. The indications for preoperative ERCP were cholangitis (n=6), choledocholithiasis (n=25), and cholangiopancreatitis (n=4).

The primary outcome of our study was the SC rate, which did not differ significantly between groups. The secondary outcomes, including conversion and complication rates, are shown in Table 2. No mortality was detected in both groups.

In the ERCP group, no postoperative complication was detected. The non-ERCP group included twelve patients (2.74 %) who experienced a postoperative complication, nine of which were serious. Table 3 presents a summary of complications and their management.

One of the bile leaks was a Strasberg A bile duct injury managed with both ERCP and percutaneous drainage. Additional ERCP needs were detected in the other three patients.

SC was performed in 16 patients. Reconstituting SC was performed in only 3 patients. Fenestrating SC was preferred

Table 3. Patients experienced complications

Gender	Surgical procedure	Total/SC	Complication
Male	Laparoscopic cholecystectomy	TC	Intraabdominal abscess (managed with PD)
Male	LSC	LSC	Bile leak (managed with ERCP)
Female	LSC	LSC	Bile leak (managed with ERCP)
Female	CSC	CSC	Intraabdominal collection (resolved spontaneously)
Male	CTC	CTC	Surgical site infection (managed with IV antibiotics)
Female	Laparoscopic cholecystectomy	TC	Intraabdominal collection (resolved spontaneously)
Male	Laparoscopic cholecystectomy	TC	Portsite hernia (managed with laparotomy)
Female	Laparoscopic cholecystectomy	TC	Bile leak (managed with ERCP)
Male	Laparoscopic cholecystectomy	TC	Bilioma (managed with PD)
Female	Laparoscopic cholecystectomy	TC	Bilioma (managed with PD)
Female	Laparoscopic cholecystectomy	TC	Strasberg A BDI (managed with ERCP + PD)
Female	Laparoscopic cholecystectomy	TC	Duodenal perforation (managed with laparotomy)

SC: Subtotal cholecystectomy, LSC: Laparoscopic subtotal cholecystectomy; CSC: Converted subtotal cholecystectomy; CTC: Converted total cholecystectomy ; IV: Intravenous.

Table 4. Results of subtotal cholecystectomy patients

Group	Surgical procedure	Type of SC	Postoperative complication
ERCP	LSC	Fenestrating	-
Non-ERCP	CSC	Reconstituting	-
Non-ERCP	LSC	Fenestrating	-
Non-ERCP	CSC	Fenestrating	-
Non-ERCP	LSC	Fenestrating	-
Non-ERCP	LSC	Fenestrating	-
Non-ERCP	LSC	Fenestrating	Bile leak (managed with ERCP)
Non-ERCP	LSC	Fenestrating	-
Non-ERCP	LSC	Fenestrating	-
Non-ERCP	LSC	Fenestrating	-
Non-ERCP	LSC	Fenestrating	-
Non-ERCP	LSC	Reconstituting	-
Non-ERCP	LSC	Fenestrating	Bile leak (managed with ERCP)
Non-ERCP	CSC	Fenestrating	Intraabdominal collection (managed conservatively)
Non-ERCP	LSC	Fenestrating	-
Non-ERCP	LSC	Reconstituting	-

SC: Subtotal cholecystectomy, LSC: Laparoscopic subtotal cholecystectomy; CSC: Converted subtotal cholecystectomy.

in 13 patients. LSC was preferred in the majority of cases (81.25%, n=13). Two patients needed postoperative ERCP in the SC group due to bile leak (12.5%). Another patient was diagnosed with intra-abdominal collection that did not require drainage and resolved spontaneously. No completion of cholecystectomy is needed for patients who underwent SC in the postoperative period. The median follow-up period was 26 months with a range of 1–4 years. The results of the SC are shown in Table 4.

DISCUSSION

To the best of our knowledge, this is the first study to focus on the relationship between ERCP history and challenging conditions in patients diagnosed with acute cholecystitis. It has been reported that there is a relationship between a history of ERCP and more complicated outcomes in elective cases.[13,14] However, the results of our study are dissimilar: previous ERCP did not change the rate of SC. Conversion and complication rates were not different, either.

Gallstone disease is accompanied by bile duct stones in 15%–20% of cases.[13] ERCP has been accepted as an effective method for the treatment of choledocholithiasis for decades. However, ERCP is also a predictive risk factor for difficult cholecystectomy.[13,14] Conversion to open is one of the most frequently investigated outcomes in the context of difficult cholecystectomy.[13,15,16] As mentioned above, studies on SC in the literature are limited, although it has largely replaced the conversion to open in surgical practice.[11] Acute cholecystitis is also a neglected clinical situation in the way it is affected by ERCP. Therefore, we designed our study with these two relatively neglected clinical conditions in mind.

The results of our preliminary investigation were presented at the 8th International Congress of the WSES, and there was no significant relationship between ERCP history, SC rate, and conversion to open in patients who underwent surgery for acute cholecystitis. However, following peer recommendations after the oral presentation and literature review, we excluded two groups of patients and reinvestigated the results. The first excluded group included patients who underwent surgery in the 1st week after the procedure, which is the period when ERCP-related effects are not yet expected to occur. It has already been reported that negative outcomes can be minimized even in elective cases that are operated early after ERCP.[17] The second excluded group included patients with an interval of >6 weeks between ERCP and LC. ERCP-related effects may not have been detected with the inclusion of patients who underwent surgery within this interval. After 6 weeks, inflammatory changes due to ERCP may be reduced.[13] The results of a study conducted by De Vries et al. might be interpreted as a confirmation of the hazardous potential of mid-term interval.[15] The proportion of patients in the middle interval (2–6 weeks) of the total patient cohort was lower in this study. This may be another reflection of the timing preference for patients undergoing LC after previous ERCP. Furthermore, conversion to open was found to be higher in the mid-interval patients than in the other two intervals in the same study. On the other hand, it was mentioned in another study by Grosek et al. reported

that LC can be performed either early or late after ERCP, and the rationale for both approaches was indicated. With early surgery, the recurrence of symptomatic biliary events can be prevented. Surgery can be performed in the late period to wait for recovery from the negative effects due to the patient's first clinical status.[18] Considering these perspectives, we reshaped our investigation by excluding these two groups to observe the most obvious relevance for ERCP.

Many explanations have been proposed to explain why ERCP complicates standard elective cholecystectomy operations. In patients with a history of ERCP, the passage of common bile duct stones may cause inflammation around the Calot triangle. Another plausible reason is the triggering of fibrosis from the hepatoduodenal ligament due to cholangitis and pancreatitis in these patients. In addition, manipulations performed during ERCP and the use of contrast material were also performed. Bacterial contamination of the bile ducts, which are considered sterile, after ERCP has also been suggested as a potential reason. Pre-cut sphincterotomies, and difficult or failed cannulations can be considered either in that context.[13,16,19,20] Despite all these possible consequences, it was determined in our study that a history of ERCP did not significantly affect the results of SC and conversion to open in patients who were diagnosed with acute cholecystitis. However, in an elective setting, ERCP was found to affect some results.[14] There may be some explanation for not detecting differences due to ERCP in emergency cholecystectomies, contrary to elective ones. One of the factors that distinguish patients with acute cholecystitis from standard elective cholecystectomy patients is infected bile. Therefore, we may need to further consider bacterial contamination when questioning the source of potentially challenging results in LC operations performed after ERCP. New randomized studies focusing on bacterial contamination will make notable contributions to this topic.

SC is a method in which a small portion of the gallbladder is left in situ and is preferred in conditions where dissection of the gallbladder from the liver bed might be dangerous or achieving the critical view of safety in Calot triangle safely is not possible. The method was first reported as an unplanned modification in 1898 by Kehr, and since 1993, it has also been performed laparoscopically.[21,22] Nowadays, it is well known that, within the increasing laparoscopy experience among surgeons, LSC is being favored against conversion while lowering bile duct injury rates by almost 0% in many studies.[8,10,11,22] As a reflection of the challenging conditions, SC is performed more frequently in acute cholecystitis. This data reminds the fact that the increased conversion risk was previously reported to be higher in these cases. It can be seen that LSC takes the place of conversion to open in acute cholecystitis, as well as scheduled cases.[22-24] Our study also shares similar results with that trend.

The conversion risk has been reported to be higher in acute cholecystitis; however, the rate of open total cholecystectomy has also been reported to decrease from 27.8% to 13.1% in acute cholecystitis cases.[24] Moreover, as mentioned in a number of studies, new-generation surgeons who are accustomed to laparoscopy early are not prone to prefer conversion to open surger.[25] Therefore, it is not surprising to observe a preference for LSC rather than conversion in upcoming years.

Another fact detected in our study was the tendency for fenestrating SC. Fenestrating SC was preferred in 70% of the patients with SC. Due to the low number of patients who underwent SC, it was not possible to perform a significant statistical sub-analysis between the fenestrating and reconstituting SC subgroups. Despite this, there is a low rate of serious complications in the fenestrating SC subgroup (23%); therefore, it may be preferred. In that context, the "less is more" approach has already been advocated to avoid hazardous results.[25] In addition, reconstituting the SC was found to have more long-term morbidity.[26] In cases of easy access to ERCP and interventional procedures, fenestrating the SC should be preferred to avoid serious biliary or vascular injuries during emergency operations.

It should be emphasized that every surgeon should be mindful of the malignancy potential, while a small part of the gallbladder remains in situ. Also, it must be remembered that while performing LSC, it is not uncommon for gallbladder contents to spill around the peritoneal cavity. Suspicion of malignancy must be excluded within preoperative imaging in patients with severe acute cholecystitis that carries the potential. In some studies, the incidence of incidental gallbladder cancer was reported to be in the 0.2%–2% range. It has been emphasized that the risk increases in the presence of older female patients and high levels of alkaline phosphatase(ALP), aspartate aminotransferase (AST), and bilirubin.[27,28] US findings and patient history can serve as indicators.[7,11] Therefore, an additional preoperative workup is considered advisable when suspected.

A significantly higher rate of complications can be expected in the ERCP group due to pre-existing inflammation. It should be noted that the patients in the ERCP group underwent surgery between 8 and 42 days after the procedure. However, our analysis did not confirm the expectation that a history of ERCP might be associated with significantly more complications. In the study by Reinders et al., ERCP was also not associated with significantly more complications.[14] However, in this study, the complexity and duration of surgery differed significantly between the ERCP and non-ERCP groups. In our study, operating time did not differ.

The predominantly therapeutic use of ERCP is recommended and is becoming an increasingly accepted trend, and this approach is also adopted in our clinic.[29,30] The therapeutic use of ERCP is of course a reason to increase sphincterotomy rates. In this context, there may be a relative advantage for patients like the ERCP group included in our study sample. Although the possibility of increased inflammation with bacterial contamination in acute cholecystitis patients with a

history of ERCP may be considered a disadvantage, the reduction in biliary pressure is another consequence of sphincterotomy and may be considered an advantage. This may be another reason why no significant additional complications were found in the ERCP group. It is also important to consider the fact that cannulation and ERCP can be performed with a higher success rate in patients with previous successful cannulation and sphincterotomy.[31] In the event of a potential postoperative complication, the ability to perform a second ERCP procedure with a relatively high success rate could be accepted as a further advantage. Considering that a history of ERCP is not associated with a significant increase in complications and that it is possible to safely perform postoperative follow-up and any necessary treatments, the decision for surgical intervention in patients with acute cholecystitis with a history of ERCP can be made with confidence.

Our study has some limitations. First, it is a single-center retrospective study. Second, there was no randomization due to the nature of the disease. On the other hand, the relatively small number of patients in the ERCP group can be accepted as a disadvantage. New studies with larger ERCP groups in this context will undoubtedly make a significant contribution to the discussion.

Conclusion

The results of the study showed that ERCP was not associated with an increased rate of SC or conversion in patients with acute cholecystitis. LC for acute cholecystitis could be safely preferred in patients with a history of ERCP. LSC is a safe procedure in difficult patients and fenestrating SC may be preferred first to avoid dangerous consequences in these cases.

Ethics Committee Approval: This study was approved by the Bakırköy Dr. Sadi Konuk Training and Research Hospital Clinical Research Ethics Committee (Date: 30.11.2022, Decision No: 2022-399).

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Authorship Contributions: Concept: Y.M.K., A.G., H.A.K., G.T.A.; Design: Y.M.K., M.K., A.G., H.A.K.; Supervision: M.K., G.T.A., A.K., T.D.; Data: Y.M.K., S.B.; Analysis: Y.M.K., M.K., T.D.; Literature search: M.K., Y.M.K., H.A.K., T.D.; Writing: Y.M.K., A.G., H.A.K., S.B.; Critical revision: Y.M.K., A.G., H.A.K., M.K., A.K., G.T.A.

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ORİJİNAL ÇALIŞMA - *ÖZ*

ERCP öyküsü akut kolesistitte subtotal kolesistektomi oranını değiştirir mi?

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AMAÇ: Akut kolesistit en sık yapılan acil ameliyatlardan biridir. Zorlu operasyonlarda güvenli bir alternatif olarak laparoskopik subtotal kolesistektomi (LSC) yaygın olarak kullanılmaktadır. Akut kolesistit olgularında ERCP öyküsü ile sonuçların değişip değişmediğini sorguladık. Literatürde doğrudan akut kolesistitte subtotal kolestektomi sonuçlarına odaklanan bir çalışmaya rastlamadık. Çalışmamızda akut kolesistitte ERCP öyküsünün subtotal kolesistektomi oranlarını etkileyip etkilemediğini araştırmayı amaçladık.
GEREÇ VE YÖNTEM: 2016-2019 yılları arasında kliniğimizde akut kolesistit nedeniyle ameliyat edilen hastaların (n=470) sonuçları retrospektif olarak değerlendirildi. Hastalar preoperatif ERCP öyküsü olup olmamasına göre ERCP grubu ve standart grup olarak iki gruba ayrıldı. Birincil sonuç subtotal kolesistektomi oranıydı. İkincil sonuçlar ise açığa dönüş, ameliyat sonrası komplikasyonlar, ciddi komplikasyonlar, ameliyat süresi ve hastanede kalış süresi idi.
BULGULAR: Standart grupta 437 hasta, ERCP grubunda ise 33 hasta tespit edildi. Standart grupta 15 ve ERCP grubunda 1 olmak üzere toplam 16 hastaya subtotal kolesistektomi yapıldığı tespit edildi. Gruplar arasında subtotal kolesistektomi oranları açısından anlamlı fark yoktu (p= 0.902). Standart grupta 4 olguda açığa geçiş ile ameliyat tamamlanırken, ERCP grubunda herhangi bir açığa geçiş görülmedi (p=0.581). Gruplar arasında komplikasyonlar, ciddi komplikasyonlar, operasyon süresi, hastanede kalış süresi ve mortalite açısından anlamlı fark saptanmadı.
TARTIŞMA: Bu çalışma, ERCP'nin akut kolesistit tanısı ile acil ameliyat edilen hastalarda artan subtotal kolesistektomi ve açığa geçiş oranı ile ilişkili olmadığını göstermiştir. Akut kolesistitte laparoskopik kolesistektomi, ERCP öyküsü olan hastalarda da güvenle uygulanabilir. Laparoskopik subtotal kolesistektomi, zorlu hastalarda güvenli bir prosedürdür ve bu gibi durumlarda tehlikeli sonuçlardan kaçınmak için Hartmann poşunu açık bırakmak tercih edilebilir.

Anahtar sözcükler: Akut kolesistit; endoskopik retrograd kolanjiopankreatografi; laparoskopik kolesistektomi; laparoskopik subtotal kolesistektomi.

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