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Research

The Surgical Results of Cholangiocarcinomas, Single Center Experience

Kolanjiokarsinomların Cerrahi Sonuçları, Tek Merkez Deneyimi

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ABSTRACT

Objective: Cholangiocarcinomas (CC) are rare tumors that develop from the biliary tract and surgery is the gold standard for them. All efforts have been made by surgeons from past to present to obtain R0 resection. The aim of the study was to examine the surgical therapy of CCs, which we have applied various surgical treatments in our clinic in the last three years.

Methods: Patients whose pathological examination yielded Hiler CC and underwent surgical operation at our clinic between February 2019 and February 2022 were retrospectively evaluated.

Results: Twenty five patients were found suitable for the study. Nine were male and 16 were female, with a mean age of 61.72±11.12 (minimum-maximum: 29-76) years. The overall morbidity rate in the postoperative period was 52%, and liver failure in the postoperative period was seen in 4 patients. Bile leakage developed in 2 patients. Portal vein thrombosis was detected in 2 patients and surgical site infection was detected in 5 patients. No mortality was seen in the intraoperative and postoperative periods. In the follow-up period, recurrence was observed in 3 patients and mortality was observed in 3 patients.

Conclusion: Advanced surgical techniques have induced extended indications in surgery and reduced mortality and morbidity ratios, and oncologic outcomes were more acceptable than before. The most significant purpose is to perform R0 resection to maintain adequate remnant liver volume. Such complex surgeries require multidisciplinary treatment in specialized hepatopancreaticobiliary and liver transplant services to optimize surgical and oncological outcomes.

Keywords: Cholangiocarcinomas, surgical results, morbidity, mortality

ÖZ

Amaç: Kolanjiokarsinomlar (KK) safra yollarından gelişen nadir tümörlerdir. KK'lerin tedavisinde cerrahi altın standarttır. Cerrahlar tarafından geçmişten günümüze R0 rezeksiyonunun elde edilmesi için her türlü çaba gösterilmiştir. Bu çalışmanın amacı, kliniğimizde son üç yılda çeşitli cerrahi tedaviler uyguladığımız KK'lerin sonuçlarını incelemektir.

Gereç ve Yöntem: Kliniğimizde Şubat 2019-Şubat 2022 tarihleri arasında Hiler KK tanısı ile cerrahi operasyon geçiren hastalarımızın tıbbi kayıtları retrospektif olarak incelendi.

Bulgular: Bu çalışmaya toplam 25 hasta dahil edildi. Çalışmada 16 kadın ve 9 erkek hasta olup, ortalama yaş 61,72±11,12 (minimum-maksimum: 29-76) yıl idi. Ameliyat sonrası dönemde genel morbidite oranı %52 idi ve 4 hastada 50:50 tanımına göre hepatektomi sonrası karaciğer yetmezliği görüldü. İki hastada safra kaçağı görüldü. İki hastada portal ven trombozu, 5 hastada cerrahi alan enfeksiyonu görüldü. İntraoperatif ve postoperatif dönemde mortalite görülmedi. Takip döneminde 3 hastada nüks ve 3 hastada mortalite görüldü.

Sonuç: Gelişen cerrahi teknik, cerrahi endikasyonları genişletmiş ve morbidite, mortalite oranı ve onkolojik sonuçlar eskisinden daha kabul edilebilir olmasına yol açmıştır. En önemli amaç, R0 rezeksiyonu yapmak ve kalacak yeterli karaciğer hacmini korumaktır. Bu tür karmaşık ameliyatlar, cerrahi ve onkolojik sonuçları optimize etmek için son derece uzmanlaşmış hepato-pankreatiko-biliyer ve karaciğer nakli ünitelerinde multidisipliner bir tedavi gerektirmektedir.

Anahtar Kelimeler: Kolanjiyokarsinomlar, cerrahi sonuçlar, morbidite, mortalite

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INTRODUCTION

Cholangiocarcinomas (CCs) are rare tumors that develop from the biliary tract. There are three different subtypes: intrahepatic, hilar, and distal CCs. CC is the second most common malignant primary liver tumor after hepatocellular carcinoma (1). Hilar CCs are also named as Klatskin tumors, which occur within 2 cm of the confluence of the bile ducts and generates for 50-70% of all CCs (2). Previously, surgical treatment for this tumor was detected as a high morbidity and mortality rate and with a low resectability ratio (up to 50%) and there is a high recurrence rate in this tumor (50% to 70%) (3,4). The diagnosis of CCs can be technically difficult and requires a high suspicion in order to detect lesions (5,6). CCs show firm biliary infiltration and vascular invasion due to a longitudinal and expansive growth pattern, and this growth pattern causes difficulty during a radical surgical intervention (6,7).

All efforts have been made by surgeons from past to present to obtain R0 resection. Because of these efforts, the surgical treatment of CCs includes extended hepatectomies, staged hepatectomy (portal vein ligation or embolization), vascular resections, and liver transplantations.

Our aim is to examine the results of CCs, which we have applied various surgical treatments in our clinic in the last three years.

METHODS

All procedures carried out in this study involving human participants were in accordance with the ethical standards of the institutional research committee and the 1964 Declaration of Helsinki. This study was approved by the Ethics Committee of Ankara City Hospital (decision no: E2-22-2192, date: 20.07.2022).

Patients whose pathological examination yielded Hiler CC and underwent surgical operation at our clinic between February 2019 and February 2022 were retrospectively evaluated. Demographic features, preoperative factors, a type of surgery, intraoperative results, and postoperative outcomes were evaluated.

Statistical Analysis

IBM Statistical Package for Social Sciences (SPSS) ver 20.0 (IBM Corporation, Armonk, NY, USA) was used. According to the distribution of normality, Student t-test and Mann-Whitney U test was used to evaluate numerical data. Chi-square test was used for the categorical data. Numerical data were given as mean ± standard deviation and median [minimum-maximum (min-max) values] according to the normality test; categorical values were given as count (n) and percentage (%). A $p>0.05$ value was statistically significant. Kaplan-Meier test was used for survival analysis.

RESULTS

A total of 25 patients were included in this study. Nine were male and 16 were female, with a mean age of 61.72±11.12 (min-max: 29-76) years. All patients were treated surgically. The final histopathological examination revealed perihilar cholangiocarcinoma in all patients. The surgical approach was based on preoperative evaluation. In the pre-operative period, the most common complaints of the patients were jaundice (19 patients) and abdominal pain was the second most common. Preoperative percutaneous transhepatic or endoscopic biliary stenting was performed for managing obstructive jaundice in 17 patients. Bile duct resection with right hepatectomy was performed in 15 patients. Resection of the bile duct with left hepatectomy was performed in 4 patients and only bile duct resection was performed in 6 patients. R0 resection was achieved in 88% of patients and R1 resection was achieved in the other 3 patients. The median operative time of the patients was 420 minutes and median blood loss was 400 mL during the operation. The median postoperative hospital stay was 18 days (min-max: 3-91 days) (Table 1).

The overall morbidity rate in the postoperative period was 52%, and according to the 50:50 definition; liver failure in the post-hepatectomy period was seen in 4 patients. Bile leakage to the abdomen was seen in 2 patients. Portal vein thrombosis was detected in 2 patients and surgical site infection was detected in 5 patients (Table 2). No mortality was seen in the intra- and postoperative periods, which

Table 1. Demographic and clinical characteristics of the patients

Parameters	Surgery group (n=25)
Mean age ± SD (years) (min-max)	61.72±11.12 29-76
Gender (mean, %)	
Male	9
Female	16
Median value of the perop blood loss (mL) (min-max)	400 (200-600)
Median operation time (minute) (min-max)	420 (350-540)
First 30 day mortality n, (%)	0
Median hospital stay (min-max) days	18 (3-91)

SD: Standard deviation, min-max: Minimum-maximum

were defined as the first 90 days after the day of surgery In the follow-up period, recurrence was observed in 3 patients and mortality was observed in 3 patients.

Table 2. Postoperative complications of the patients

Complications	n, (%)
Surgical site infection	5 (20%)
Posthepatectomy liver failure	4 (16%)
Bile leakage	2 (8%)
Portal vein thrombosis	2 (8%)

DISCUSSION

CC is a malignant tumor that can be treated surely only by radical surgery. In the last decade, the treatment of CC was improved. By this improvment, surgical morbidity and mortality were decreased, and so indications for surgery were expanded (8). Our results in this study are encouraging and similar to previous results (9,10). There were only 3 recurrences in 25 patients in our study group and zero postoperative mortality. In the follow-up period, mortality was seen only in 3 patients.

Most papers reported that the purpose of surgery of CCs must be R0 resection; therefore, the principle surgical treatment, especially for type III and IV tumors, should include resection of the main bile duct with regional lymphadenectomy of the hepatoduodenal ligament and hepatic artery plus hemihepatectomy (right or left) and caudate lobe resection. The surgical treatment of type I or II tumors is hilar resection alone if the he R0 resection margin is achieved (11). In our study, bile duct resection with right hepatectomy was performed in 15 patients. Bile duct resection with left hepatectomy was performed in 4 patients, and only bile duct resection was performed in 6 patients. R0 resection was achieved in 88% of patients, and R1 resection was performed in 3 patients.

The surgical treatment of CC is very difficult and should be treated in an experient center. In the literature, the mortality ratio is reported as 7.5-18% and the complication rate is 19-85% (4,12-14). In our study, no mortality was seen in the intra- and postoperative periods, and the complication ratio was 52 (posthepatectomy liver failure was detected in 4 patients. Bile leakage was detected in 2 patients. Portal vein thrombosis was detected in 2 patients and surgical site infection was detected in 5 patients).

The peak prevalence of the CCs is in the seventh decade, and male predominance (1.5:1) was detected in a previous study (15). In our study, nine were male and 16 were female, with a mean age of 61.72±11.12 (min-max: 29-76) years. There is a slight female predominance in our study. In the pre-operative period, especially in CCs requiring major liver resection, biliary drainage is recommended in many publications. In our study, preoperative percutaneous transhepatic or endoscopic stenting was performed for managing obstructive jaundice in 17 patients.

Liver transplantation is also used in selected patient groups for treating CC in current literature (16,17). Today, liver transplantation is also used in selected patient groups for treating CC. In our study, liver transplantation was not applied to any patient.

Limitations of our study are a retrospective study and a single center experience, and the number of cases is low.

CONCLUSION

Advanced surgical techniques have induced extended indications in surgery and reduced mortality and morbidity ratio, and oncologic outcomes were more acceptable than before. The most significant purpose is to perform R0 resection to maintain adequate remnant liver volume. Such complex surgeries require multidisciplinary treatment in specialized hepatopancreaticobiliary and liver transplant services to optimize surgical and oncological outcomes.

ETHICS

Ethics Committee Approval: This study was approved by the Ethics Committee of Ankara City Hospital (decision no: E2-22-2192, date: 20.07.2022).

Informed Consent: Retrospective study.

Authorship Contributions

Surgical and Medical Practices: O.A., V.Ö., A.G., Y.M.Ö., M.K.Ç., E.P., E.B.B., Concept: O.A., V.Ö., M.K.Ç., Design: O.A., V.Ö., M.K.Ç., Data Collection or Processing: V.Ö., A.G., Y.M.Ö., E.P., Analysis or Interpretation: V.Ö., Y.M.Ö., E.B.B., Literature Search: O.A., V.Ö., A.G., E.P., Writing: V.Ö., M.K.Ç., E.B.B.

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