

Hepatectomy for benign and malign diseases in University Hospital

Hepatectomia para doenças benignas e malignas em Hospital Universitário

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Financial support: None.

Conflict of interest: None.

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Submitted: 01 December 2010. Accepted, after review: 27 July 2011.

ABSTRACT

Purpose: The hepatectomy is a surgical modality for the treatment of benign and malignant liver diseases. This retrospective study aimed to analyze the main clinical and technical aspects concerning 33 hepatectomies performed from July 2006 to July 2010, at Onofre Lopes University Hospital, Federal University of Rio Grande do Norte, Brazil.

Methods: The patients informations were stored in the program 2000 MV ®, developed by MV Software & Consulting. The data of interest for the work were organized in tables, and these were processed in the Microsoft Office Excel ® 2010 for the construction of statistical data and graphs. Demographic data included gender, origin, age and co-morbidities. Hepatectomy was categorized as anatomical resection and nonanatomical resection. A curative hepatectomy was defined as a case without macroscopic evidence of residual tumor. All patients that underwent hepatectomy were computed. The prevalence of complications was calculated. Statistics: all continuous results were presented as the median (range). All categorical results were presented as percentage. **Results:** We did not find difference in the prevalence of gender. The most prevalent comorbidity and postoperative complication was arterial hypertension (30%) and fistula (18%), respectively. Forty five percent of patients had no comorbidity. Mortality was 12%. Twenty one percent of patients had gallbladder cancer and 12% had metastasis of colon cancer. Hepatocellular carcinoma occurred in 6% of patients and iatrogenic lesions of the bile duct in 3% of cases. Anatomical resection predominated (n=25; 75.7%). Seven of them (21.2%) underwent major resection exceeding hemihepatectomy, and 4 underwent extended bi-segmentectomy. Eight patients (24.3%) underwent non-anatomical (atypical) resections. **Conclusion:** These data showed morbidity and mortality posthepatectomy compatible with literature and that radiological and functional assessment permitted hepatectomy including anatomic resection and optimal pathologic margins. Measures to minimize postoperative morbidity were implemented.

Keywords: Hepatectomy. Liver. Surgery. Complications.

RESUMO

Objetivo: A hepatectomia é uma modalidade cirúrgica para o tratamento de doenças hepáticas benignas e malignas. Este estudo retrospectivo teve como objetivo analisar os principais aspectos clínicos e técnicas relativas a 33 hepatectomias realizadas de julho de 2006 a julho de 2010, no Hospital Universitário Onofre Lopes, Universidade Federal do Rio Grande do Norte, Brasil. **Métodos:** As informações dos pacientes foram armazenados no programa de 2000 MV ®, desenvolvido por MV Software & Consulting. Os dados de interesse para o trabalho foram organizados em tabelas, que foram processados no Microsoft Office Excel ® 2010 para a construção de dados estatísticos e gráficos. Os dados demográficos incluíram sexo, origem, idade e comorbidades. A hepatectomia foi categorizada como ressecção anatômica e ressecção nonanatômica. A hepatectomia curativa foi definida como sem evidência macroscópica de tumor residual. Todos os pacientes que foram submetidos a hepatectomia foram computados. A prevalência de complicações foi calculada e expressa. Estatísticas: todos os dados contínuos foram apresentados como médias (intervalos). Todos os dados categóricos foram apresentados em porcentagem. **Resultados:** Não foi encontrada diferença na prevalência de gênero masculino e feminino. A comorbidade mais prevalente foi hipertensão arterial (30%) e a complicação pós-operatória mais encontrada foi a fístula entérica (18%). Quarenta e cinco por cento dos pacientes não apresentaram comorbidade. A mortalidade foi de 12%. Vinte e um por cento dos pacientes tinham câncer de vesícula biliar e 12% tinham metástase hepática de câncer de cólon. Carcinoma hepatocelular ocorreu em 6% dos pacientes e lesão iatrogênica de ducto biliar em 3% dos casos. A ressecção anatômica predominou (n = 25; 75,7%). Sete deles (21,2%) foram submetidos a hemihepatectomia e 4 foram submetidos a bisegmentectomia estendida. Oito pacientes (24,3%) foram submetidos a ressecção atípica (não-anatômica). **Conclusão:** Esses dados mostraram morbidade e mortalidade pós-hepatectomia foram compatíveis com a literatura e que a avaliação radiológica e funcional permitiu ressecção anatômica na maioria dos casos, com ótima margem de ressecção. Medidas para minimizar a morbidade pós-operatória foram implementadas. **Descritores:** Hepatectomia. Fígado. Cirurgia. Complicações.

Introduction

Liver resections characterized a major challenge for the surgeon in the past due to its high mortality, but currently the mortality rate is around 5% in important medical centers¹. Today it is a surgical procedure for the treatment of benign hemangioma, hepatocellular adenoma and malignant diseases as the primary hepatocellular carcinoma and hepatoblastoma in childhood, in addition to metastasis of colorectal carcinomas and rare tumors gastrinomas and carcinoids². Hepatocellular carcinoma (HCC) is the sixth most common cancer in the world and the third most common cause

of cancer-related death³. Patients at the early stage of disease are those who present with an asymptomatic single HCC with the nodule < 5 cm in diameter or ≤ 3 in number. Patients exceeding these limits, but free of cancer-related symptoms and vascular invasion or extrahepatic spread, are considered at the intermediate stage. The patients with the cancer-related symptoms and vascular invasion or extrahepatic spread are deemed at the advanced stage. HCC is frequently diagnosed at the late stage and has a high mortality rate⁴. This increase of cases occurs because of the spread of hepatitis viruses B and C^{5,6}.

The liver is a frequent site of metastasis of solid tumors. The treatment of liver metastases of colorectal tumors is already well established, but colorectal tumors for therapy is not well defined⁷. Currently 15 to 25% of patients diagnosed with colorectal tumors have liver metastasis and 25 to 50% of them will develop metastases within three years. Surgical resection of colorectal metastases is the only curative option and this procedure can guarantee the survival of 25 to 50% in 5 years⁸. Surgical resection is a potentially curative therapy for HCC. However, only 10%-30% of patients with HCC are eligible for curative hepatectomy⁹. Radical resection is still the first choice for treatment of HCC¹⁰, even at the intermediate or advanced stage¹¹. If radical resection is impractical, palliative resection combined with comprehensive therapy can significantly prolong patients' survival time¹². Despite medical advances with new modalities of treatment for liver, resection is still the best curative therapy^{8,13}.

The aim of this work was to analyze the epidemiological data and surgical treatment performed on all the patients submitted to hepatectomy in a University Hospital during a five years interval.

Methods

The records of 41 patients who underwent curative hepatectomy for hepatocellular carcinoma and other diseases we examined between July 2006 and July 2010 at Onofre Lopes University Hospital, Federal University of Rio Grande do Norte, Brazil. Eight patients were excluded from the analysis because the records were incomplete, leaving 33 patients in the study. This study was approved by the Institutional Revision Board of the Hospital. We based on the information stored in the program 2000 MV ®, developed by VM Software & Consulting. The data of interest for the work were organized in tables, and these were stored in the Microsoft Office Excel ® 2003 for the construction of statistical data and graphs. Demographic data included gender, origin, age and co-morbidities.

Hepatectomy was categorized as anatomical resection and nonanatomical resection. A curative hepatectomy was defined as a case without macroscopic evidence of residual tumor. All the diseases that indicated hepatectomy were computed. The

prevalence of complications was calculated. Statistical data: All continuous data are presented as the median (range). All categorical data are presented as percentage.

Results

Demographic characteristics of 33 patients are presented in Figure 1. Female patients predominated (n=17; 51%), and the median age was 51 years (range, 25–84). 64% of patients were from provincial small towns and 36% from the capital (Figure 2).

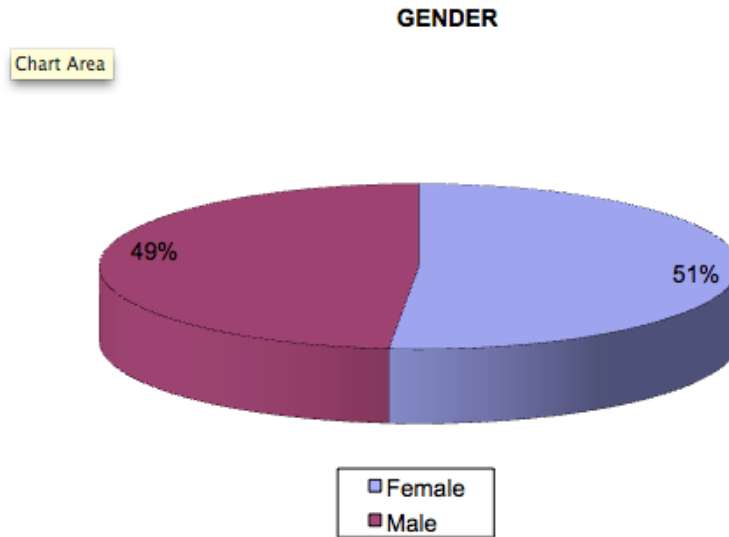


Figure 1-Distribution by gender.

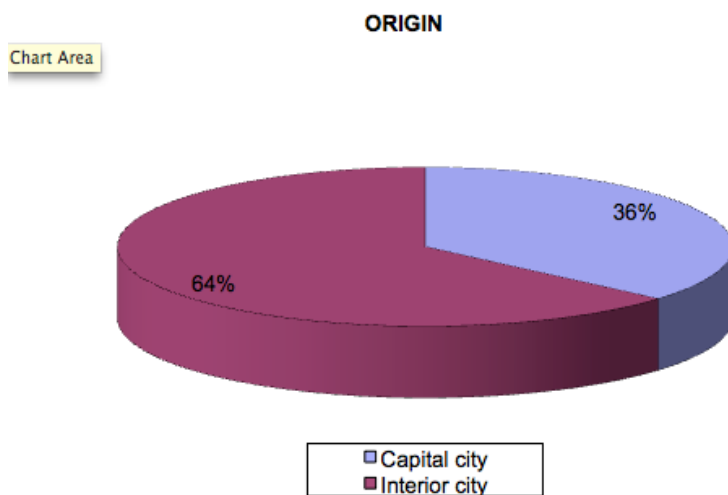


Figure 2 - Distribution by city origin.

With regard to co-morbidities, 45% of patients had any associated diseases, 30% were hypertensive, 12% were smokers, 9% alcoholics, 12% had a history of diabetes mellitus treatment before surgical resection, and 6% had chronic pancreatitis. The percentage of patients with chronic renal failure, cardiac arrhythmia and Crohn's disease was 3% each (Figure 3).

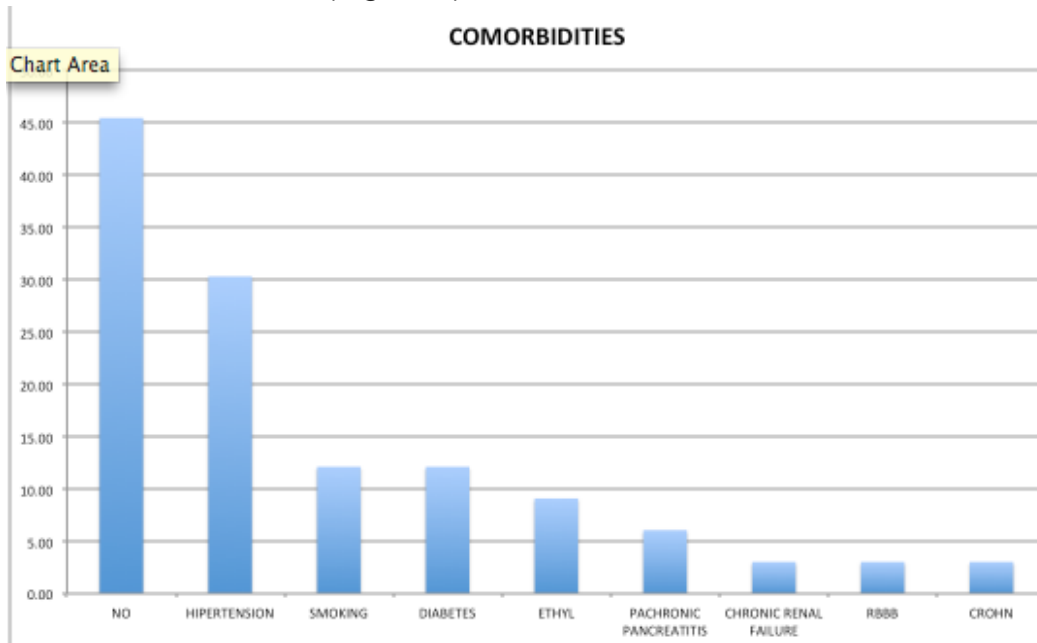


Figure 3 - Distribution of comorbidities.

With regard to diseases that originated the hepatectomy, gallbladder cancer occurred in 21% of cases, hepatic metastasis of colon cancer in 12% and GIST in 3% of cases. Klatskin tumor, adjacent tumor invasion, metastasis from neuroendocrine tumors, tumors of undetermined origin, benign cysts and hemangiomas contributed with 9%; hepatocellular carcinoma occurred in 6% of patients and iatrogenic lesions of the bile duct in 3% of cases (Figure 4).

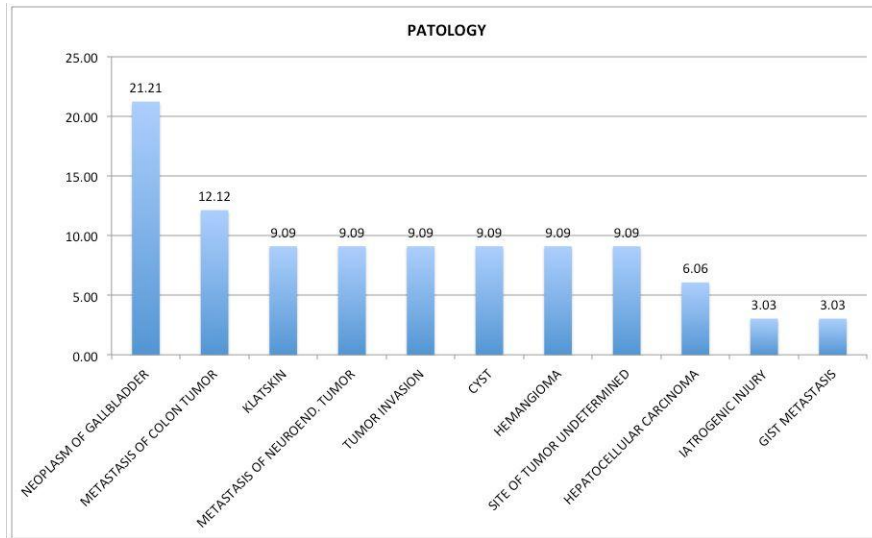


Figure 4 - Distribution of diseases that originated resections

The operative time ranged from 110 to 660 minutes (mean of 314.6 minutes). The length of hospital stay was from 2 to 69 days (average 16 days). The stay in the intensive care unit ranged from 0 to 13 days, with an average of 3 days. 60.6% of patients were transfused during surgery or during hospitalization, and 6% had autotransfusion during surgery; 33.3% were not transfused. Only 9% of patients received i.v. human albumin.

Anatomical resection predominated (n=25; 75.7%). Seven of them (21.2%) underwent major resection exceeding hemihepatectomy, and 4 underwent extended bisegmentectomy. Eight patients (24.3%) underwent non-anatomical (atypical) resections. These data are summarized in Table 1.

Table 1-Types of resections.

TYPE OF RESECTION	N	PERCENTAGE
Right trisegmentectomy	7	21%
Right hepatectomy	6	18%
Left hepatectomy	5	15%
Bisegmentectomy	4	12%
Central hepatectomy	2	6%
Nodulectomy	1	3%
Atypical resection	4	12%
Not specified	4	12%

The most common complication was fistula (18%), followed by abscess (15%). Nine percent of patients developed sepsis, acute renal failure occurred in 6% and intra-abdominal hematoma in 6%. Other complications such as stroke, bilioma, empyema, pleural fistula, liver failure, coagulopathy, atrial fibrillation, liver failure and pneumonia totaled 3% each (Figure 5). Four patients (12%) died during hospitalization.

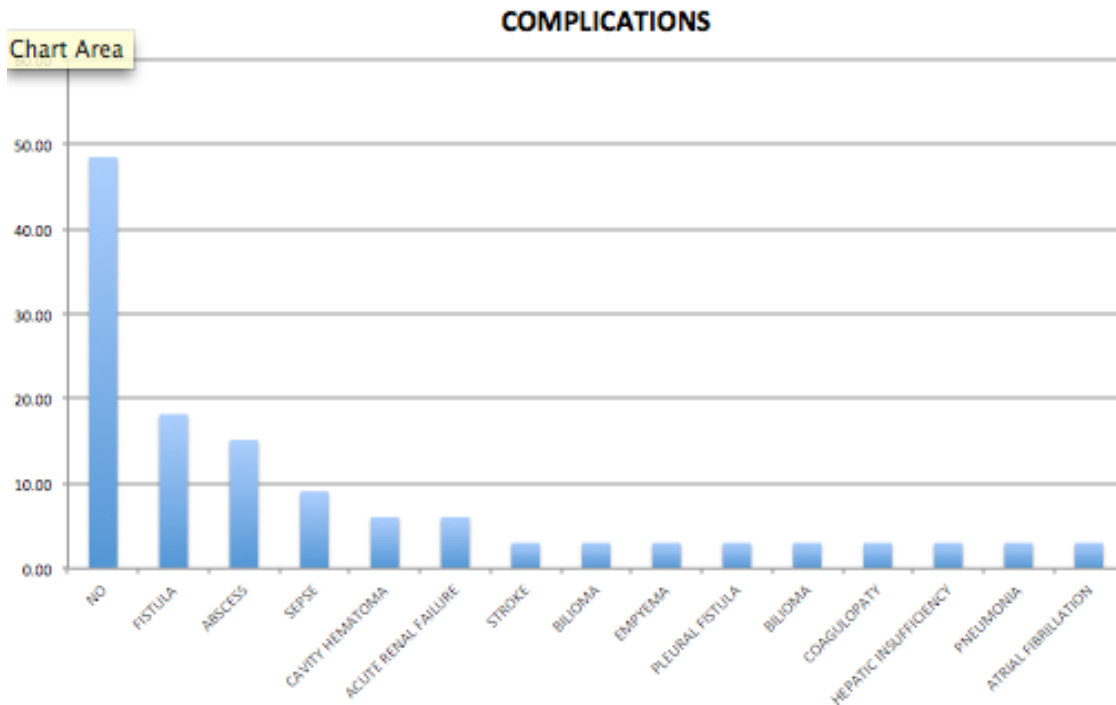


Figure 5 - Postoperative complications.

Discussion

Liver resection is a complex surgery to be performed by experienced surgeons in specialized centers. For many years it was associated with increasing morbidity and mortality. After the study of functional anatomy and physiology of liver regeneration, performed by Couinaud, major advances in this area led to the current period that witnessed satisfactory results¹⁴. As surgical techniques improved over the last recent decades, after a good understanding of modern liver anatomy¹⁵, hepatic resection is now considered a safe procedure and the gold standard of curative treatment. Nevertheless, surgical resection is often contraindicated due to deterioration of hepatic function and excessive tumor burden, both of which may result from delayed diagnosis. Fortunately, early diagnosis of HCC has recently increased because of regular

examination of high-risk patients and advancement of radiological diagnostic techniques. One of the most relevant factor of successfull hepatectomy is the advancement of pre-operative radiological workup for the diagnosis and study of injuries, often in early stage, including the intraoperative ultrasonography. This modernization of radiology is reflected not only in diagnosis but also in therapy¹. Despite the decrease in surgery-related mortality and the increase in possible surgical approaches, long-term outcome of surgical resection remains unsatisfactory in many cases due to early recurrence¹⁶.

Analyzing our data with regard to gender, there was a similarity between them. We found that most of our patients came from provincial small towns (interior) of Rio Grande do Norte State, Brazil. This is understandable, since HUOL is a reference public regional hospital. The age had a very wide range (25-84 years). One of the deaths occurred in a young patient (25 years) with colon carcinoma and extensive liver metastasis. In our series there was still a death in a patient with an initial indeterminate diagnosis. The definitive diagnosis revealed benign disease. The mortality in our series was 12% and is consistent with the literature of important centers, around 3-15%². Most patients who died had malignant disease, jaundice and malnutrition. It was noted high morbidity and mortality, length of intensive care unit and hospital stay in patients undergoing liver resection due to cancer of the bile ducts.

Some patients stayed for a long time in intensive care unit because of the need for ventilatory assistance and sepsis. Co-morbidities were conveniently evaluated and treated to minimize postoperative complications. The main comorbidity found was hypertension, which is consistent with the literature, followed by smoking and alcoholism². The hepatectomy was more frequently performed in cases of gallbladder cancer. This certainly is due to the high prevalence of biliary tract diseases operated in our hospital, not infrequently faced with a pathological diagnosis of malignancy. The metastasis of colon cancer was the cause of our second indication of hepatectomy. Only three patients were operated with benign diseases. Abscess and biliary fistula were the main postoperative complications.

Based on these informations we emphasize the real need to encourage studies like this, revealing the particular aspects of our service, for the knowledge of our reality. These findings may guide our future steps in surgical liver diseases. In conclusion, these data showed that morbidity and mortality posthepatectomy was compatible with literature and that radiological and functional assessment permitted hepatectomy including anatomic resection and optimal pathologic margins. Measures to minimize postoperative morbidity were implemented.

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