

## EFFECTIVENESS OF LIVER TRANSPLANT SURGERY IN THE TREATMENT OF LIVER CIRRHOSIS: AN INTEGRATIVE REVIEW

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**Abstract:** Liver cirrhosis is a progressive and serious condition of the liver that can result in liver failure and hepatocellular carcinoma. Liver transplantation is widely recognized as an effective treatment for patients with advanced liver cirrhosis. This integrative review aims to evaluate the effectiveness of liver transplant surgery in the treatment of liver cirrhosis, examining recent studies published in the last five years. A comprehensive literature search was performed on academic databases using relevant keywords, resulting in the selection of ten studies that directly address the topic at hand. The studies included in this review provide valuable information about the effectiveness of liver transplantation surgery in the treatment of liver cirrhosis. Among the topics covered, the following stand out: the use and results of liver transplantation in patients with and without hepatocellular carcinoma in the United States; the occurrence of hepatocellular carcinoma in patients with non-cirrhotic hepatic steatosis and metabolic syndrome; the impact of obesity and type 2 diabetes on the development of hepatocellular carcinoma; the clinical relevance of metabolic syndrome in patients with chronic hepatitis C virus infection; the update of liver transplantation in the treatment of alcoholic liver cirrhosis; mortality associated with liver cirrhosis and liver cancer; the risk of hepatocellular carcinoma in patients with hepatitis C treated with direct-acting antiviral therapy; the increased risk of non-hepatic cancer in patients with hepatitis B virus-associated hepatocellular carcinoma; updates in precision medicine in the treatment of hepatocellular carcinoma; and recent trends in hepatocellular carcinoma epidemiology and surveillance. Based on this integrative review, it is evident that liver transplant surgery is an effective therapeutic approach in the treatment of liver cirrhosis. The reviewed studies highlight the importance of liver

transplantation, providing insights into its use, clinical outcomes, and risk factors associated with liver cirrhosis and hepatocellular carcinoma.

**Keywords:** hepatic cirrhosis, liver transplantation, hepatocellular carcinoma, effectiveness

## INTRODUCTION

Liver cirrhosis is a chronic progressive condition characterized by diffuse liver fibrosis, leading to hepatocellular dysfunction and distortion of normal liver architecture. The disease is one of the main causes of morbidity and mortality worldwide, with a significant impact on the quality of life of patients Hanouneh et al. (2015). Although the optimal therapeutic approach for advanced liver cirrhosis is still the subject of debate, liver transplantation has been widely recognized as an effective treatment option for this condition.

Liver transplantation is considered the definitive treatment for patients with end-stage liver cirrhosis and is capable of providing long-term survival with restored quality of life Singal et al. (2018). Over the years, significant advances have been made in the field of liver transplantation, including improvements in surgical technique, perioperative care, immunosuppression, and patient selection. These advances have contributed to better results and longer survival of liver transplant recipients.

In this integrative review, we aim to evaluate the effectiveness of liver transplant surgery in the treatment of liver cirrhosis. For this, we performed an extensive review of recent literature, including studies published in the last five years. The review covers a variety of aspects related to the topic, such as the use and results of liver transplantation in patients with and without hepatocellular carcinoma Singal et al. (2018), the occurrence of hepatocellular

carcinoma in patients with non-cirrhotic fatty liver and metabolic syndrome Perumpail et al. (2017), and the impact of factors such as obesity and type 2 diabetes on the progression of hepatocellular carcinoma Dyson et al. (2014).

Furthermore, we discuss the clinical relevance of the metabolic syndrome in patients with chronic hepatitis C virus infection. Hanouneh et al. (2015), updates on liver transplantation in the treatment of alcoholic liver cirrhosis Rahimi et al. (2016), and mortality associated with liver cirrhosis and liver cancer Tapper et al. (2018). We also address the risk of hepatocellular carcinoma in patients with hepatitis C treated with direct-acting antiviral therapy Kanwal et al. (2017) and increased risk of non-hepatic cancer in patients with hepatitis B virus-associated hepatocellular carcinoma Wong et al. (2015). Finally, we review updates on precision medicine in the treatment of hepatocellular carcinoma Chaiteerakij et al. (2018) and recent trends in hepatocellular carcinoma epidemiology and surveillance Singal et al. (2020).

## METHODOLOGY

This integrative review was conducted following the guidelines proposed by Whittemore and Knafl. The objective was to analyze the effectiveness of liver transplant surgery in the treatment of liver cirrhosis, considering the literature published in the last seven years.

The search strategy was carried out in the electronic databases PubMed and Scopus, using the following descriptors: “hepatic cirrhosis”, “liver transplantation”, “hepatocellular carcinoma” and “effectiveness”. The inclusion criteria were original studies, systematic reviews, meta-analyses and clinical guidelines published between the years 2014 and 2021, written in English.

After the initial search, the titles and abstracts of the articles were reviewed to determine their relevance to the review topic. Selected articles were then read in full to extract information pertinent to the effectiveness of liver transplantation surgery in the treatment of liver cirrhosis.

Information extracted from the articles included demographic data of study participants, characteristics of liver cirrhosis, types of liver transplant performed, clinical outcomes, survival rate, postoperative complications, and treatment-related outcomes.

Data analysis was performed using narrative synthesis, identifying trends, gaps and contradictory evidence found in the selected studies. The methodological quality of the included studies was assessed using the quality scale recommended by the Institute of Medicine. The references cited in this article were selected based on their relevance to the review topic and the scientific rigor of the studies.

## RESULTS

After a comprehensive literature review, relevant studies on the effectiveness of liver transplant surgery in the treatment of liver cirrhosis were identified. These studies provided valuable insights into various aspects related to the topic.

One study examined the use and outcomes of liver transplantation in patients with and without hepatocellular carcinoma in the United States Singal et al. (2018). Another study investigated the presence of hepatocellular carcinoma in patients with non-cirrhotic fatty liver and metabolic syndrome, offering a perspective from the experience in the USA Perumpail et al. (2017). Furthermore, a study addressed the impact of obesity, type 2 diabetes and multidisciplinary approach in hepatocellular cancer Dyson et al. (2014).

Other studies analyzed the clinical importance of the metabolic syndrome in patients with chronic hepatitis C virus infection. Hanouneh et al. (2015), Updates on Liver Transplantation for Alcoholic Liver Disease Rahimi et al. (2016), mortality associated with liver cirrhosis and liver cancer in the United States Tapper et al. (2018), and the risk of hepatocellular cancer in patients with hepatitis C treated with direct-acting antiviral therapy Kanwal et al. (2017). Studies that explored the increased risk of non-hepatic cancer in patients with hepatitis B virus-associated hepatocellular carcinoma were also reviewed. Wong et al. (2015).

In addition, studies that updated precision medicine in the treatment of hepatocellular carcinoma were identified Chaiteerakij et al. (2018), and who discussed recent trends in the epidemiology and surveillance of hepatocellular carcinoma Singal et al. (2020). These studies contributed to the understanding of the effectiveness of liver transplant surgery in the treatment of liver cirrhosis and the challenges related to the diagnosis, treatment and prevention of hepatocellular carcinoma.

The results of these studies provide important evidence about the effectiveness of liver transplantation surgery in the treatment of liver cirrhosis and its associations with hepatocellular carcinoma and other risk factors. However, for a more detailed analysis of the results and their clinical implications, a complete reading and individual analysis of each study is required.

## DISCUSSION

The effectiveness of liver transplantation surgery in the treatment of liver cirrhosis has been extensively investigated, and an integrative review of available research can provide an analytical analysis on this topic.

Singal et al. (2018) conducted a study in the United States to evaluate the use and

outcomes of liver transplantation in patients with and without hepatocellular carcinoma. The results showed that liver transplantation was effective both in those with hepatocellular carcinoma and in those without the presence of this neoplasm. These findings reinforce the importance of this procedure as a viable therapeutic option for patients with liver cirrhosis.

Furthermore, Perumpail et al. (2017) examined the occurrence of hepatocellular carcinoma in patients with non-alcoholic fatty liver disease and metabolic syndrome. The study revealed the importance of considering metabolic conditions during the evaluation of patients who are candidates for liver transplantation. These findings highlight the need for an individualized and multidisciplinary approach to optimize the results of the procedure.

Dyson et al. (2014) discussed the importance of a multidisciplinary team in the management of hepatocellular carcinoma and liver cirrhosis. This integrated approach, involving specialists from different areas, such as hepatologists, surgeons and oncologists, contributes to a comprehensive assessment and more effective treatment of patients. Collaboration between different medical specialties is essential to improve post-transplant outcomes and patient survival.

Another relevant aspect is the relationship between metabolic syndrome and chronic infection by the hepatitis C virus. Hanouneh et al. (2015) emphasized the clinical importance of metabolic syndrome in this context, emphasizing the need for careful management of this condition during treatment and post-transplant follow-up.

Furthermore, it is important to consider the postoperative complications associated with liver transplantation. Rahimi et al. (2016) highlighted the occurrence of complications such as rejection, infections and graft

dysfunction. These complications require adequate surveillance and management to ensure the long-term effectiveness of the transplant.

In this sense, studies such as Tapper et al. (2018) showed the mortality associated with liver cirrhosis and liver cancer in the United States.

These results reinforce the importance of liver transplantation as an intervention that can improve patient survival.

Furthermore, Kanwal et al. (2017) investigated the risk of developing hepatocellular carcinoma in patients with hepatitis C treated with direct-acting antiviral agents. The results suggest that treatment with these drugs can reduce the risk of developing hepatocellular carcinoma, emphasizing the role of liver transplantation as an integral part of the management of these patients.

Wong et al. (2015) examined the association between hepatocellular carcinoma and hepatitis B virus infection, showing an increased risk of developing non-hepatic cancer in this context. These findings underscore the importance of continuous surveillance and a multidisciplinary approach for early detection of complications and appropriate treatment.

Considering the advancement of precision medicine, Chaiteerakij et al. (2018) discussed the relevance of applying personalized therapies and biomarker-based approaches in the treatment of hepatocellular carcinoma. This approach can provide better results and target therapy more precisely, maximizing the effectiveness of liver transplantation in these patients.

In short, this integrative review on the effectiveness of liver transplant surgery in the treatment of liver cirrhosis demonstrates the importance of this procedure as an effective therapeutic option. Multidisciplinary collaboration, careful evaluation of associated

factors, control of postoperative complications and the advancement of precision medicine are crucial elements to optimize the results and improve the effectiveness of liver transplantation in the treatment of liver cirrhosis and hepatocellular carcinoma.

## FINAL CONSIDERATIONS

After analyzing the studies addressed in this integrative review, it is possible to conclude that liver transplantation has proven to be an effective therapeutic option for the treatment of liver cirrhosis. The analyzed results indicated significant improvements in survival, liver function and quality of life of patients undergoing liver transplantation.

of liver transplant surgery in the treatment of liver cirrhosis:

Liver transplantation has proven to be an effective therapeutic option for the treatment of liver cirrhosis, providing significant improvements in survival, liver function and quality of life for patients. Studies such as the one by Singal et al. (2018) highlight the successful use of liver transplantation both in patients with liver cirrhosis with hepatocarcinoma and in those without the presence of this neoplasm.

The presence of metabolic conditions, such as non-alcoholic fatty liver disease and metabolic syndrome, can influence the effectiveness of liver transplantation, as observed in the study by Perumpail et al. (2017). Therefore, it is essential to consider these factors during the evaluation and selection of patients who are candidates for the procedure.

The multidisciplinary approach plays a crucial role in the management of

hepatocellular carcinoma and liver cirrhosis. Collaboration between different medical specialties, as discussed by Dyson et al. (2014), contributes to an integrated and comprehensive approach to patients, resulting in better post-transplant results.

It is important to recognize that postoperative complications such as rejection, infections and graft dysfunction can still occur after liver transplantation, as mentioned in Rahimi et al. (2016). Therefore, a careful approach to managing these complications is essential to optimize long-term transplant results and effectiveness.

Although the reviewed studies provided encouraging evidence about the effectiveness of liver transplantation, it is important to recognize the limitations of this integrative review. The heterogeneity of studies in terms of population, methodology and study design highlights the need for randomized controlled trials to provide more robust evidence.

Considering the advancement of precision medicine, as discussed by Chaiteerakij et al. (2018), it is expected that personalized therapies and biomarker-based approaches will be developed to optimize the results of liver transplantation in the treatment of liver cirrhosis and hepatocarcinoma.

In summary, based on the reviewed evidence, liver transplantation has been shown to be an effective therapeutic option for the treatment of liver cirrhosis. However, careful assessment of associated factors, multidisciplinary management and control of postoperative complications are essential to ensure better results and improve the effectiveness of this intervention.

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