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Review

# Outcomes of hepatectomy for noncirrhotic hepatocellular carcinoma: A systematic review

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ABSTRACT

*Background:* Noncirrhotic hepatocellular carcinoma (HCC) is rare. The aim of this study was to evaluate the published evidence for hepatectomy in patients with noncirrhotic HCC.
*Methods:* A literature search was conducted in PubMed database for eligible studies from the time of inception to March 2014. Comparisons of surgical outcomes for noncirrhotic and cirrhotic HCC were pooled and analyzed by meta-analytical techniques.
*Results:* Thirty-one observational studies comprising a total of 3771 patients who underwent hepatectomy for noncirrhotic HCC were reviewed. The median postoperative morbidity was 29.5% (range, 8.3–55.5%) and mean mortality was 2.7% (range, 0–6.5%). Median 5-year overall and disease free survival was 47.9% (range, 26–81%) and 38.0% (range, 24.0–58.4%) respectively. In comparative studies, both the 5-year disease free (odds ratio (OR): 0.61, 95% confidence interval (95% CI): 0.51–0.72; $P < 0.001$) and overall survival (OR: 0.61, 95% CI: 0.42–0.90; $P = 0.01$) in the noncirrhotic group were significantly better than those in the cirrhotic group.
*Conclusions:* Hepatectomy for noncirrhotic HCC carries low perioperative morbidity and mortality and offers favorable long-term outcomes.



**Contents**



## 1. Introduction

It is well known that cirrhosis from any cause is an important etiological factor in the development of hepatocellular carcinoma (HCC) and hence can be considered a premalignant condition.

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Indeed, more than 80–90% of patients with HCC worldwide have underlying cirrhosis [1]. On the other hand, some HCC developed from noncirrhotic liver. Hepatic resection is the mainstay of curative treatment for HCC. Many studies have described the outcomes of hepatic resection for cirrhotic HCC, but data on noncirrhotic HCC is quite small because of low prevalence. The aim of this study was to perform a systematic review of available published literature to evaluate the role of hepatic resection for noncirrhotic HCC. In addition, we performed a meta-analysis to compare the clinicopathologic features and surgical outcomes between patients with noncirrhotic HCC and cirrhotic HCC.

## 2. Methods

### 2.1. Systematic search strategy

A systematic review of all published literature from the time of inception to March 2014 was carried out using PubMed database. The following Medical Subject Headings terms were used: "hepatocellular carcinoma," "noncirrhotic liver," and "hepatectomy." Only articles on humans and in English languages were included for assessment. Reference lists of all retrieved articles were manually searched to identify additional eligible publications.

### 2.2. Criteria for inclusion and exclusion

For inclusion, studies had published results on long-term survival data of patients with noncirrhotic HCC who underwent liver resection. Letters, reviews, abstracts, editorials, expert opinions, animal studies, and papers with fewer than 10 patients were excluded. Studies contained patients mainly treated with nonsurgical management or liver transplantation were also excluded. When multiple studies analyzed the same population by the same institution and/or authors, only the most recent publication was considered for assessment.

### 2.3. Data abstraction and quality assessment

Data were extracted by two authors (Yanming Zhou and Xiaoyi Lei) independently using predefined criteria, including the first author, year of publication, study period, sample size, study population characteristics, and outcomes of interests. Data are presented as median (range) unless otherwise stated. Discrepancies between the two reviewers were resolved by discussion and consensus. Study methodology quality was assessed according to the Newcastle–Ottawa scale consisting of three factors: patient selection, comparability of the study groups, and outcome assessment [2].

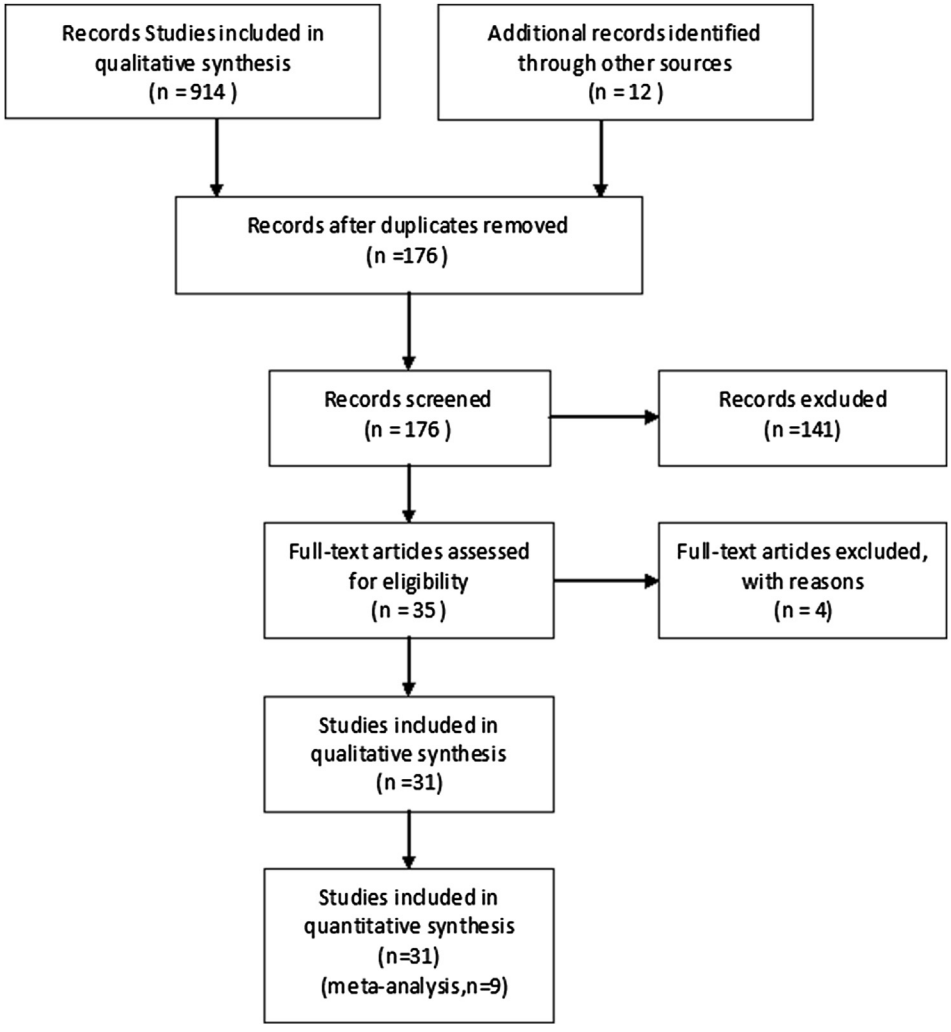


**Figure 1.** Flow diagram of the selection and screening process for eligible studies.