

## The 9th Conference on Health Care of the Chinese in North America



### Liver Transplantation for Hepatocellular Carcinoma: The New Millennium

*Ronald W. Busuttil, MD, PhD, Professor of Surgery Dumont Chair in Transplantation Surgery, University of California, Los Angeles*

---

#### Abstract

In the early days of liver transplantation, transplantation for hepatocellular carcinoma (HCC) was a frequent occurrence. The results were not as good as for benign disease, however, because of the high incidence of recurrence. Today, less than 5% of all liver transplants are performed for hepatocellular malignancy. Increasing data in the literature suggest that with selection of appropriate candidates, the results of transplantation for HCC are as good as for benign disease.

Approximately 2500 new cases of HCC are diagnosed each year in the United States. It is the most common malignant tumor in men, with a worldwide incidence of 30 per 100,000 patients. Cirrhosis, hepatitis B, hepatitis C, primary biliary cirrhosis, alcoholic liver disease, hemochromatosis, tyrosinemia, alpha-antitrypsin deficiency, porphyria cutanea tarda, glycogen storage diseases, and Wilson's disease are risk factors for HCC. It is a slow-growing malignancy with a 50% 2-year survival rate in patients with small untreated tumors. Once patients become symptomatic, mean survival is approximately 6 months.

Surgical resection in the noncirrhotic patient is the "gold standard" for the treatment of HCC. The indications are lesions limited to one lobe, mild hepatic dysfunction, and absence of extrahepatic spread of the cancer. Only about 25% of patients with HCC are resectable. The 1-year postresection survival rate changes from 50% to 80%, with a 5-year maximum survival of 50%. There is a 68% recurrence rate. Prognosis is better for non-cirrhotic patients, patients with tumors smaller than 5 cm., those with tumor margins larger than 5 mm., those with single rather than multiple nodules, those without vascular invasion, those with lower tumor grade or stage, and those without lymph-node involvement.

Liver transplantation is indicated for patients with HCC who have centrally located tumors not amenable to resection, large tumors, bilobar lesions, and cirrhosis; and for patients who have no evidence of extrahepatic involvement. Outcomes in a collective series of 654 patients from the U.S. Registry, Pittsburgh, UCLA, Boston, and Europe were 40% to 80% 1-year survival, 18% to 65% 5-year survival, and 21% to 67% recurrence rate. Three nonrandomized studies comparing liver resection (n=261) and transplantation (n=225), conducted in Pittsburgh, France, and Hanover, showed similar 1 and 5-year survival; however, for cirrhotic patients with HCC, mean survival time was better for those who were transplanted than for those who were resected.

Other modalities used to treat patients with HCC are largely palliative and include transarterial chemoembolization, percutaneous alcohol injection, and cryosurgery.

Early detection clearly represents the best hope for cure. Surgical resection is the mainstay of treatment. Liver transplantation is effective and indicated for patients with stage I and II tumors. Adjuvant chemotherapy should be considered for patients with microvascular invasion or lymph node involvement. Chemotherapy may improve the outcome of surgical resection or liver transplantation in patients with stage III or IV tumors. Transarterial chemoembolization is perhaps best for transplant candidates prior to surgery. Percutaneous ethanol injection has some potential utility for small tumors in patients who are not candidates for resection or transplantation. Randomized, controlled studies are needed to evaluate the various treatment modalities further.