

## Clinical Observations

# RESULTS OF HEPATECTOMY FOR 600 CASES WITH PRIMARY LIVER CANCER

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Hepatic resection had been performed in 600 cases with primary liver cancer (PLC) in our hospital from 1964 to 1993. Among them, 24 cases underwent second hepatic resection because of tumor recurrence. The ratio of male to female was 8.0:1. Most of the patients were 40 to 59 years old and the age ranged from 8 to 78 years old. The positive rate of AFP was 57.4% ( $>400 \mu\text{g/L}$ ). Of them, 84.4% were associated with hepatic cirrhosis. Hepatocellular carcinoma was verified in 91.6% of these cases. Small tumor ( $<5 \text{ cm}$  in diameter) was found in 130 cases (21.7%). In this series, 10 cases underwent semi-hepatectomy and 590 cases underwent irregular hepatectomy. Spontaneous tumor rupture was found in 29 cases. In 13 of 600 cases, hepatectomy was done after TAE (transcatheter hepatic arterial chemoembolization). Six of 600 cases underwent second stage hepatectomy since the tumors could not be resected during laparotomy. After multimodality therapy, including tumor ethanol injection, microwave tumor coagulation and hepatic artery chemoembolization, these tumors became small and subsequently resected. In these 600 cases, 24 cases died within one month after hepatectomy with a mortality of 4.0%. The most common cause of death was hepatic failure. The 1-, 3-, 5- and 10-year survival rates were 61.9%, 40.2%, 33.0% and 29.2%, respectively in the whole series and 87.8%, 69.4%, 54.0% and 43.0%, respectively in the patients with small tumor.

**Key words:** Liver Cancer, Hepatectomy.

At present, hepatectomy is still the most effective treatment for primary liver cancer (PLC). From 1964 to 1993, hepatectomy had been done in 600 patients with PLC in our hospital. The results are reported as follow.

## MATERIALS AND METHODS

### Clinical Data

In these 600 cases, 533 were male and 67 were female. The ratio of male to female was 8.0:1. Most of the patients were 40 to 59 years old and the age ranged from 8 to 78 years old. The positive rate of AFP was 57.4% ( $>400 \mu\text{g/L}$ ). Of them, 84.4% were associated with hepatic cirrhosis. Hepatocellular carcinoma was verified in 550 cases (91.6%); cholangiocellular carcinoma in 24 cases (4.0%); mixed type in 16 cases (2.7%) and other type in 10 cases (1.7%). Four of them had multiple primary carcinoma, accompanied with nasopharyngeal carcinoma, colon carcinoma and parotid carcinoma in 2, 1 and 1 cases, respectively. The sites of cancer were in left lobe in 245 cases, right lobe in 333 cases and both lobe in 22 cases. The sizes of tumor ranged from 1.0

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to 25.0 cm in diameter with an average of 9.0 cm. Small tumor (<5 cm in diameter) was found in 130 cases (21.7%).

### Operations

In this series, regular hepatectomy was done in 10 cases: right semi-hepatectomy in 5 cases and left semi-hepatectomy in another 5 cases. Irregular hepatectomy was performed in 590 cases, including 1 segment resection in 224 cases, 2 segments in 262 cases, 3 segments in 61 cases and 4 segments in 43 cases. Of the 590 cases, 24 cases underwent re-hepatectomy because of the tumor recurrence. TAE had been done in 13 case before hepatectomy. Six cases underwent two-stage hepatectomy as the tumors could not be resected during the first laparotomy. After undergoing multimodality therapy, including tumor ethanol injection, mirowave tumor coagulation and hepatic artery chemoembolization, the tumors shrank and were subsequently resected. Spontaneous tumor rupture was found in 29 cases. Of these cases, the ruptured tumor was resected simultaneously in 24 cases and at second laparotomy in another 5 cases with intervals from 16 to 41 days between two operations.

### The Causes of Death

Twenty-four cases died within 1 month post-

operatively with an postoperative mortality rate of 4.0%. The causes of death were hepatic failure and hemorrhage of upper gastrointestinal tract in 20 cases. The other causes included bile peritonitis, hemorrhage in the cut surface of the liver, injure of inferior vena cava and heart accident.

### RESULTS

All cases were followed up until December 1993. 57, 15 and 2 cases survived for more than 5, 10 and 15 years, respectively. The survival rates were calculated with life table. The 1-, 3-, 5- and 10-year survival rates were 61.9%, 40.2%, 33.0% and 29.2%, respectively in the whole series and 87.8%, 69.4%, 54.0% and 43.0%, respectively in the group of small tumor (<5 cm in diameter), and 65.2%, 43.8%, 32.1% and 30.2%, respectively in the group of large tumor (5-10 cm in diameter) and 42.8%, 20.0%, 17.7% and 17.7%, respectively in the group of huge tumor (>10 cm in diameter). The survival rates during different periods were shown in the Table 1. In the 24 cases with re-hepatectomy, four cases survived for over 5 years from the first hepatectomy and 1 case underwent hepatectomy for 3 times and survived for over 16 years. 29 cases with ruptured tumor underwent hepatic resection, in which 4 cases survived for over 3 years, 1 case for over 5 years and 1 case for over 12 years.

Table 1. The survival rates of PLC after hepatectomy during different periods

Periods	No.	Survival rates (%)			
		1 year	3 years	5 years	10 years
1964-1973	15	80.0	40.0	20.0	20.0
1974-1983	72	52.0	31.0	19.4	16.7
1984-1993	513	61.9	41.6	38.0	32.0
Total	600	61.9	40.0	33.0	29.2

### DISCUSSION

#### Hepatectomy Is the Most Efficient Treatment Method for PLC<sup>1</sup>

The prognosis for PLC is poor in clinical stage

and relatively good in sub-clinical stage. Surgical treatment could get relatively good outcome.<sup>2</sup> Churutchet reported<sup>3</sup> in 1971 that only 45 cases of PLC survived for over 5 years after hepatic resection in the whole world in that period. Since 1970s, more and more cases of sub-clinical PLC were detected and

underwent radical resection because of the employment of AFP serosurvey, ultrasonography (US), CT and MRI, which improved the prognosis of PLC. In our series, during the 10 years period from 1964 to 1973, only 15 cases of PLC had been undergone hepatectomy while in last 10 years period (from 1984 to 1993) the cases of PLC that had been resected reached to 513. On the other hand, the operative mortality gradually decreased. It was reported by Tang ZY, et al.<sup>4</sup> that the rate of operative mortality was 20.7% from 1958 to 1968 and 1.9% from 1980 to 1990. The hepatic resection for PLC is no longer "the forbidden area" and is performed widely in our country because of improvement of the techniques of hepatic surgery and early detection of PLC with AFP serosurvey and imaging diagnosis of PLC. The number of patients who survived for long period after hepatectomy increased year by year. In this series, 57, 15 and 2 cases survived for over 5, 10 and 15 years, respectively. It may be concluded that hepatectomy is the most efficient therapy for PLC. The resection of recurrent PLC and ruptured tumor could prolong the survival time of patients and some of them might be cured. The increasing of resection rate for PLC and decreasing of operative mortality played an important role in the cure of PLC.

### **Early Diagnosis and Early Treatment for PLC Is the Key to Better the Effect of Therapy**

Our data demonstrated that the result of treatment for PLC was associated with the tumor size. The survival time of small PLC was longer than that of large PLC and huge PLC. The percentage of small PLC had direct influence on the survival rate of the whole group. The percentage of small PLC was only 21.7% in our series and 33.7% in the group reported by Tang ZY.<sup>4</sup> Therefore, it should be emphasized that AFP serosurvey, ultrasonography and even CT and/or MRI be regularly used to detect the sub-clinical PLC among the high risk population in order to improve the results of surgical treatment for PLC.

### **Improving the Modes of Hepatic Resection**

The modes of hepatectomy can be divided into two categories: regular resection of hepatic lobe or segment and irregular or partial hepatic lobe or segment or local resection. Although the former was

the classical hepatectomy, it required sophisticated techniques and often sacrifice too much normal liver tissue. In this series, it was only employed in the cases in early time. Most (590) cases underwent irregular hepatectomy. We have reported that this mode of hepatectomy could reduce the amount of bleeding during operation, shorten the operative time and decrease the operative mortality.<sup>5,6</sup> The follow-up results of irregular hepatectomy for PLC in right lobe demonstrated that the 3- and 5- year survival rate did not decrease.<sup>7</sup> Therefore, the irregular hepatectomy could be used in any kind of PLC, no matter whether it is large PLC or small PLC and accompanied or not with cirrhosis, if we could follow the principle of surgical oncology such as no-touch technique, good exposure of operative field, avoiding the squeezing of tumor tissue and more than 3 cm from tumor border to cutting line. Moreover, it was most suitable for those accompanied with moderate or severe cirrhosis. In our series, it was used in most cases and the long-term outcome was satisfactory. The techniques for the interruption of hepatic blood flow we used included temporary occlusion of the hepatic hilum, microwave coagulation along the cutting line, continuous mattress suture and hepatic clamp. One or more methods mentioned above can be used during operation according to surgeon's experience, tumor size and location and cirrhosis.

### **Decreasing the Postoperative Recurrent Rate of PLC**

Hepatocellular carcinoma could invade branches of portal vein and surrounding liver tissue and result in intrahepatic metastasis in early stage.<sup>8,9</sup> According to Okamoto's investigation,<sup>8</sup> 50% had invasion of portal venous branches and 44.1% had satellite nodule in PLC with diameter <3 cm, 20% had intrahepatic metastasis and invasion of portal venous branches in PLC with diameter <2 cm. Therefore, decreasing the intrahepatic metastasis is important measure to improve the outcome of PLC treatment. In order to decrease the intrahepatic recurrence rate after surgical resection of PLC, from 1989 to 1992, 219 patients were recruited to a prospective trial to evaluate transcatheter hepatic artery chemoembolization (TAE) as a postoperative therapy for PLC. The results demonstrated that TAE three to four weeks after resection of PLC could decrease the intrahepatic recurrence rate and increase the survival rates for PLC after

radical or palliative resection.<sup>10,11</sup> The patients should be monitored regularly after resection, especially within 2 years. Ultrasonography and AFP measurement should be taken every 2 to 3 months to detect sub-clinical recurrent tumor. The most efficient therapy for recurrent tumor was re-hepatectomy.<sup>12</sup> If second hepatic resection could not be done, other methods such as tumor ethanol injection treatment, coagulating tumor with microwave and hepatic artery chemoembolization might get some palliative outcome.

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