SURGICAL RESECTION FOR PRIMARY CARCINOMA OF THE LIVER

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From October 1959 to date, 27 cases of carcinoma of the liver were submitted for laparotomy in this Unit. Twenty-three of these cases were males and four were females giving a ratio of six males to one female.

The youngest patient was a woman of 25 years who noticed a painful epigastric mass following the normal delivery of a full term infant. The oldest was a man of 63 years. The maximum incidence was in the 5th decade—there being ten patients in this group.

Patients were admitted either directly to a Surgical Unit or initially into a Medical Unit and from there referred to surgery for exploration.

It is interesting to note that of the total number of cases only seventeen or sixty-three per cent were originally diagnosed as primary carcinoma of the liver. The other ten cases presented with symptoms that mimicked other medical or surgical conditions. The provisional diagnoses of these cases on admission were as follows:—

Intraperitoneal Haemorrhage	2
Liver Abscess	2
Carcinoma of Stomach	2
Acute Cholecystitis	1
Cirrhosis of Liver	1
Bleeding Peptic Ulcer	1
Obstructive Jaundice	1

Three of these cases were actually explored as emergencies, two for intraperitoneal haemorrhage of unknown cause and one for a haematemesis.

It is interesting to note that the incidence of cirrhosis of the liver was present in only ten out of the twenty-seven cases that had been submitted to laparotomy. This incidence of thirty-seven per cent is extremely low compared with Shanmugaratnam's (1956) series. In a review of eighty-one post-mortems in cases of carcinoma of the liver in this country, he found cirrhosis of varying degree in ninety-four per cent of them.

Of the twenty-seven patients who underwent operation, only ten were found to have tumours that were resectable and the first eight were reported in detail in an earlier communication (Cohen and Tan, 1965). This gives a resection rate of thirty-seven per cent. In the others the lesions were diffuse or distant abdominal metastases were found to be present.

One patient who presented as an obstructive jaundice is particularly worthy of mention. He was found at operation to have an enlarged common bile duct. The gall bladder was also enlarged. The common bile duct contained necrotic material which was easily removed and was sent for biopsy. However, a considerable amount of a similar necrotic material exuded from higher levels and this could be sucked out with ease and with relatively minimal haemorrhage. All this necrotic tissue consisted of hepato-cellular carcinoma. Because of the uncertainty of the diagnosis at the time of operation, a choledocho-duodenostomy was done. The patient made a good post-operative recovery and was alive and well eight months after operation.

All other inoperable cases underwent only an exploratory laparotomy with biopsy.

The following is an analysis of all the cases operated on and the procedures carried out:—

EXPLORATORY LAPAROTOMY (With biopsy only)	— 16 cases (57%)
CHOLEDOCHO-DUODENOSTOMY	— 1 case
RESECTIONS	— 10 cases
Right Hepatic Lobectomy	— 7 cases
Left Partial Hepatic Lobectomy	— 3 cases

TECHNIQUE OF OPERATION

Right Lobe Tumours

It is most important to place these patients in a right anterior oblique position with the right arm firmly fixed to an arm-support. The patient can be brought to an almost supine position or an almost completely lateral thoracic position as occasion demands during the operation by tilting the table from side to side. This position was described by Rodney Smith (1958) and is extremely useful. A right paramedian incision is made initially and the

tumour explored for operability. If operable, the incision is extended along the eighth or even the seventh intercostal space into the right chest. The diaphragm is divided radially towards the inferior vena cava. The liver is then lifted anteriorly and the right coronary ligament divided to free it from its moorings. The right hepatic vein is mobilised and a ligature placed loosely around it.

It has been found an extremely useful manouvre to then turn ones attention to the minor hepatic veins that enter the inferior vena cava directly from the liver. Tying and division of these veins mobilises the liver and makes subsequent dissection of the porta hepatis considerably easier. This latter dissection involves the isolation, ligation and division of the right hepatic artery, the right hepatic duct and the right tributary of the portal vein. A distinct discolouration takes place between the two lobes indicating the line of section of the liver. The right hepatic vein is then ligated and the liver resected either with the finger fracture technique described by Lin (1958) or with the point of a pair of artery forceps as described by Ogilvie (1953). Any cord-like structures that are encountered are divided between artery forceps and tied. Meticulous attention must be paid to prevent any damage to the median hepatic vein which often drains blood from both lobes of the liver.

The raw area of the liver is closed by means of through and through mattress chromic catgut sutures and the raw surfaces covered with omentum. The right chest is drained as well as the right subphrenic space.

Left Lobe Tumours

With the patient lying in the supine position, the tumour is approached by means of a left paramedian incision. On occasion it may be necessary to supplement this by a right transverse incision just above the level of the umbilicus.

If found to be operable, the left lobe is mobilised by dividing the left triangular ligament. Where the tumour is confined to the left of the falciform ligament, the falciform ligament is divided and a soft intestinal clamp is placed across the liver at this level and the liver divided witn cutting diathermy. The edge of the liver is sutured with interrupted mattress catgut sutures and the falciform ligament is sutured over the raw surface. Such raw surface as is not covered by the falciform ligament is then covered by greater omentum. In this series no formal left

TABLE I

Case	Name	Sex/Age	Type of Opr.	Survival Time	State of Liver	Cause of Death
1.	G.S.E.	F/40	Left partial lobectomy	4 yrs. 3 months	Periportal fibrosis	Recurrence with liver failure.
2.	L.A.K.	M/53	,,	3 months	No cirrhosis	Recurrence with liver failure.
3.	A.S.E.	F/25	,,	49 days	No cirrhosis	Recurrence with secondaries in lymph nodes.
4.	H.T.F.	M/35	Right lobectomy	3 yrs. 4 months	No cirrhosis	Recurrence with Pulmonary metastases.
5.	W.S.C.	M/40	,,	15 months	No cirrhosis	Recurrence with metastases in lungs and skull.
6.	W.K.	M/49	,,	48 days	Biliary cirrhosis	Liver failure.
7.	L.C.K.	M/47	,,	4 months	No cirrhosis	Recurrence with liver failure.
8.	C.K.B.	M/57	,,	7 days	No cirrhosis	Hepato-renal failure.
9.	C.Y.L.	F/35	,,	14 days	Multilobular cirrhosis	Liver failure and broncho-pneumonia.
10.	Z.H.L.	F/42	,,	7 days	No cirrhosis	Hepato-renal failure.

hepatic lobectomy was carried out. A tube drain is left in the subphrenic space.

Results of Resection

The long term outlook in this series of cases has been dismal. Only three cases survived beyond the year. Case 1 in particular had a very useful life span of four years and three months. Case 4 survived three years and four months. An analysis of 10 cases done in this series is shown in Table I.

All the tumours resected were hepatocellular carcinoma, except in case 10 where the tumour was a cholangio-cellular carcinoma. It is interesting to note that this was in a Malay and all the other subjects in this series were Chinese. Our impression of these cases is that the patients gain considerable comfort following resection, after recovering from the initial discomfort of the operation. Patients felt perceptibly better before the tumour recurred or "reoccurred" as we believe happen in some cases.

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