

## DEVASCULARIZATION AND TRANSECTION PROCEDURES

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*(Received 17 September 1990)*

Transection and devascularization procedures have been by far the most popular operations for the treatment of oesophagogastric varices in Japan during the last two decades<sup>1-5</sup> and although since the new development of endoscopic sclerotherapy during the last ten years the number of patients treated by operation has decreased considerably, these procedures still remain the treatment of choice in many of the surgical institutions in Japan, especially in good-risk patients with oesophagogastric varices.

**KEY WORDS:** Portal hypertension, devascularization, transection

### OUR EXPERIENCE

During the period January, 1964 to March, 1990, 532 patients have been treated by transection and devascularization procedures in our department: diseases causing portal hypertension and varices were liver cirrhosis in 381, idiopathic portal hypertension (IPH) 104, extrahepatic portal obstruction (EHPO) in 38, schistosomiasis japonica in 4, Budd-Chiari syndrome in 2, and other diseases in 3. Approximately 85% of cirrhotic patients were either cryptogenic or posthepatic. Mean ages of these patients were  $48.6 \pm 10.9$  years in cirrhosis,  $48.2 \pm 12.0$  years in IPH, and  $23.4 \pm 15.8$  years in EHPO (Mean  $\pm$  SD). Male: female ratio was approximately 2:1. Results of non-shunting operations in patients with cirrhosis, IPH and EHPO were analysed. Overall operative mortality was 5.0%, it was observed only in patients with liver cirrhosis and was higher in emergency cases (23.3%) compared to elective (3.6%) or prophylactic(3.9%) cases.

Operative mortality was also high in Child C patients (17.1%) compared to Child A and B patients (0% and 2.3% respectively). Long-term results in these patients differed significantly by the nature of original diseases and severity of hepatic deterioration. Cumulative survival rates at 5 years in patients with EHPO were 97.3%, 92.0% in IPH, and 62.4% in cirrhosis, and those at 10 years were 90.6%, 76.7%, and 32.0% respectively. Cumulative survival rates at 5 years in patients with cirrhosis classified as Child A was 76.6%, 71.6% in Child B, and 37.4% in Child C. Cumulative survival rates at 10 years were 54.9% in Child A, 35.5% in Child B and 13.0% in Child C.

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Recurrent bleeding rate of non-shunting operations (including both bleeding from recurrent varices and bleeding from peptic ulcers and hemorrhagic gastritis) was around 20% at 10 years, irrespective of the types of operations. Postoperative follow-up by endoscopy revealed that recurrence rate of varices after operation was 5% at one year, 16% at 2 years, 26% at 3 years, 30% at 4 years and 35% at 5 years. Recurrence of varices was observed more often in patients with alcoholic cirrhosis or in those with cirrhosis complicated by hepatocellular carcinoma. Recently, recurrence of varices after these non-shunting operations have been successfully treated by endoscopic sclerotherapy. Usually a session or two of endoscopic injection sclerotherapy could eradicate the residual or recurrent varices. Our experiences have clearly shown that devascularization and transection procedures are a safe and preferable operation in patients in Child A and B categories, and also feasible as an emergency operation in these cases when necessary. However, these operations are not indicated in Child C patients<sup>6</sup>. In assessing a patient's risk for these procedures, albumin and bilirubin levels in serum, S-GOT, S-GPT, antipyrin clearance, ICG-15, K-ICG, prothrombin time and hepaplastin test are very informative (Table 1).

**Table 1** Indications for surgical treatment have become more strict since 1986 when technique of sclerotherapy was established.

## Indications for Surgical Treatment

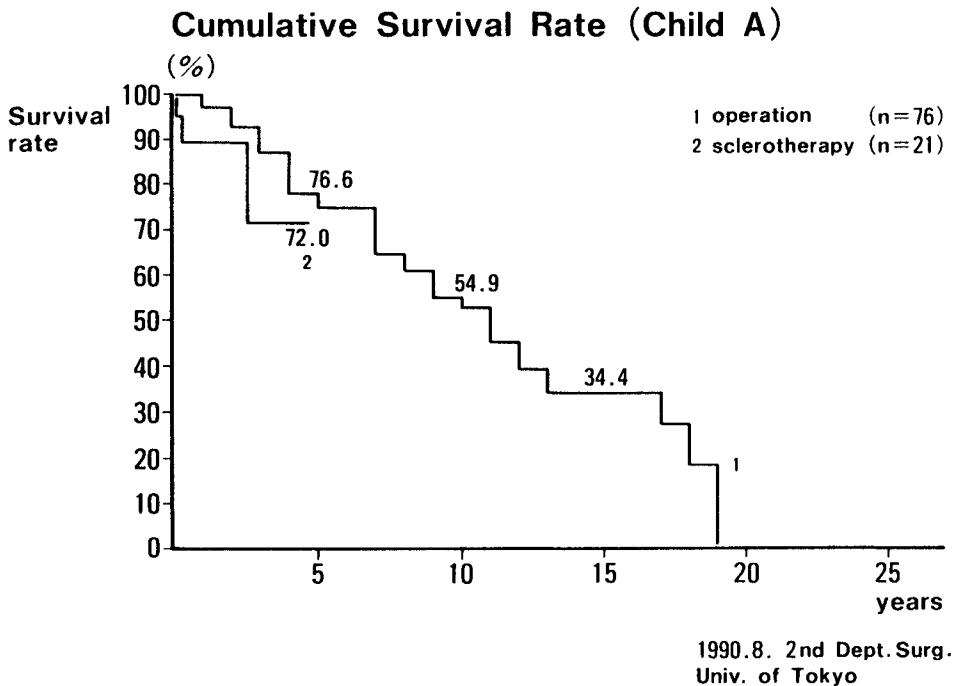
	before 1986	after 1986
Age History Endoscopic Findings	70 year old > history of bleeding R-C sign(+), F <sub>2-3</sub> , C <sub>B</sub>	65 year old > [ditto]
Clinical Symptoms	Encephalopathy (→) Ascites (→) Cachexia (→)	[ditto]
Liver Function Tests		
Albumin	2.8 g/dl <	3.0 g/dl <
Bilirubin	3.5 mg/dl >	2.0 mg/dl >
S-GOT	200 units >	100 units >
S-GPT	200 units >	100 units >
Antipyrin Clearance	0.10 ml/min/kg <	[ditto]
Prothrombin Time	50 % <	[ditto]
Hepaplastin Test	50 % <	[ditto]
ICG R-15	40 % >	[ditto]
K-ICG	0.04 min <sup>-1</sup> <	0.06 min <sup>-1</sup> <
	No severe complications in other organs	[ditto]

## ENDOSCOPIC SCLEROTHERAPY

Endoscopic sclerotherapy has become very popular in Japan during the last several years, and now the number of patients treated by this modality of treatment exceeds that of those treated by operation<sup>7</sup>. A recent nation-wide survey revealed that approximately 85% of patients with varices were treated initially by sclerotherapy, and only 15% treated by surgery. Reasons for this drastic change are not clear, however the following may explain some of the reasons: improvement of technical skills and equipments of endoscopy, development of effective sclerosants, increasing number of aged patients, increasing incidence of hepatocellular carcinoma in post-hepatic cirrhosis, increasing number of endoscopists in Japan and their interests and enthusiasm for this modality of treatment.

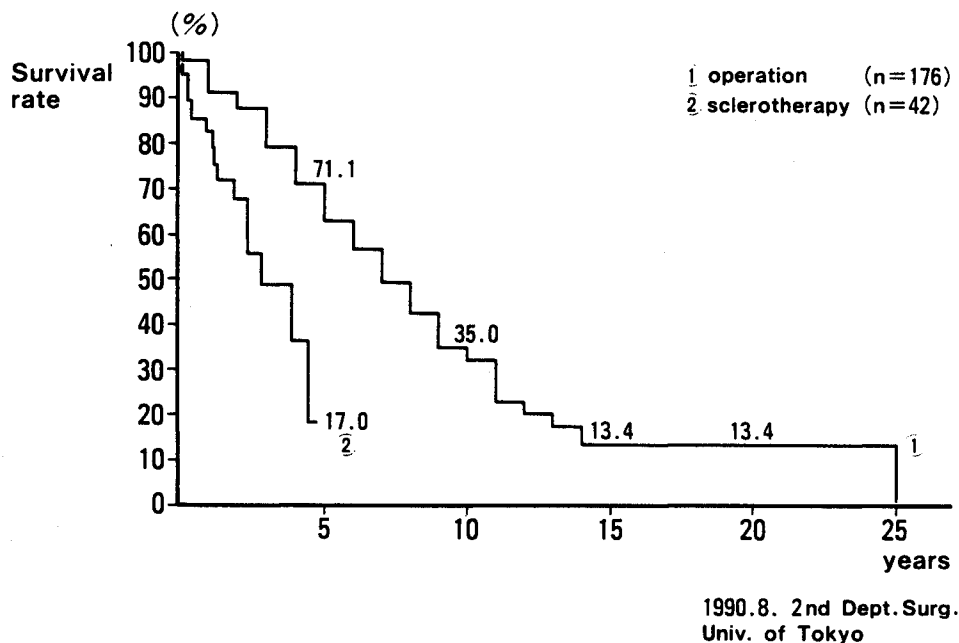
We started sclerotherapy for varices in 1969 in our department and treated 169 patients in whom surgery was not indicated, namely in Child C patients, patients complicated with unresectable hepatoma, patients with residual or recurrent varices after operation, rejection of operation by patient, or in whom treatment was performed as a prophylactic measure.

Cumulative survival rates of these patients were 72% at one year, 45% at 3 years, and 34% at 5 years. Cumulative survival rate in Child A patients was 72.0% which was not significantly different from that of non-shunting operations, but those of Child B and C patients were much lower than those of patients treated by surgery (Figures 1,2,3). This was partly because the sclerotherapy treated group included



**Figure 1** Cumulative survival rate in Child A patients; Non-shunting operation vs sclerotherapy

### Cumulative Survival Rate (Child B)



**Figure 2** Cumulative survival rate in Child B patients; Non-shunting operation vs sclerotherapy.

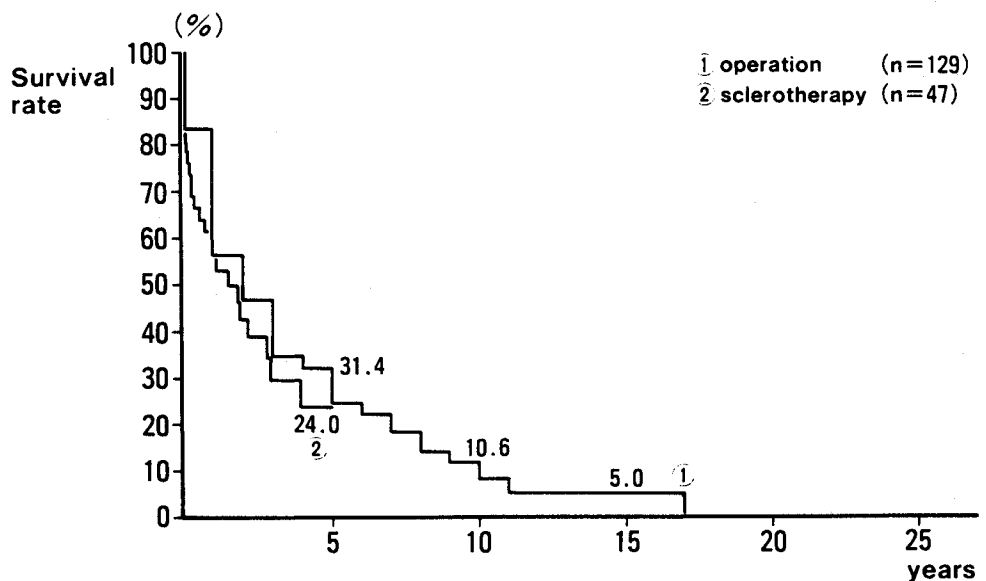
more patients who were complicated by hepatoma. Recurrence rate of bleeding after sclerotherapy was rather high, 22% of patients had at least one episode of rebleeding by the end of one year after sclerotherapy, and rebleeding rate reached up to 33% at 3 years. Oesophageal varices in Child C patients did not improve even after several sessions of sclerotherapy and patients with large caliber varices with increased blood flow were difficult to treat by sclerotherapy, who were eventually treated by surgery. It is rather disappointing for us surgeons that sclerotherapy has not been successful in many of the poor risk patients in whom operation can not be tolerated.

### PROPHYLACTIC TREATMENT OF OESOPHAGOGASTRIC VARICES

Prophylactic treatment of oesophagogastric varices has been a target of controversy among surgeons for many years, since predictability of rupture of varices has been doubted.

Endoscopic findings, and intravariceal pressure are considered to be of significant value in predicting variceal rupture<sup>8-11</sup>.

### Cumulative Survival Rate (Child C)



1990.8. 2nd Dept. Surg.  
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**Figure 3** Cumulative survival rate in Child C patients; Non-shunting operation vs sclerotherapy.

Correlation between Red-Color signs on endoscopy and intravariceal pressure was also found. On the basis of Red-Color signs and prognostic blue color of varices by endoscopy, prophylactic operation and prophylactic sclerotherapy have been widely performed in Japan<sup>7</sup>. Only few prospective controlled studies of prophylactic operations have been reported so far<sup>12</sup>. Mortality rate and morbidity directly related to prophylactic treatment have been very low with non-shunting operations and sclerotherapy.

Reports of prophylactic controlled studies with sclerotherapy are accumulating,<sup>13-19</sup> but the results have not been unanimous, and therefore not convincing.

Further study seems to be necessary before prophylactic treatment of oesophageal varices can be justified.

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