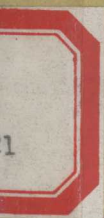


# TREATMENT OF ESOPHAGEAL VARICES



一九九一年十月卅一日



# Treatment of esophageal varices

Proceedings of the Tokyo Symposium  
on the Treatment of Esophageal Varices,  
Tokyo, Japan, 21–22 January 1988

*Editor:*

**YASUO IDEZUKI**

Second Department of Surgery,  
The University of Tokyo, Faculty of Medicine, Tokyo, Japan



EXCERPTA MEDICA, AMSTERDAM - NEW YORK - OXFORD

© 1988, Elsevier Science Publishers B.V. (Biomedical Division)

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior written permission of the Publisher, Elsevier Science Publishers B.V. (Biomedical Division), P.O. Box 1527, 1000 BM Amsterdam, The Netherlands.

No responsibility is assumed by the Publisher for any injury and/or damage to persons or property as a matter of products liability, negligence or otherwise, or from any use or operation of any methods, products, instructions or ideas contained in the material herein. Because of the rapid advances in the medical sciences, the Publisher recommends that independent verification of diagnoses and drug dosages should be made.

*Special regulations for readers in the U.S.A.* This publication has been registered with the Copyright Clearance Center, Inc. (CCC), Salem, Massachusetts. Information can be obtained from the CCC about conditions under which the photocopying of parts of this publication may be made in the USA. All other copyright questions, including photocopying outside the USA, should be referred to the copyright owner, Elsevier Science Publishers B.V. (Biomedical Division) unless otherwise specified.

International Congress Series 794  
ISBN 0-444-80999-6

*Published by:*  
Elsevier Science Publishers B.V.  
(Biomedical Division)  
P.O. Box 211  
1000 AE Amsterdam  
The Netherlands

*Sole distributors for the USA and Canada:*  
Elsevier Science Publishing Company, Inc.  
52 Vanderbilt Avenue  
New York, NY 10017  
USA

#### Library of Congress Cataloging in Publication Data

Tokyo Symposium on the Treatment of Esophageal  
Varices (1988)  
Treatment of esophageal varices.

(International congress series ; 794)

Includes bibliographies and index.

1. Esophageal varices--Endoscopic surgery--Congresses.
2. Portal hypertension--Surgery--Congresses.
3. Hemodynamics--Congresses. 4. Esophageal varices--Surgery--Japan--Congresses. I. Idezuki, Yasuo, 1934- . II. Title. III. Series: International congress series ; no. 794. [DNLM: 1. Esophageal and Gastric Varices--surgery--congresses. 2. Hemodynamics--congresses. 3. Sclerosing Solutions--therapeutic use--congresses. W3 EX89 no.794 / WI 720 T646t 1988]

RD539.5.T65 1988 617'.5480592 88-31095  
ISBN 0-444-80999-6 (U.S.)

Printed in The Netherlands

## Preface

Methods of control of bleeding from ruptured esophagogastric varices have been a target of interest of many physicians and surgeons since establishment of the concept of portal hypertension in the 1930s. However, treatment of esophagogastric varices has always been one of the most controversial issues in surgery and this seems still to be so since the new development of endoscopic sclerotherapy in recent years.

Many surgical procedures have been proposed and performed in patients in the past; however, the most logical and appropriate method of treatment for varices has not been uniformly agreed. One important reason for this is probably because the treatment of varices in most cases is a symptomatic one and does not improve the eventual course of the original diseases of the liver causing portal hypertension and varices. When portal decompression operations were introduced in the 1940s, it was considered that the final solution had been found; however, after 20 years of experience with these decompression procedures, they were abandoned by many surgeons because the mortality and morbidity associated with these operations were intolerably high and the results of controlled trials reported from many institutions had revealed that the patients' life expectancy was not improved by these shunt operations. In the late 1960s, selective shunt operations were introduced by Dr. Warren and by Dr. Inokuchi, and also the reappraisal and modification of direct operations on the esophagogastric varices were started and gradually became popular in Japan. Again 20 years have elapsed since the introduction of these new procedures, and now the long-term integrity of selective shunts is being questioned and the procedures are being modified again. Discrepancies in the results of direct operations reported from Japan and those reported from the United States and European countries have been significant, and non-shunting operations have not become popular in most of the Western countries.

Although controversies over the issue during the last four decades have mostly been over the methods of operation used by surgeons, since the recent development of endoscopic sclerotherapy controversy now exists between surgeons and physicians over surgery versus endoscopic sclerotherapy. In many institutions the recent development of sclerotherapy has had a great impact on surgeons as well as physicians. It seems that even selection of patients for surgery has been transferred to the hands of physicians from those of surgeons in many of the institutions in many countries.

Each doctor by nature, whether he is a physician or a surgeon, believes in his own treatment, which seems quite natural and is understandable, but often tends to become dogmatic in his selection of patients for a particular treatment. However, it is important to be thoroughly aware of up-to-date results with each method of



treatment and to analyse the data from other institutions critically but fairly in order to clarify and to solve the problems facing us. Only a scientific attitude and a critical mind will lead to the right conclusions.

We have invited almost all the prominent physicians and surgeons in Japan who have been engaged in this area so that the current trends in the treatment of varices in Japan will be dealt with comprehensively. We have also invited the most important physicians and surgeons from around the world who have been pioneers in the treatment of varices and have been actively engaged in this field, so that the current trends in other countries will also be well represented.

It is important that in solving this complicated and controversial issue that physicians and surgeons get together and exchange their results and ideas. Most of the practical problems in treating patients with varices have been brought up and discussed among the participants during the two-day symposium. I believe that the most recent results and solid data on treatment of esophagogastric varices from around the world are included in this volume. I sincerely hope that this information will be utilized in the future development of the treatment of varices and portal hypertension.

In the United States and in some of the European countries, liver transplantation is being performed as an ultimate form of treatment of bleeding varices in cirrhotic patients. Certainly, this may be a form of radical treatment for these patients, but liver transplantation still has its own problems and the number of patients to benefit from this radical approach will be limited.

**Yasuo Idezuki**

*A note from the editor:* The original manuscript by Dr. W. Dean Warren covering his talk at the symposium could not be included in this volume because of his severe condition due to the advance of his unrelenting illness. Those who attended the symposium should recall his invaluable endeavours and contributions to the symposium despite his severe illness. It is greatly appreciated that the authors, J.B. Lippincott Company and The Emory University Journal of Medicine have kindly permitted us to use the article by Henderson, Millikan and Warren which appeared in the Emory University Journal of Medicine as a substitute in this volume (Chapter 20).

# The Tokyo Symposium on the Treatment of Esophageal Varices (Tokyo, Japan, 21 – 22 January 1988)

## PRESIDENT

Yasuo Idezuki

(The University of Tokyo)

## ADVISORY BOARD TO EXECUTIVE COMMITTEE

Fumihiro Ichida

(Niigata University)

Kiyoshi Inokuchi

(Saga Prefectural Hospital)

Kunio Okuda

(Chiba University)

Toshitsugu Oda

(National Medical Center of Hospital)

Takao Sakita

(Showa General Hospital)

Tatsuo Wada

(Kanagawa Cancer Center)

## EXECUTIVE COMMITTEE

Haruo Aoki

(Fujita-Gakuen Health University)

Toshio Isomatsu

(Sapporo Teishin Hospital)

Kaoru Umeyama

(Osaka City University)

Hiroshi Oka

(The University of Tokyo)

Eizo Okamoto

(Hyogo College of Medicine)

Keiichi Ono

(Hirosaki University)

Reiji Kasukawa

(Fukushima Medical College)

Haruo Kameda

(The Jikei University)

Seiichiro Kobayashi

(Tokyo Women's Medical College)

Michio Kobayashi

(Medical College of Oita)

Kenji Koyama

(Akita University)

Toshio Sato

(Tohoku University)

Mitsuo Sugiura

(Juntendo University)

Keizo Sugimachi

(Kyusyu University)

Tadayoshi Takemoto

(Yamaguchi University)

Takayoshi Tobe

(Kyoto University)

Fusahiro Nagao

(The Jikei University)

Masayoshi Namiki

(Asahikawa Medical College)

Terukazu Mutoh

(Niigata University)

Sadahiro Yamamoto

(Aichi Medical University)

## ORGANIZING COMMITTEE

Yoshiya Kumagai

(Mitsukoshi Health and Ware Foundation)

Hiroaki Suzuki

(The Jikei University)

Yasuhiro Takase

(The University of Tsukuba)

Yusuke Tada

(The University of Tokyo)

Shunji Futagawa

(Juntendo University)

## EXECUTIVE SECRETARY

Kensho Sanjo

(The University of Tokyo)

## Acknowledgements

The Committee of The Tokyo Symposium on the Treatment of Esophageal Varices wishes to thank the following for their valuable contributions:

**Supporter's organization:**

Ministry of Education, Science and Culture of Japan  
Second Department of Surgery,  
University of Tokyo, Faculty of Medicine

**Main sponsors:**

Shionogi & Co., Ltd.  
Eisai Co., Ltd.  
Yamanouchi Pharmaceutical Co., Ltd.  
Sankyo Co., Ltd.  
Tsumura Juntendo Inc.  
Taiho Pharmaceutical Co., Ltd.  
Morishita Pharmaceutical Co., Ltd.  
Warner-Lambert K.K.  
Ajinomoto Co., Ltd.  
Toshiba Medical System Co., Ltd.

**Sponsors:**

Green Cross Corporation  
Kaigen Co., Ltd.  
Lederle (Japan) Ltd.

**Publication coordinator**

Jeff International Project Inc., Tokyo

# Contents

## Preface

<i>Y. Idezuki</i> .....	v
<b>The Tokyo Symposium on the Treatment of Esophageal Varices</b> .....	vii
<b>Acknowledgements</b> .....	ix

## INDICATIONS AND RESULTS OF ENDOSCOPIC SCLEROTHERAPY

**Chairpersons:** *Tadayoshi Takemoto and Haruo Kameda*

### Chapter 1

Indications and early and long-term results of paravariceal immediate, elective and prophylactic injection sclerotherapy

<i>K.-J. Paquet</i> .....	1
---------------------------	---

### Chapter 2

Results of endoscopic sclerotherapy: influence of hepatic reserve and cause of varices

<i>E.P. DiMugno</i> .....	23
---------------------------	----

### Chapter 3

Indication and results of injection sclerotherapy

<i>E. Okamoto, A. Shu and Y. Nakai</i> .....	37
--	----

### Chapter 4

Endoscopic sclerotherapy for esophageal varices by combined injection technique with 1% Polidocanol

<i>Y. Watanabe, M. Kohyama, R. Ohmasa, K. Masuda, H. Suzuki and O. Miho</i> .....	45
---	----

### Chapter 5

Endoscopic injection sclerotherapy: application, results and prediction of recurrence after the treatment

<i>Y. Yazaki, H. Maguchi, S. Okano, Y. Tominaga, T. Suzuki, M. Mizuno, C. Sekiya, A. Uehara and M. Namiki</i> .....	53
---	----

### Chapter 6

Clinical evaluation of endoscopic injection sclerotherapy for esophageal varices

<i>K. Tanikawa and A. Toyonaga</i> .....	67
--	----

### Chapter 7

A combination method for endoscopic injection sclerotherapy with ethanolamine oleate and polidocanol on esophageal varices

<i>R. Kasukawa, M. Masaki, K. Obara and H. Mitsuhashi</i> .....	75
---	----

### Chapter 8

Indication and technique of endoscopic injection sclerotherapy

<i>K. Sugimachi, S. Kitano, M. Hashizume and H. Yamaga</i> .....	85
--	----

### Chapter 9

Elective treatment of esophageal varices by injection sclerotherapy

<i>Y. Takase, Y. Kobayashi and S. Shibuya</i> .....	95
---	----

### Chapter 10

Indications of injection sclerotherapy for varices of the cardia

<i>Y. Kumagai and H. Makuuchi</i> .....	105
---	-----

### Chapter 11

Pathological findings after endoscopical injection sclerotherapy for esophageal varices

<i>M. Arakawa and M. Kage</i> .....	111
-------------------------------------	-----



## INDICATIONS AND RESULTS OF NON-SHUNTING OPERATIONS

Chairpersons: *Toshio Sato and Hiroshi Takagi*

### Chapter 12

- Oesophageal transection for varices: rationale, indications, technique and results  
*R.A.J. Spence* ..... 123

### Chapter 13

- Indications and results of portal-azygos disconnection surgeries (terminal esophago-proximal gastrectomy, proximal gastric transection and autosuture proximal gastrectomy) under endoscope assistance  
*S. Yamamoto* ..... 141

### Chapter 14

- Experience with non-shunting operation for esophageal varices, 1980-87  
*M. Sugiura, S. Futagawa, M. Fukasawa, Eiichi Kinoshita, R. Nakanishi and Y. Nishimura* ..... 149

### Chapter 15

- Late results of 224 cases of esophageal transection for esophageal varices  
*S. Kobayashi and K. Takasaki* ..... 161

### Chapter 16

- Indications and results of transabdominal esophageal transection for esophageal varices  
*K. Umeyama, T. Yamashita, K. Yoshikawa and T. Ishikawa* ..... 167

### Chapter 17

- Indications and results of non-shunting operations for esophageal varices  
*Y. Idezuki, K. Sanjo, H. Koyama, H. Sakamoto and N. Kokudo* ..... 175

### Chapter 18

- Indications and results of non-shunting operations: experience in 190 cases  
*K. Ouchi, T. Sato and K. Koyama* ..... 187

### Chapter 19

- The role of non-shunting surgery in the treatment of esophageal varices in comparison to injection sclerotherapy  
*K. Yoshida, K. Tsukada and T. Muto* ..... 195

## INDICATIONS AND RESULTS OF SELECTIVE SHUNTS

Chairpersons: *Sadahiro Yamamoto and Tatsuzo Tanabe*

### Chapter 20

- Selective variceal decompression by the distal splenorenal shunt: an Emory perspective 20 years later  
*J.M. Henderson, W.J. Millikan, Jr. and W.D. Warren* ..... 205

### Chapter 21

- The importance of hepatic functional reserve as a determinant of prognosis after portal decompression  
*F.E. Eckhauser, J.G. Turcotte and G.D. Zuidema* ..... 239

### Chapter 22

- Evaluation of shunting operation for the treatment of portal hypertension  
*Yan-Ting Huang* ..... 247

### Chapter 23

- Mesocaval shunts  
*K.G. Swan, J.J. Flanagan and J.M. Rocko* ..... 257

### Chapter 24

- Indication, results and prognosis of distal splenorenal shunt  
*K.-J. Paquet* ..... 271

### Chapter 25

- Selective shunts for esophageal varices via trans-left gastric venous and trans-splenic routes - their rationale and clinical results  
*M. Kobayashi, K. Inokuchi and K. Sugimachi* ..... 277

**Chapter 26**

Indication and results of distal splenorenal shunt

*T. Isomatsu* ..... 287**Chapter 27**

Long-term results of superselective distal splenorenal shunt

*H. Katoh and T. Tanabe* ..... 299**HEMODYNAMICS OF ESOPHAGEAL VARICES****Chairpersons:** *Hiroshi Oka and Takayoshi Tobe***Chapter 28**

Experimental and clinical effects of vasopressin

*K.G. Swan, J.J. Flanagan and D.M. Rosa* ..... 303**Chapter 29**

The hemodynamics of esophago-gastric varices: significance of esophago-gastric arterial inflow in their formation

*H. Aoki, A. Hasumi and M. Shimazu* ..... 315**Chapter 30**

Continuous intravenous infusion of pitressin for esophageal variceal bleeding and combined therapy for esophageal varices

*J. Ono and T. Katsuki* ..... 329**Chapter 31**

The effect of an amino acid solution granule-enriched with branched chain amino acids, and arginine, in patients with portal systemic encephalopathy

*K. Sanjo, Y. Idezuki and H. Oka* ..... 339**Chapter 32**

Emergency control of bleeding esophageal varices using a transparent tamponade tube (Idezuki's tube)

*M. Hagiwara, Y. Sato, M. Sakai and H. Watanabe* ..... 347**Chapter 33**

Angiographic study of hemodynamics in portal hypertension

*S. Futagawa, R. Nakanishi, Y. Hishimura and M. Sugiura* ..... 355**TREATMENT OF ESOPHAGEAL VARICES IN JAPAN****Chairperson:** *Taketo Katsuki***Chapter 34**

Study on portal hypertension in Japan: activities of the Japanese Research Society for Portal Hypertension during a period of 20 years

*K. Inokuchi* ..... 361**Chairperson:** *Tatsuo Wada***Chapter 35**

Current status of treatment of esophageal varices in Japan: endoscopic sclerotherapy in Japan

*Y. Idezuki* ..... 367

## Summary of general discussion on the treatment of esophageal varices

Chairpersons: W.D. Warren and Yasuo Idezuki ..... 375

K.-J. Paquet

Roy A.J. Spence

Kenneth G. Swan

Frederic E. Eckhauser

Eugene P. DiMagno

Huang Yan-Ting

Kiyoshi Inokuchi

Mitsuo Sugiura

Sadahiro Yamamoto

Kyuichi Tanikawa

Yasuhiro Takase

Hiroshi Ashida

Closing remarks ..... 379

Author index ..... 381

Subject index ..... 383

## TREATMENT OF ESOPHAGEAL VARICES IN JAPAN

Chairpersons: Yasuo Idezuki

Chapter 34

Study on portal hypertension in Japan: activities of the Japanese Research Society for Portal

Hypertension during a period of 10 years

K. Nakatsuji ..... 387

Chairpersons: Tetsuo Ikeda

Chapter 35

Current status of treatment of esophageal varices in Japan: endoscopic sclerotherapy in Japan

Y. Ashida ..... 387

Chapter 1

# Indications and early and long-term results of paravariceal immediate, elective and prophylactic injection sclerotherapy

K.-J. PAQUET

*Department of Surgery and Vascular Surgery, Heinz-Kalk Hospital, Am Gradierbau, D-8730 Bad Kissingen, FRG*

As so often happens, interest in an old technique has been renewed. Injection sclerotherapy was introduced in 1939 by Crawford and Frenckner [1] and in 1955 Macbeth [2] reported good results in 30 patients. A few other reports followed in ear, nose and throat journals but then shunt procedures became popular and have been an elective standard treatment for the past 20 years. Lately, however, surgeons have become disillusioned with shunt surgery, particularly for emergency bleeding. While Orloff et al. [3] still recommend emergency portacaval shunts, despite a mortality of 49% in the first 138 patients, shunting is an elective procedure in most centers. Even then the late encephalopathy has been found to be significant, and not only in those with very poor liver function. Against this background, Johnston and Rodgers and our group in 1973 [4, 5] published remarkably good results from sclerotherapy, controlling bleeding in 93 (92%) out of 117 patients with a total admission mortality of 18 (19%). Several other centers in Europe, South Africa and the United States then adapted the technique. However, around this time Warren and Inokuchi [6, 7] were starting their selective shunts, aimed at reducing the incidence of encephalopathy, so now is an opportune time in the treatment of this difficult disease to assess the role of injection sclerotherapy.

Stelzner and Lierse [8] noted that at the esophagogastric junction in rhesus monkeys (Fig. 1) the gastric subglandular veins pierce the muscularis mucosa to become subepithelial in position for the lowest few centimetres of the esophagus. Varices are useful collateral channels bypassing a venous block. It is only the few that happen to impinge on the esophageal mucosa that are dangerous and it is only these that need treatment [9]. Experiences in more than 1000 emergency endoscopies of the upper gastrointestinal tract in patients with liver cirrhosis and variceal hemorrhage have demonstrated that the source of bleeding can be found in the lower part of the esophagus in more than 90% of cases. This is the rationale for local sclerotherapy rather than larger operations to bypass or ligate all the collateral chan-



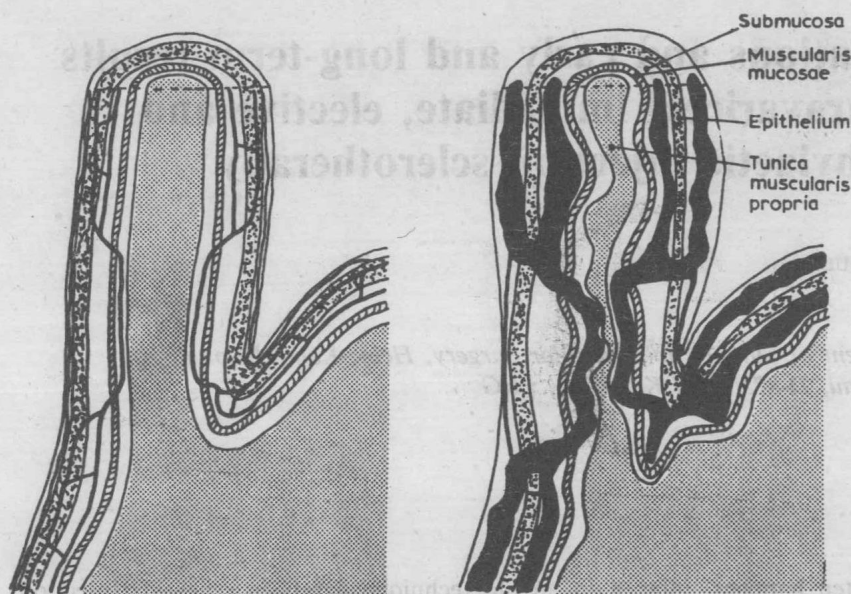


FIG. 1 Anatomical localization of esophageal varices in the lower part of the esophagus in rhesus monkeys; they are localized subepithelially.

TABLE 1 Different groups treated by paravariceal endoscopic sclerotherapy (01.01.1969–01.09.1987;  $n = 1761$ ) at the Department of Surgery, University of Bonn, and the Heinz-Kalk Hospital, Bad Kissingen, FRG

Group I	: Acute and uncontrollable variceal hemorrhage ( $n = 540 - 232$ (group Ia) = 308)
Group Ia	: Prospective evaluation ( $n = 232$ ; 01.01.1982–01.01.1987)
Group II	: Acute variceal hemorrhage – prospective controlled randomized trial ( $n = 22$ (43); 01.01.80–01.01.81)
Group III	: Elective treatment of variceal hemorrhage ( $n = 1016$ )
Group IVa	: Prophylactic treatment of esophageal varices 1. Prospective controlled randomized trial ( $n = 36$ ; 01.01.78–01.01.80)
Group IVb	: 2. Prospective evaluation ( $n = 82$ ; 01.01.80–01.09.86)
Group V	: Acute and elective treatment of variceal hemorrhage in childhood ( $n = 65$ ; 01.01.72–01.09.87)

nels. Our group has performed the method of paravariceal injection for more than 17 years and collected experience on more than 1750 patients, divided into 5 different groups (Table 1). The classification according to Child-Pugh [10, 11] is shown in Table 2.

Endoscopic sclerotherapy of esophageal varices is a therapeutic procedure to treat bleeding esophageal varices and to prevent further variceal bleeding. This procedure involves the passage of an esophagoscope, visualization of the esophageal varices and injection of a sclerosing agent into the varices or into the area surrounding the varices – paravariceally. The mechanism of injection sclerosis to control variceal hemorrhage is not understood completely, and involves a series of pathological events. The sclerosing agents are thought to damage the intima of varix and to cause intraluminal thrombosis followed by necrosis, polymorphonuclear leucocyte in-

TABLE 2 Sclerotherapy of the esophageal wall in esophageal varices: total number and classification after Child-Pugh ( $n = 1761$ ; 01.01.1969 – 01.09.1987 Department of Surgery, University of Bonn, and Heinz-Kalk Hospital, Bad Kissingen)

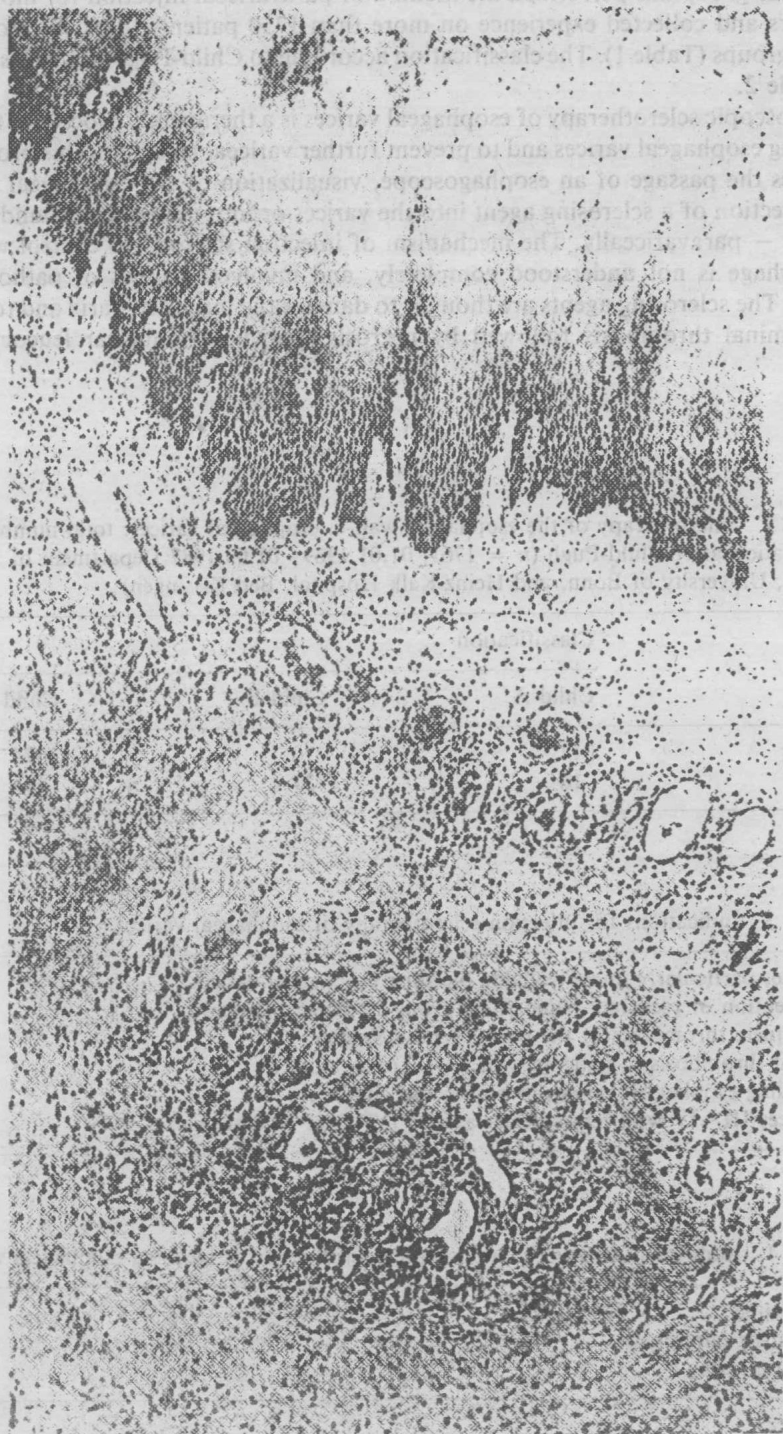
	Classification		
	Child A	Child B	Child C
Number	317	370	1074
Percent	18	21	61

TABLE 3 Indications for injection sclerotherapy of esophageal varices

1. Acute, particularly uncontrollable bleeding esophageal varices
2. Prevention of recurrent hemorrhage from esophageal varices
3. Complete thrombosis of the portal venous system
4. Shunt thrombosis in patients with intrahepatic block
5. Bleeding esophageal varices in babies and children
6. Varices III – IV with teleangiectasias and IVP over 30 cmH<sub>2</sub>O

TABLE 4 Additional devices for endoscopic sclerotherapy of bleeding esophageal varices

Flexible tube  
Balloons for tamponade  
X-ray monitoring



filtration, and localized inflammation. This, in turn, is thought to progress to intravascular fibrous organization, intimal thickening and perivenous fibrosis. By using the paravariceal approach the varices as collaterals are protected by scar tissue and thickening of the epithelium and mucosa and still perfused (Fig. 2).

The technique to perform endoscopic sclerotherapy is not standardized. Physicians differ in the indications for treatment. Our main indications are listed in Table 3. We must consider several different points. Will injection sclerotherapy be performed during the acute hemorrhage as emergency treatment or will it be performed after conservative management with vaso- or glycyipressin or balloon tamponade or only if this conservative management is not effective? Will it be applied as long-term management to prevent recurrent bleeding or are there indications for its prophylactic use (Table 4)? Is it suitable for all patients without respect to their liver function or should it only be chosen for patients with decompensated liver function, especial-

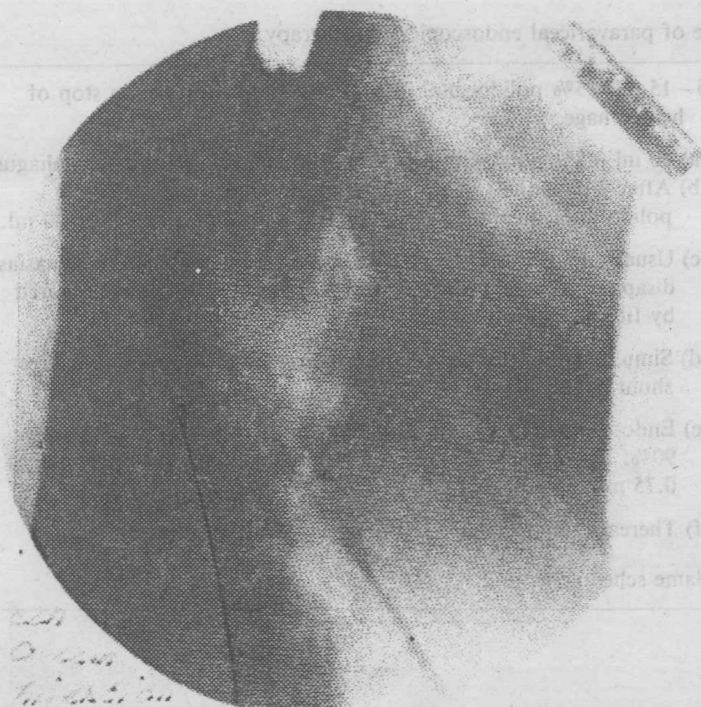


FIG. 3 X-ray control of paravariceal or submucosal injection of sclerosant diluted by contrast medium; the X-ray picture is taken three minutes after injection; all injected substance is still localized in the injection areas and has not entered the systemic circulation.

FIG. 2 Histological specimen of the terminal esophagus after paravariceal endoscopic injection sclerotherapy and resection of 3 cm terminal esophagus; esophageal varices are still perfused.



ly Child C patients? Can the results of endoscopic sclerotherapy be improved if this type of treatment is combined with other methods such as drugs, laser or shunt operation and performed as acute or long-term management? Are additional devices necessary for endoscopic sclerotherapy of esophageal varices such as an additional tube, which is recommended by the King's College Hospital in London, or different types of balloon or is X-ray monitoring during injection necessary or advisable? We prefer to do it by free-hand technique without special devices. We only sometimes check the localization of injection if it is para- or intravariceal by X-ray monitoring (Fig. 3). The schedule of our method of paravariceal endoscopic sclerotherapy is shown in Table 5.

Furthermore, physicians and surgeons differ (Table 6) with regard to volume of sclerosing agent, the type, number, place, depth and frequency of injections, the type of endoscope and anaesthetic and attractive supportive measures.

TABLE 5 Schedule of paravariceal endoscopic sclerotherapy

- 
- |                  |  |
|------------------|--|
| 1. Acute:        | 5–15 ml 0.5% polidocanol in portions of 1 ml up to the stop of hemorrhage.   |
| 2. Elective:     | <p>(a) 40 ml 0.5% polidocanol in 40 portions in the terminal esophagus.</p> <p>(b) After 7 days the same; if there are no ulcerations, take 1% polidocanol; in the case of ulcerations wait or inject only 20 ml.</p> <p>(c) Usually 1–6 sessions using the same schedule till teleangiectasias disappeared and epithelium and mucosa are completely covered by fibrous tissue.</p> <p>(d) Simultaneous selection of the patients for elective and selective shunt operation.</p> <p>(e) Endoscopic control after 4 months and resclerosis if necessary 90%. Inject per session 0.5 or 1% polidocanol in 40 portions of 0.75 ml.</p> <p>(f) Thereafter endoscopic control every 4–12 months.</p> |
| 3. Prophylactic: | Same schedule as in 2.   |
- 

TABLE 6 Differences in the techniques of endoscopic sclerotherapy of esophageal varices

- 
- |  |
|--|
| 1. Different substances for injection, e.g. polidocanol, ethanolamine, etc.                |
| 2. Volume per injection  |
| 3. Place and depth of injection: intra-, para- and combined injection                      |
| 4. Schedule of sclerotherapy, e.g. injection once per week, etc.; control after 3–4 months |
| 5. Type of endoscope, rigid or flexible  |
| 6. Methods of compression during injection   |
-