Raymond L. Hurt (Ed.)

Management of Oesophageal Carcinoma

Raymond L. Hurt (Ed.)

Management of Oesophageal Carcinoma

With 110 Figures

Springer-Verlag
London Berlin Heidelberg New York
Paris Tokyo Hong Kong

Raymond L. Hurt, MB, BS, FRCS
Consultant Thoracic Surgeon, North Middlesex Hospital, Edmonton, London N18 1QX and St. Bartholomew's Hospital, London EC1A 7BE

ISBN 3-540-19553-X Springer-Verlag Berlin Heidelberg New York
ISBN 0-387-19553-X Springer-Verlag New York Berlin Heidelberg

British Library Cataloguing in Publication Data
Management of oesophageal cancer.
1. Man. Oesophagus. Cancer I. Hurt, Raymond 616.99'432
ISBN 3-540-19533-X

Library of Congress Cataloging-in-Publication Data
Management of oesophageal carcinoma/Raymond Hurt (ed.).
p. cm. Includes bibliographies and index.
ISBN 0-387-19533-X
1. Esophagus—Cancer. 2. Esophagus—Surgery. I. Hurt, Raymond.
[DNLM: 1. Esophageal Neoplasms. WI 250 M266] RC280.E8M36 1989
616.99'432—dc19 DNLM/DLC for Library of Congress 89-6101
CIP

Filmset by Wilmaset, Birkenhead, Wirral
Printed by Henry Ling Ltd, The Dorset Press, Dorchester
2128/3916-543210 Printed on acid-free paper

Contributors

S. J. Arnott, FRCS, FRCR
Consultant Radiotherapist, Radiotherapy Department, St. Bartholomew's Hospital, West Smithfield, London EC1A 7BE

R. S. Bonser, MB, FRCS
Senior Registrar in Cardiothoracic Surgery, Brompton Hospital, Fulham Road, London SW3 6HP

Paula J. Cook-Mozaffari, MA, BLitt
Medical Research Council External Scientific Staff, ICRF, Cancer Epidemiology Unit, Department of Community Medicine, Radcliffe Infirmary, Woodstock Road, Oxford OX2 6HE

R. J. Donnelly, FRCS Ed
Consultant Thoracic Surgeon, Regional Adult Cardiothoracic Unit, Broadgreen Hospital, Thomas Drive, Liverpool L14 3LB

P. Goldstraw, MB, FRCS, FRCSE
Consultant Thoracic Surgeon, Brompton Hospital, Fulham Road, London SW3 6HP

D. F. N. Harrison, MD, MS, PhD, FRCS
Professor, The Institute of Laryngology and Otology, 330 Gray's Inn Road, London WC1X 8EE

R. L. Hurt, MB, BS, FRCS
Consultant Thoracic Surgeon, North Middlesex Hospital, Edmonton, London N18 1QX and St. Bartholomew's Hospital, London EC1A 7BE

R. M. Kirk, MS, FRCS
Consultant Surgeon, Royal Free Hospital, London, Pond Street, London NW3 2QG

R. E. Lea, MBChB, FRCS Ed
Consultant Thoracic Surgeon, Wessex Cardiothoracic Unit, Southampton General Hospital, Tremona Road, Southampton SO9 4XY

Alison M. McLean, MB, BChir, MRCP, FRCR
Consultant Radiologist, St. Bartholomew's Hospital, London EC1A 7BE

K. Matthewson, MB, BS, MRCP
Consultant Physician and Gastroenterologist, General Hospital, Hexham, Northumberland, NE46 1QJ

K. M. Pagliero, MB, BS, FRCS
Consultant Thoracic Surgeon, Royal Devon and Exeter Hospital (Wonford), Barrack Road, Exeter EX2 5DW

R. H. Reznek, MRCP, FRCR
Consultant Radiologist, St. Bartholomew's Hospital, West Smithfield, London EC1A 7BE

J. R. Salisbury, BSc, MB, BS, MRCPath
Senior Lecturer, Department of Morbid Anatomy, King's College School of Medicine and Dentistry, Denmark Hill, London SE5 8RX

A. Watson, MD, FRCS
Consultant Surgeon, Royal Lancaster Infirmary, Lancaster LA1 4RP

W. F. Whimster, MD, FRCP, FRCPath
Reader and Head of Department, Department of Morbid Anatomy, King's College School of Medicine and Dentistry, Denmark Hill, London SE5 8RX

Contents

Chapter 1

Historical Survey of Surgical Treatment

R. L. Hurt

> That which is *New* at this time will one day be *Ancient*; as what today is *Ancient* was once *New* . . . it is not *Length of Time* which can give a value to *Things*; it is only their own *Excellency*.
> (Belloste, The Hospital Surgeon, 1701)

Since the middle of the last century, surgeons have shown great courage and enterprise in developing techniques for the resection of carcinoma of the oesophagus – first for growths in the cervical oesophagus, then for growths at the lower end of the oesophagus (by the abdominal route), and finally for growths in the thoracic oesophagus. The history of the development of these techniques may be divided, like Gaul, into three parts.

1. *1877–1912*: Early procedures in which no attempt had been made to restore continuity between the pharynx and the stomach (except for carcinoma of the cervical oesophagus).
2. *1913–1938*: Later procedures in which continuity had been restored, usually at a subsequent operation, by a presternal tube of skin, stomach, jejunum or colon, or an external rubber tube.
3. *1938 onwards*: The ideal procedure of excision and immediate restoration of continuity within the chest or neck to allow normal swallowing.

The development of successful techniques was slow because of the inaccessibility of the oesophagus, both in the neck and in the thorax, the lack of a serous coat to the oesophagus which made early anastomotic techniques hazardous, and the

situation of the oesophagus in an area where postoperative infection was especially dangerous and rapid in its spread.

Nineteenth Century

"Surgeons have travelled a long rugged road to bring their craft to its present position. This road can be measured by milestones of triumph and progress; also by tombstones of tragedy and prejudice. The journey cannot be described as a particularly sentimental one, but rather as a struggle in which stern realism has usually obscured any elements of romance. Only the words of those who have lighted the way remain to show the romance of surgery. They are the words of earnest men, the strength of whose convictions exceeded the techniques available for its expression. These men stand poles apart from today's 'bright boys' who are so facile in wielding the techniques they have inherited." (E. D. Churchill, 1960)

Acknowledgement should also be made to the courage of those innumerable patients whose fortitude in the early days of thoracic surgery enabled progress to be maintained. This was in the face of much adversity which often lasted for several months during the complicated staged procedures necessary for the completion of the early operations.

The saga of the development of resection techniques began in Central Europe in the late nineteenth century, at a time when the Viennese School of Surgery was at its height. Theodor Billroth (Fig. 1.1), that giant among surgeons who was also a capable pianist, violinist, composer and music critic, as well as a personal friend of Brahms, began to investigate the possibility of the resection of the *cervical oesophagus* in dogs in Vienna in 1870. He was assisted by Czerny, who later, when Professor of Surgery in Heidelberg, achieved in 1877 the first successful resection of an oesophageal carcinoma. This carcinoma, an annular stricture a short distance below the pharynx in a 51-year-old woman, was excised by removing a segment of the cervical oesophagus containing the growth and bringing out the lower end onto the neck. Subsequent feeding was through a catheter inserted into this oesophagostomy and the patient was well and back at work five months later. She lived for a further seven months before dying from a recurrence of the tumour.

Two years later, in 1879, Billroth himself resected a more extensive carcinoma of the cervical oesophagus. After a preliminary tracheostomy, the carcinoma, together with the larynx and thyroid gland, were removed and a feeding oesophageal tube was left in place. Perhaps somewhat surprisingly there were no immediate complications and four weeks later the operation wound was "encouraged to close", with the hope that epithelialisation would produce a new oesophageal channel. Bougies were passed to maintain the lumen but alas two weeks later a bougie passed into the mediastinum and the patient died within three days from mediastinitis. Using this technique nine resections were reported up to 1885 by Bergmann (Berlin), Billroth, Czerny, Langenbeck (Berlin), Thiersch, Novarro, Israel and Iversen. There were five operative deaths and only

Fig. 1.1. Theodor Billroth 1829–1894. From Meade, History of Thoracic Surgery, 1961. Courtesy of Charles C Thomas, Publisher, Springfield, Illinois.

four patients survived operation for 3–12 months (von Mikulicz 1886). Doubtless many non-survivors were not reported.

A considerable advance was made in 1886 by von Mikulicz of Cracow University, Poland, who had also been a pupil of Billroth. He successfully reconstructed the cervical oesophagus by the use of skin flaps and his patient was able to swallow normally for about eleven months after operation before dying from a recurrence of the growth (von Mikulicz 1886). Karl Garré of Switzerland reported three successful resections in 1898, the first two by a Mikulicz-type of operation and the third by a new technique using healthy laryngeal mucous membrane as a pedicle graft to construct a new oesophagus. By the end of the nineteenth century Germany was clearly pre-eminent in the development of oesophageal resection and in the *Handbuch der Praktischen Chirurgia* edited by Bergmann, Bruns and Mikulicz (1899), the Viennese surgeon Lotheisen summarised the accepted views on the treatment of oesophageal carcinoma available at that time:

> The treatment includes such operative procedures as oesophageal resection or oesophagotomy and gastrostomy. Non-operative methods are dilation with sounds or rubber catheters and the introduction of permanent intubation for feeding.
>
> *Resection of the oesophagus*: Radical measures are rarely possible for the growth is not often so located as to be accessible for resection. Only in the cervical portion have any results – even transitory ones – been achieved by surgeons. Up to the present time only 15 cases of primary carcinoma of the

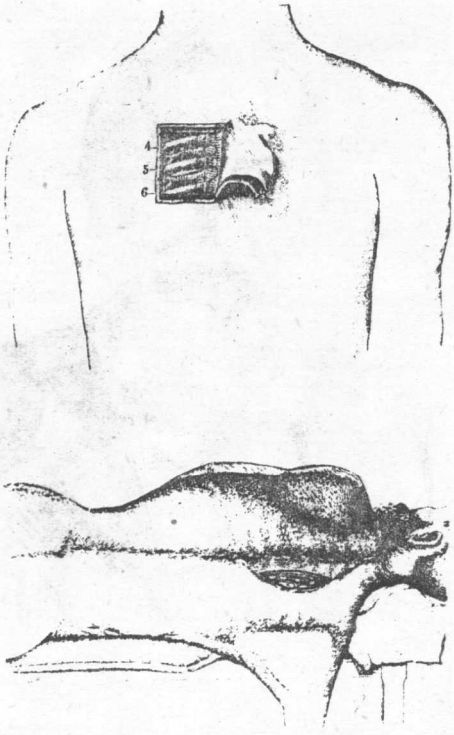

Fig. 1.2. Bryant's (1895) approach to the posterior mediastinum (above) and Potarca's (1898) approach to the intrathoracic oesophagus (below).

oesophagus have come to operation, of which numbers five terminated fatally. Resection is often followed by severe oesophageal stricture . . . This is particularly so if there is tension. (Quoted by L. A. Hochberg, 1960)

Resection of the *thoracic oesophagus* had been a very much more difficult problem for two reasons – firstly, the physiological and anaesthetic problems of operating inside the chest had not yet been solved and, secondly, the problem of mediastinal infection had not yet been overcome.

Nassiloff of St Petersburg must be given the credit for first suggesting in 1888 an extrapleural approach to the upper thoracic oesophagus "from the posterior part of the thorax outside the pleura by resecting four ribs". This study of dissections in cadavers, which was repeated by Bryant in 1895 in the USA and by Potarca in 1898 in Bucharest (Fig. 1.2), was originally proposed for the removal of foreign bodies and, indeed, in 1901 Enderlen of Heidelberg successfully removed a swallowed denture by this route. A logical extension of this work was for the resection of carcinoma. It had been thought that this extrapleural approach would reduce the hazard of mediastinal and pleural infection but in fact most subsequent operations were by the transpleural route.

Early Twentieth Century

From 1900 onwards there were two approaches to the problem of resection of the thoracic oesophagus: (1) excision of the growth, together with a cervical oesophagostomy and a feeding gastrostomy, followed *later* by the use of an external rubber tube (Torek operation) or the construction of a presternal tube of skin, stomach, jejunum or colon; or (2) resection of the growth and an *immediate* anastomosis of the oesophagus to the mobilised stomach brought up into the chest.

1. *Torek operation.* A successful resection and the use of a cervical oesophagostomy was not accomplished till 1913 by Franz Torek (Fig. 1.3) in New York, who resected an oesophageal carcinoma situated at the level of the aortic arch in a 67-year-old woman by a left transpleural approach, a route which had first been attempted by both Mikulicz and Fauré 10 years earlier but without success. The aortic arch was retracted anteriorly after division of the upper intercostal arteries. The lower end of the oesophagus was invaginated like an appendix stump, the upper end, together with the carcinoma, brought out through a cervical incision, the carcinoma resected and the remainder of the oesophagus tunnelled under the skin to make an oesophagostomy on the anterior chest wall at the second interspace. During this operation there was considerable concern at the necessity for the division of the cardiac branches of the vagus nerve. During previous

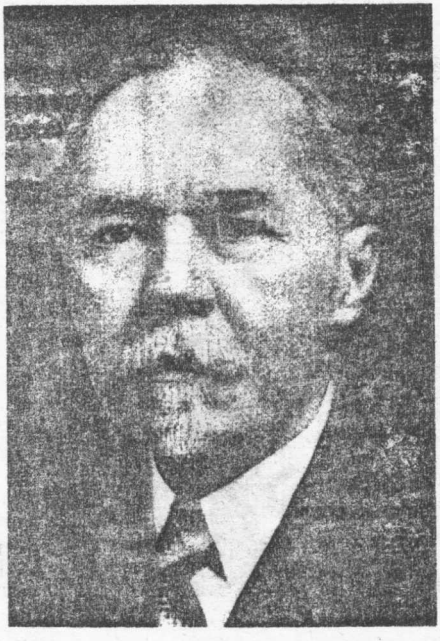

Fig. 1.3. Franz Torek 1861–1938. From Nissen, Pages in the History of Chest Surgery, 1960, Courtesy of Charles C Thomas, Publisher, Springfield, Illinois.