

THE RISKS ASSOCIATED WITH PNEUMONECTOMY

Gilles Beauchamp, MD,* Denise Ouellette, MD

In this issue (page 437), Swartz and colleagues report their experience with a group of patients who underwent pneumonectomy at the Montreal General Hospital. The death rate was 10.9%, and this presented an opportunity for the authors to review pneumonectomy-related deaths in the literature and identify the risk factors.

In the last 15 years, many articles on pneumonectomy have reported death rates similar to that of Swartz and colleagues. However, in 1982, Ginsberg and associates¹ reported a 6.2% death rate in 569 pneumonectomies of the Lung Cancer Study Group. The rate rose to 7.1% for patients over 70 years of age. A large series of patients has recently been reported by Damhuis and Schulte of the Comprehensive Cancer Centre of Rotterdam, The Netherlands, duplicating the results of the Lung Cancer Study Group, with an operative death rate of 5.7% for pneumonectomy.² Others have scrutinized in more detail the causes of death after pneumonectomy: Kohman and associates,³ Patel, Townsend and Fountain,⁴ Romano and Mark,⁵ Putnam and colleagues,⁶ Wahi and colleagues,⁷ Ferguson, Reeder and Mick,⁸ and Deslauriers and associates⁹ are among those who have identified through multivariate analysis several risk factors leading to death after pneumonectomy. These factors included sex (men are at greater

risk than women), age (greater than 60 to 70 years), pulmonary reserve (spirometry, diffusion), side of resection (right pneumonectomy presents a greater risk than left pneumonectomy), stage of malignant disease (stage III presents a greater risk than stage I or II), extent of resection (completion pneumonectomy and pleuropneumonectomy are greater risks than pneumonectomy), Karnofsky index (less than 9 indicates a risk), comorbid disease (chronic obstructive pulmonary disease, congestive heart failure and diabetes are high risk factors), intraoperative and postoperative tachyarrhythmias (atrial fibrillation), administration of fluid or blood in the first 24 hours postoperatively (more than 2.5 to 3 L) and the development of postpneumonectomy pulmonary edema (PPE).

In their study, Swartz and colleagues identified the following risk factors as significant ones leading to postoperative death: age, comorbid disease and the amount of fluid given in the first 12 hours postoperatively, the last being a possible cause of PPE. PPE remains an unexplained entity that deserves more attention in order to decrease pneumonectomy-related death. This belongs to the fields of basic and clinical research, where studies in an institution such as the Montreal General Hospital could help us better

understand this phenomenon. A reduction of the incidence of PPE would make pneumonectomy safer and could reduce the death rate below 5%. Until we know more about PPE and its prevention, surgeons should continue to improve the management of the other known risk factors in order to make pneumonectomy a safer operation.

Several previously mentioned risk factors except PPE are to some extent predictable or manageable. In the report of Swartz and colleagues, there were 3 cases of cardiac herniation causing death, which is preventable. Today we can better select patients for surgery according to their cardiopulmonary fitness, and this remains the domain of the surgeon. To decrease the death rate after pneumonectomy, Knott-Craig has proposed a series of precautions.¹⁰ These include preoperative digitalization, subcutaneous administration of heparin, use of veno-occlusive stockings and aggressive bronchial toilet. His data seem to prove the efficacy of his prevention protocol, because he reports a death rate of 3.2% for his pneumonectomies. According to Swartz and colleagues, one should add a very diligent management of perioperative fluid. Preoperative optimization of cardiac function is also mandatory.

The routine use of epidural analgesia has certainly helped to decrease the

From the Division of Thoracic Surgery, Hôpital Maisonneuve-Rosemont, Université de Montréal, Montreal, Que.

**Member, Editorial Board, Canadian Journal of Surgery*

Correspondence to: Dr. Gilles Beauchamp, Division of Thoracic Surgery, Hôpital Maisonneuve-Rosemont, 5415, boul de l'Assomption, Montreal QC H1T 2M4

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incidence of postoperative atelectasis and pneumonia. This is a major improvement in the management of these patients who undergo pneumonectomy. Thus, a team approach, including surgeons, anesthetists, critical care and chest physicians, is essential. Pneumonectomy should be performed in hospitals with sufficient caseload and surgical expertise. Finally, on a national level, thoracic surgeons should develop a national registry for pneumonectomies. This could increase our knowledge of the pathophysiology of pneumonectomy and stimulate us to obtain better results in what is still considered a high risk operation.

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Books and Other Media Received Livres et autres documents reçus

This list is an acknowledgement of books and other media received. It does not preclude review at a later date.

Cette liste énumère les livres et autres documents reçus. Elle n'en exclut pas la critique à une date ultérieure.

Congenital Heart Disease. Textbook of Angiocardiography. Volume I. Robert M. Freedom, John B. Mawson,

Shi-Joon Yoo and Leland N. Benson. 662 pp. Illust. Futura Publishing Company, Inc., Armonk, NY. 1997. US\$275. ISBN 0-87993-656-8 (2-volume set)

Congenital Heart Disease. Textbook of Angiocardiography. Volume II. Robert M. Freedom, John B. Mawson,

Shi-Joon Yoo and Leland N. Benson. 767 pp. Illust. Futura Publishing Company, Inc., Armonk, NY. 1997. US\$275. ISBN 0-87993-656-8 (2-volume set)

Reconstructive Urologic Surgery. 3rd edition. Edited by John A. Libertino. 694 pp. Illust. Mosby-Year Book, Inc.,

Chicago, Ill.; Harcourt Brace & Co. Canada, Ltd., Toronto. 1998. Can\$240. ISBN 0-8016-7802-1

Tropical Surgery. Edited by Ricardo V. Cohen, Frederico Aun, David E. Uip. 337 pp. Illust. Karger Landes Systems, Basel, Switzerland. 1997. Price not available. ISBN 3-8055-6497-X