Assistance Publique
Hôpitaux de Marseille

JOURNÉE DE RÉANIMATION ET URGENCES RESPIRATOIRES

Prévention des Complications Respiratoires en Chirurgie Thoraco-Abdominale

Définition, fréquence, gravité

D'JOURNO XB

Chirurgie Thoracique - CHU Marseille

JRUR – 5 avril 2007

Assistance Publique
Hôpitaux de Marseille

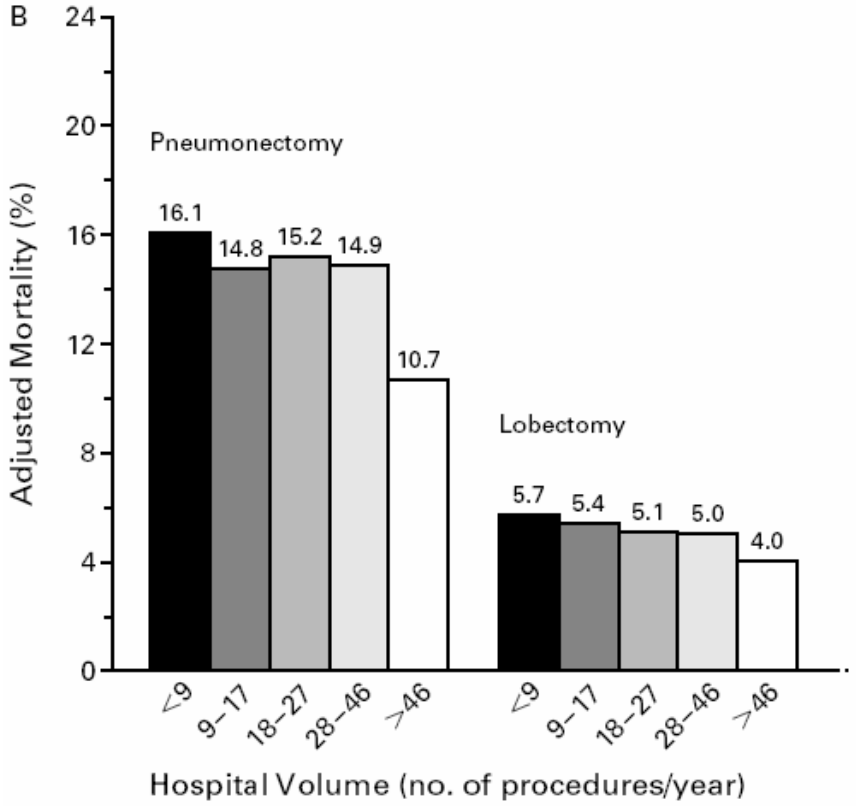
Journée de Réanimation et Urgences Respiratoires

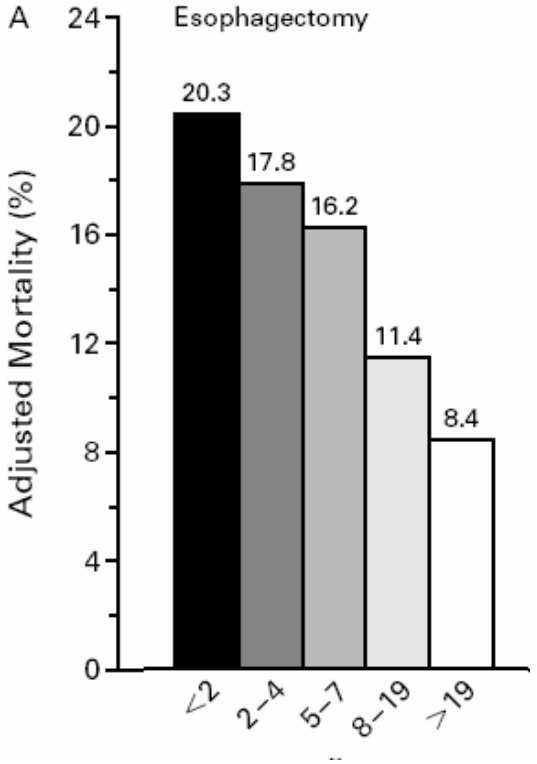
- Cancer de l'œsophage (oesophagectomie)
- Cancer du poumon (Lobectomie – Pneumonectomie)

- Dépend de l'expérience du centre hospitalier
- Dépend étroitement de la définition employée

Mortalité « opératoire »

Dépend de l'expérience du centre hospitalier





The New England Journal of Medicine

JD Birkmeyer N Engl J Med 2002; 346:1128-37.

Dépend étroitement de la définition employée

Exemple du cancer de l'oesophage

Références	Nb	CRPO %	Pneumopathie	SDRA ALI	Encombrement	Reintubation	DC	Séjour USI	Séjour Hôpital
Karl ATS 2000	143	**19**	8	2	nc	2	2.1	3.3	13.5
Doty ATS 2002	120	**8**	2.5	2.5	nc	nc	0.8	nc	15
Chandrashekar 2002	76	**22**	13	9.2	nc	9	2.6	3	nc
Fang ATS 2003	441	**7.3**	nc	nc	nc	nc	3.9	nc	nc
Atkins ATS 2004	379	**15,8**	15,8	Nc	nc	6,1	5,8	nc	nc
Ferguson JTCVS 2002	292	**27**	nc	Nc	nc	nc	13.7	nc	19
Avendano ATS 2002	81	**36.1**	32.8	9.8	nc	nc	11.5	6.1	17.7
Whooley ATS 2001	710	**32**	17	12	nc	nc	11	nc	24

Classification of Surgical Complications

A New Proposal With Evaluation in a Cohort of 6336 Patients and Results of a Survey

Daniel Dindo, MD, Nicolas Demartines, MD, and Pierre-Alain Clavien, MD, PhD, FRCS, FACS

(*Ann Surg* 2004;240: 205–213)

TABLE 1. Classification of Surgical Complications

Grade	Definition
Grade I	Any deviation from the normal postoperative course without the need for pharmacological treatment or surgical, endoscopic, and radiological interventions
	Allowed therapeutic regimens are: drugs as antiemetics, antipyretics, analgetics, diuretics, electrolytes, and physiotherapy. This grade also includes wound infections opened at the bedside
Grade II	Requiring pharmacological treatment with drugs other than such allowed for grade I complications
	Blood transfusions and total parenteral nutrition are also included
Grade III	Requiring surgical, endoscopic or radiological intervention
Grade IIIa	Intervention not under general anesthesia
Grade IIIb	Intervention under general anesthesia
Grade IV	Life-threatening complication (including CNS complications)* requiring IC/ICU management
Grade IVa	Single organ dysfunction (including dialysis)
Grade IVb	Multiorgan dysfunction
Grade V	Death of a patient
Suffix "d"	If the patient suffers from a complication at the time of discharge (see examples in Table 2), the suffix "d" (for "disability") is added to the respective grade of complication. This label indicates the need for a follow-up to fully evaluate the complication.

*Brain hemorrhage, ischemic stroke, subarrachnoidal bleeding, but excluding transient ischemic attacks.
CNS, central nervous system; IC, intermediate care; ICU, intensive care unit.

Assistance Publique
Hôpitaux de Marseille

ANIMATION
RGENCES
SPIRATOIRES

TABLE 2. Clinical Examples of Complication Grades

Grades	Organ System	Examples
Grade I	Cardiac	Atrial fibrillation converting after correction of K^+-level
	Respiratory	Atelectasis requiring physiotherapy
	Neurological	Transient confusion not requiring therapy
	Gastrointestinal	Noninfectious diarrhea
	Renal	Transient elevation of serum creatinine
	Other	Wound infection treated by opening of the wound at the bedside
Grade II	Cardiac	Tachyarrhythmia requiring β-receptor antagonists for heart rate control
	Respiratory	Pneumonia treated with antibiotics on the ward
	Neurological	TIA requiring treatment with anticoagulants
	Gastrointestinal	Infectious diarrhea requiring antibiotics
	Renal	Urinary tract infection requiring antibiotics
	Other	Same as for I but followed by treatment with antibiotics because of additional phlegmonous infection
Grade IIIa	Cardiac	Bradyarrhythmia requiring pacemaker implantation in local anesthesia
	Neurological	See grade IV
	Gastrointestinal	Biloma after liver resection requiring percutaneous drainage
	Renal	Stenosis of the ureter after kidney transplantation treated by stenting
	Other	Closure of dehiscent noninfected wound in the OR under local anesthesia
Grade IIIb	Cardiac	Cardiac temponade after thoracic surgery requiring fenestration
	Respiratory	Bronchopleural fistulas after thoracic surgery requiring surgical closure
	Neurological	See grade IV
	Gastrointestinal	Anastomotic leakage after descendorectostomy requiring relaparotomy
	Renal	Stenosis of the ureter after kidney transplantation treated by surgery
	Other	Wound infection leading to eventration of small bowel
Grade IVa	Cardiac	Heart failure leading to low-output syndrome
	Respiratory	Lung failure requiring intubation
	Neurological	Ischemic stroke/brain hemorrhage
	Gastrointestinal	Necrotizing pancreatitis
	Renal	Renal insufficiency requiring dialysis
Grade IVb	Cardiac	Same as for IVa but in combination with renal failure
	Respiratory	Same as for IVa but in combination with renal failure
	Gastrointestinal	Same as for IVa but in combination with hemodynamic instability
	Neurological	Ischemic stroke/brain hemorrhage with respiratory failure
	Renal	Same as for IVa but in combination with hemodynamic instability
Suffix "d"	Cardiac	Cardiac insufficiency after myocardial infarction (IVa–d)
	Respiratory	Dyspnea after pneumonectomy for severe bleeding after chest tube placement (IIIb–d)
	Gastrointestinal	Residual fecal incontinence after abscess following descendorectostomy with surgical evacuation. (IIIb–d)
	Neurological	Stroke with sensorimotor hemisyndrome (IVa–d)
	Renal	Residual renal insufficiency after sepsis with multiorgan dysfunction (IVb–d)
	Other	Hoarseness after thyroid surgery (I–d)

TIA, transient ischemic attack; OR, operating room.

Définition (s)

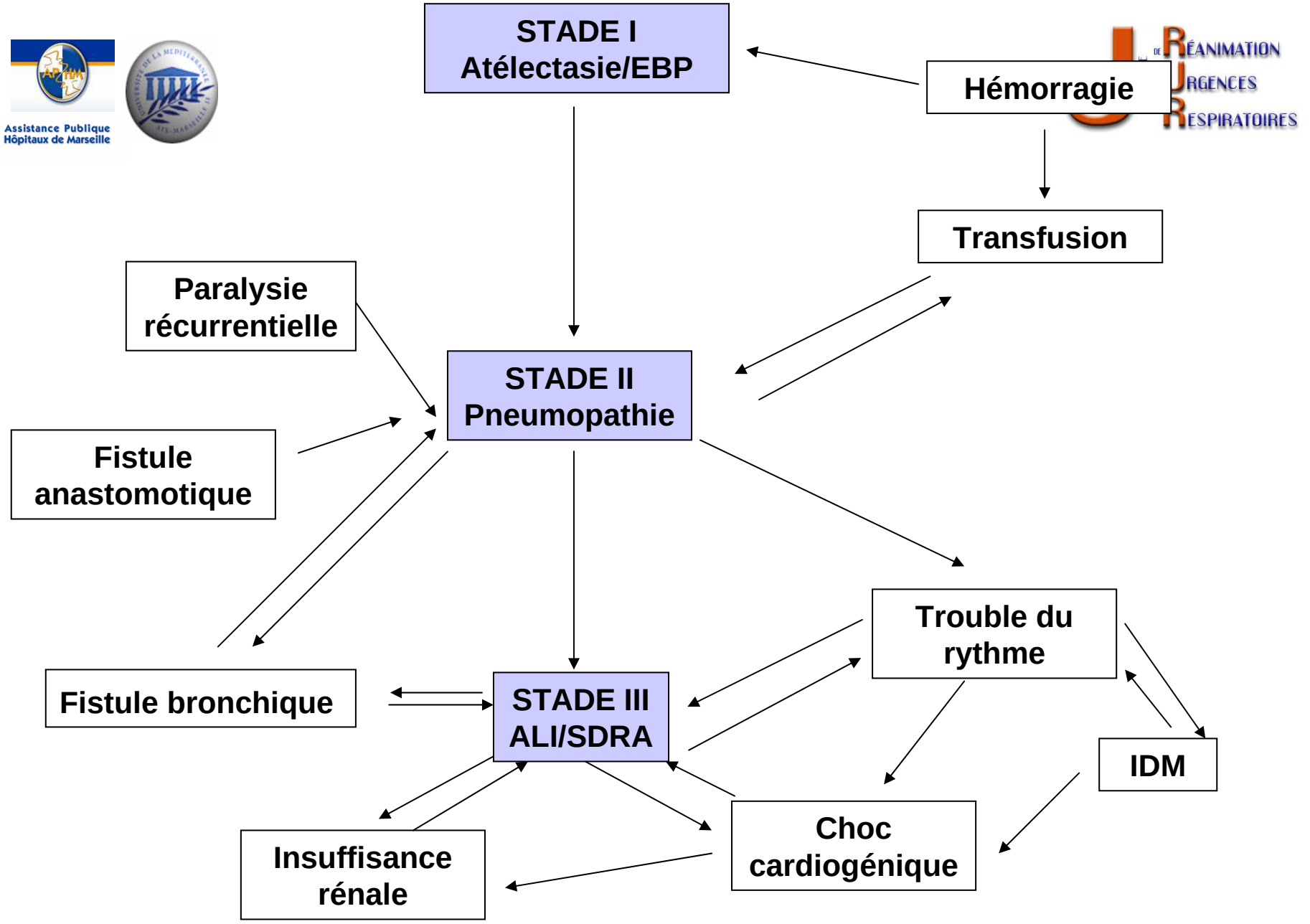
- Absence de définitions standardisées

- **Associées** à une complication chirurgicale
  - Fistule bronchique
  - Complications pleurales
  - Paralysie laryngée
  - Torsion lobaire
  - Liée à une fistule ou à une nécrose de la plastie gastrique

> 72 heures

- **Indépendantes** d'une complication chirurgicale
  - Encombrement
  - Pneumonie
  - SDRA / ALI
  - Défaillance cardiogénique / Embolie pulmonaire

< 72 heures


STADE I
Atélectasie/EBP
Hémorragie
Transfusion
Paralysie
récurrentielle
STADE II
Pneumopathie
Fistule
anastomotique
Fistule bronchique
STADE III
ALI/SDRA
Trouble du
rythme
IDM
Choc
cardiogénique
Insuffisance
rénale

Fréquence/gravité

Première cause de mortalité hospitalière

	Fréquence	Mortalité hosp.
Atélectasie	7%	-
Pneumopathie	7% - 30 %	15%
Œdème	4% - 14 %	65%
ALI	*0.8%- 9%*	*33%*
ARDS	*3.2% - 14 %*	*72%*

Kutlu CA & al. Ann Thorac Surg 2000;69:376-80

Licker M & al. Anesth Analg 2003;97:1558-65

Ruffini E & al. Eur J Cardio-thorac Surg 2001;20:30-7

Filaire M & al. Ann Thorac Surg 1999;67:1460-5

Assistance Publique
Hôpitaux de Marseille

Journée de Réanimation et Urgences Respiratoires

Les traitements préopératoires augmentent-ils les risques de complications respiratoires ?

PNEUMONECTOMIE DROITE

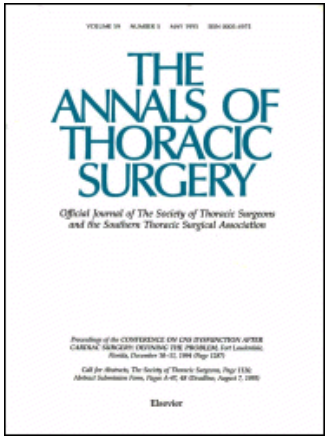
Morbidity and Mortality After Neoadjuvant Therapy for Lung Cancer: The Risks of Right Pneumonectomy

Ann Thorac Surg 2001;72:1149–54

Jocelyne Martin, MD, Robert J. Ginsberg, MD, Amir Abolhoda, MD, Manjit S. Bains, MD, Robert J. Downey, MD, Robert J. Korst, MD, Tracey L. Weigel, MD, Mark G. Kris, MD, Ennapadam S. Venkatraman, PhD, and Valerie W. Rusch, MD

Thoracic Service, Department of Surgery, Thoracic Oncology Service, Department of Medicine, and Biostatistics Service, Department of Epidemiology and Biostatistics, Memorial Sloan-Kettering Cancer Center, New York, New York

23%



Multivariate Analysis	Odds Ratio (Confidence Interval)	*p* Value
Right pneumonectomy (Yes:no)	2.933 (1.174–7.327)	0.020
Blood loss (mL)	1.001 (1.000–1.002)	0.011
Forced expiratory volume in 1 second (percent predicted)	0.105 (0.019–0.579)	0.010

One hundred consecutive pneumonectomies after induction therapy for non–small cell lung cancer: An uncertain balance between risks and benefits

Christophe Doddoli, MD,[a,d] Fabrice Barlesi, MD,[b] Delphine Trousse, MD,[a] Stéphane Robitail, MD,[c] Sadio Yena, MD,[a] Philippe Astoul, MD, PhD,[b] Roger Giudicelli, MD,[a] Pierre Fuentes, MD,[a] and Pascal Thomas, MD[a,d]

2005

Objective: We sought to assess postoperative outcome after pneumonectomy after neoadjuvant therapy in patients with non–small cell lung cancer.

Methods: This retrospective study included 100 patients treated from January 1989 through December 2003 for a primary lung cancer in whom pneumonectomy had been performed after an induction treatment. Surgical intervention had not been considered initially for the following reasons: N2 disease (stage IIIA, n = 79), doubtful resectability (stage IIIB [T4, N0], n = 19), and M1 disease (stage IV [T2, N0, M1, solitary brain metastasis], n = 2). All patients received a 2-drug platinum-based regimen with a median of 2.5 cycles (range, 2-4 cycles), and 30 had associated radiotherapy (30-45 Gy).

Results: There were 55 right and 45 left resections. Overall 30-day and 90-day mortality rates were 12% and 21%, respectively. At multivariate analysis, one independent prognostic factor entered the model to predict 30-day mortality: postoperative cardiovascular event (relative risk, 45.7; 95% confidence interval, 3.7-226.7; $P = .001$). Four variables predicted 90-day mortality: age of more than 60 years (relative risk, 5.06; 95% confidence interval, 1.47-17.48; $P = .01$), male sex (relative risk, 8.25; 95% confidence interval, 1.01-67.34; $P = .049$), postoperative respiratory event (relative risk, 3.64; 95% confidence interval, 1.14-9.37; $P = .007$), and postoperative cardiovascular event (relative risk, 7.84; 95% confidence interval, 3.12-19.71; $P < .001$). Estimated overall survivals in 90-day survivors were 35% (range, 29%-41%) and 25% (range, 19.3%-30.7%) at 3 and 5 years, respectively. At multivariate analysis, one independent prognostic factor entered the model: pathologic stage III-IV residual disease (relative risk, 1.89; 95% confidence interval, 1.09-3.26; $P = .022$).

Conclusions: Pneumonectomy after induction therapy is a high-risk procedure, the survival benefit of which appears uncertain.

Induction de l'inflammation

Preoperative chemotherapy increases cytokine production after lung cancer surgery

Endo S et al. Eur J Cardiothorac Surg 2004;26:787-791

39 pts

Randomisation

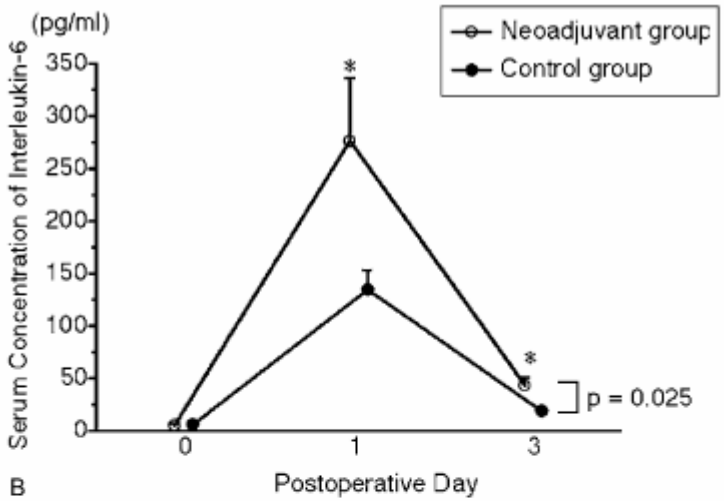
1 cure cisplatine docetaxel

Chirurgie

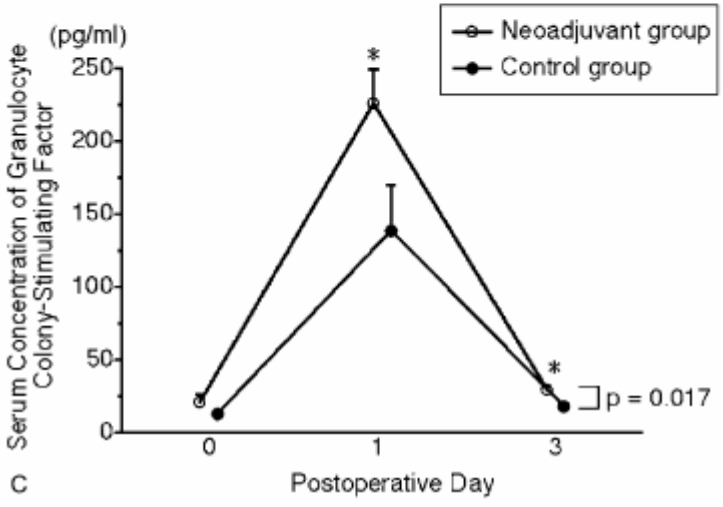
4 semaines

Chirurgie

IL6



GCSF



Augmentation des Infections par colonisation bronchique

Oesophagectomie
Après RTCT
N=117

Sans LBA préopératoire
N=72

Pneumonie : 15 %
SDRA : 19 %
CMV : 8 %

Avec LBA préopératoire
N=45

Colonisation : 28 %

- Bactérie : 23 %
- CMV : 30 %
- Levure : 46 %

- Pneumonie : 20 %
- SDRA : 7 %
- CMV : 0 %

Toxicité pulmonaire

Respiratory Function Changes After Chemotherapy: An Additional Risk for Postoperative Respiratory Complications?

Leo F et al. Ann Thorac Surg 2004; 77:260-5

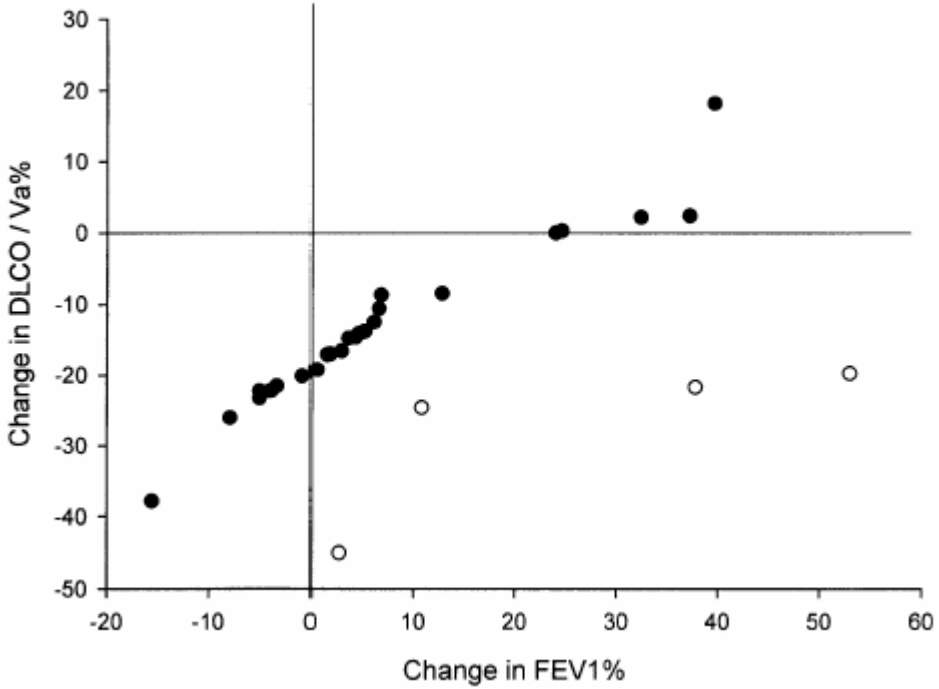
30 pts

↓

3 cures
Cisplatine (J1J21) Gemcitabine (J1J8J21)

↓

Chirurgie



Chute DLCO/VA >15%

Assistance Publique
Hôpitaux de Marseille

Journée de Réanimation et Urgences Respiratoires

Conséquences des complications respiratoires sur la survie à moyen et long terme ?

Conséquences à moyen terme

Salvage Intensive Care Following Initial Recovery From Pulmonary Resection: Is It Justified?

John E. Pilling, MRCS, Antonio E. Martin-Ucar, FRCS, and David A. Waller, FRCS(CTh)

Department of Thoracic Surgery, Glenfield Hospital, Leicester, United Kingdom

- Parmi les opérés ayant nécessité une ventilation >24H et étant sortis de l'hôpital :

  1 malade / 3 décède dans les 6 mois – 1 an

- VM + Hémodialyse ⟶ 100 % mortalité

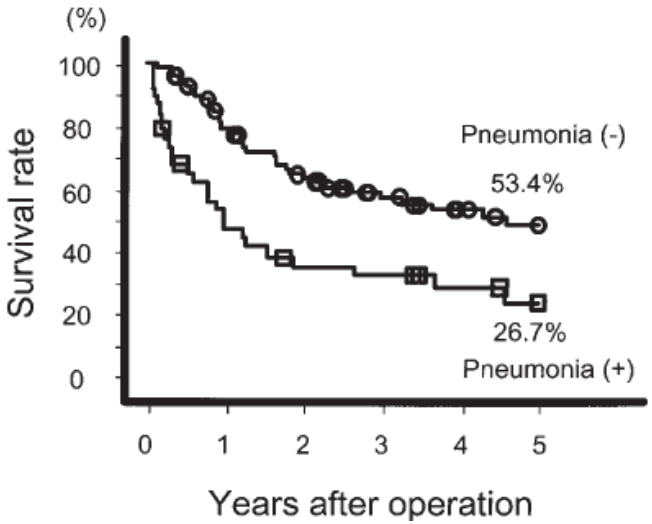
Hirschler-Schulte CJW & al. Thorax 1985;40:387–90.

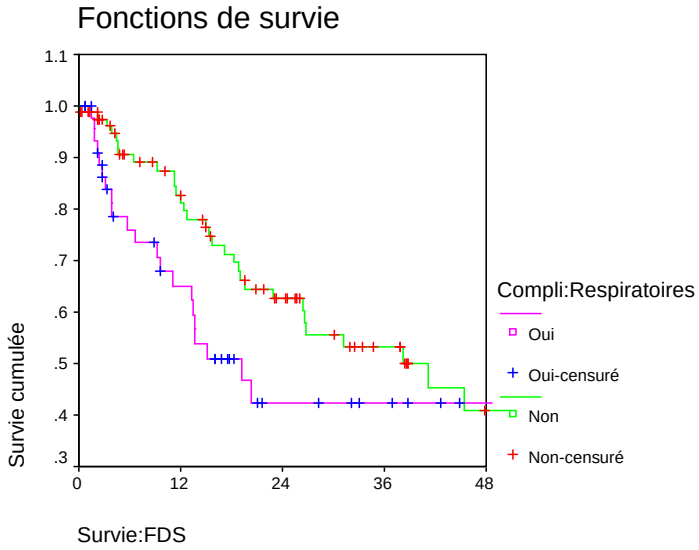
Pilling JE & al. Ann Thorac Surg 2004;77:1039–44.

Conséquences à Long terme

Journal of Surgical Oncology 2004;88:71–77

Postoperative Pulmonary Complications Are Associated with Worse Short- and Long-Term Outcomes After Extended Esophagectomy





- **Mortalité postopératoire**
- **Immudépression liée aux complications**
- **Réactions inflammatoires**
- **Retard thérapeutique adjuvant (RTCT)**

Conclusions

- *Définitions des CRPO en 3 stades :*
  - *Encombrement*
  - *Pneumopathie*
  - *ALI / SDRA*
- *Incidence et gravité*
- *Affectent la survie à court et long terme*