

La Chimiothérapie Périopératoire vue Par le Chirurgien

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Hôpitaux Universitaires de Strasbourg



*Les Hôpitaux
Universitaires
de STRASBOURG*



Aucun conflit d'intérêt

Test de vision de la Haute Autorité de Santé



Plan de la présentation

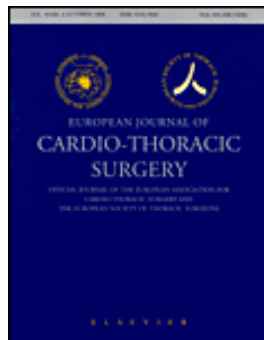
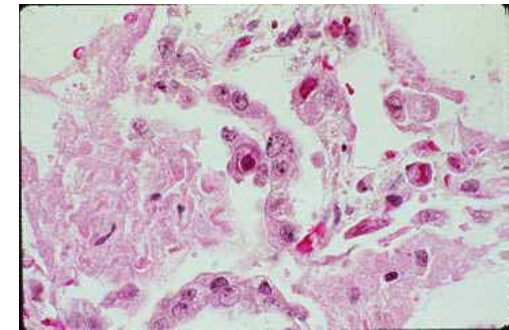
1. Les raisons possibles d'une majoration du risque (péri)opératoire par la CT
2. Données factuelles
3. Données de la pratique clinique
4. Evolution des pratiques chirurgicales induites
5. Quelques messages et pistes de réflexion



1. Les raisons pour lesquelles le risque de complication majeure périopératoire pourrait être majoré

Risque infectieux

- **Pneumopathies infectieuses (20%)**
 - Agents inhabituels (CMV – agents fongiques: 30%)
 - Délai – traitements préemptifs
(LBA préop?)



European Journal of Cardio-thoracic Surgery 20 (2001) 385–390

EUROPEAN JOURNAL OF
CARDIO-THORACIC
SURGERY
www.elsevier.com/locate/ejcts

Postoperative complications in relation with induction
therapy for lung cancer[☆]

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Roger Giudicelli^a, Pierre Fuentes^a

^aDepartment of Thoracic Surgery, Sainte-Marguerite University Hospital, Marseilles, France

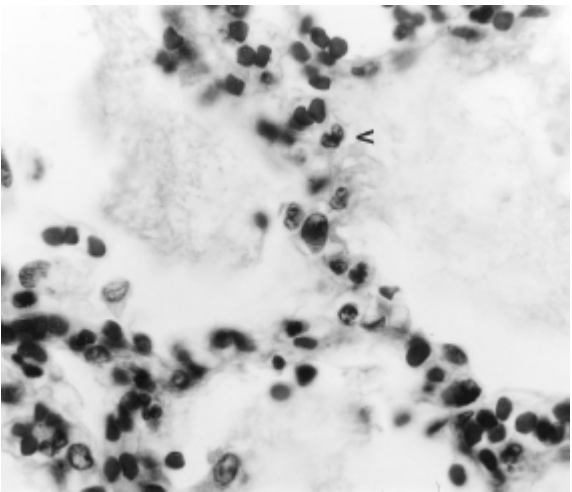
^bDepartment of Biostatistics and Medical Information, Sainte-Marguerite University Hospital, Marseilles, France

Transfusions périopératoires



- **TRALI**

- Recrutement-adhérence
- Activation PNN (réseau capillaire pulmonaire)
- Œdème lésionnel – SIRS -MOF



Anticorps anti-PNN/Lysophosphatidylcholines

Looney MR., Gropper MA, Matthay MA. Transfusion-related acute lung injury: a review. Chest 2004; 126: 249-58

Impact of blood transfusions on outcome after pneumonectomy for thoracic malignancies



Eur Respir J 2007; 29: 1–7

38% transfusés

TABLE 2 Multivariate analysis of independent predictors of the need of allogeneic blood transfusion after pneumonectomy for thoracic malignancies

| Variables | OR (95% CI) | p-value |
|------------------------------|------------------|---------|
| Extrapleural dissection | 7.6 (4.1–13.9) | <0.0001 |
| Completion pneumonectomy | 4.1 (1.9–8.9) | <0.0001 |
| Mediastinal extension | 3 (1.5–6.3) | 0.003 |
| Neoadjuvant treatment | 2.3 (1.4–3.8) | 0.001 |
| Patient age·yr ⁻¹ | 1.03 (1.01–1.05) | 0.011 |

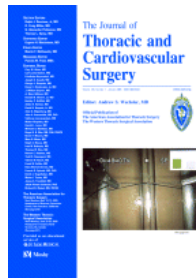
Multivariate analysis of independent predictors of 30-day mortality after pneumonectomy for thoracic malignancies

| | OR (95% CI) | p-value |
|------------------------------------|-----------------|---------|
| Blood transfusion | 10 (3.7–27) | <0.0001 |
| Right pneumonectomy | 3.7 (1.5–8.9) | 0.003 |
| Coronary artery disease | 3.3 (1.02–10.6) | 0.047 |
| Patient age·yr⁻¹ | 1.05 (1.0–1.1) | 0.038 |

Blood transfusion was the strongest predictor of 30-day mortality (OR 10; 95% confidence interval (CI): 3.7–27), respiratory failure (OR 19.2; 95% CI 7.4–49.4) and infectious complications (odds ratio (OR) 3; 95% CI 1.5–6.2).

Risque thrombo-embolique

Groupe de Toronto



J Thorac Cardiovasc Surg 2009;138:843-8

12.3%

-½ avant la chirurgie: essentiellement des EP

-½ après la chirurgie: essentiellement des TP

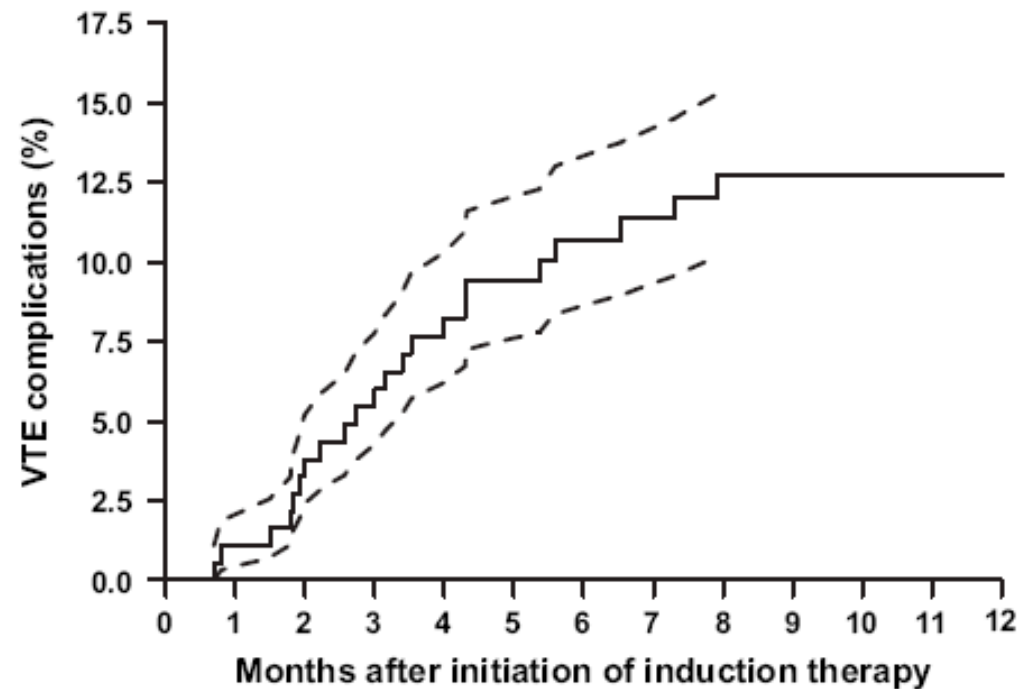


FIGURE 1. Cumulative proportion of VTE complications after initiation of induction therapy. *Dashed lines* represent the 95% confidence interval. VTE, Venous thromboembolism.

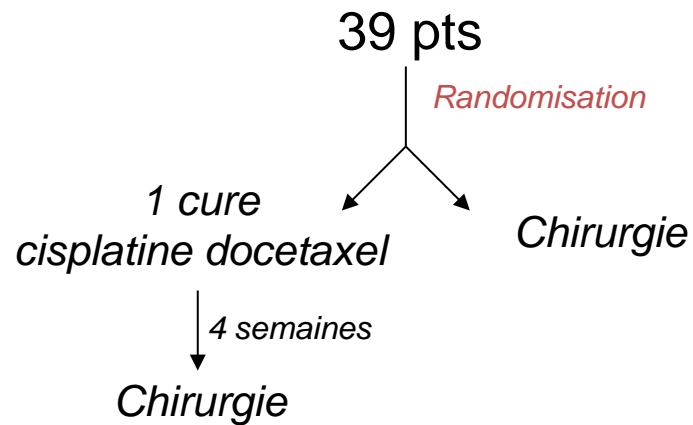
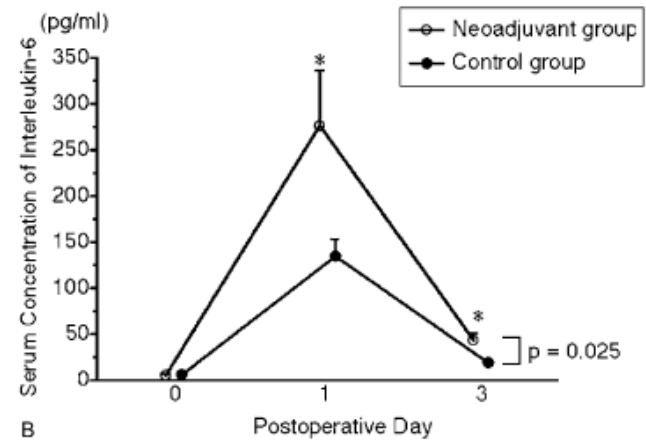
Induction de l'inflammation

Preoperative chemotherapy increases cytokine production after lung cancer surgery

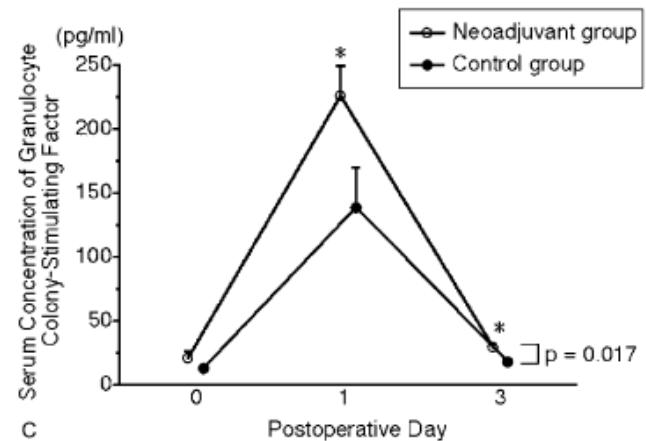


IL6

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



GCSF



« Chimio-toxicité » pulmonaire

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



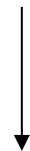
Leo F et al. Ann Thorac Surg 2004;
77:260-5

30 pts

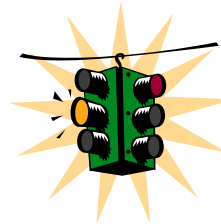
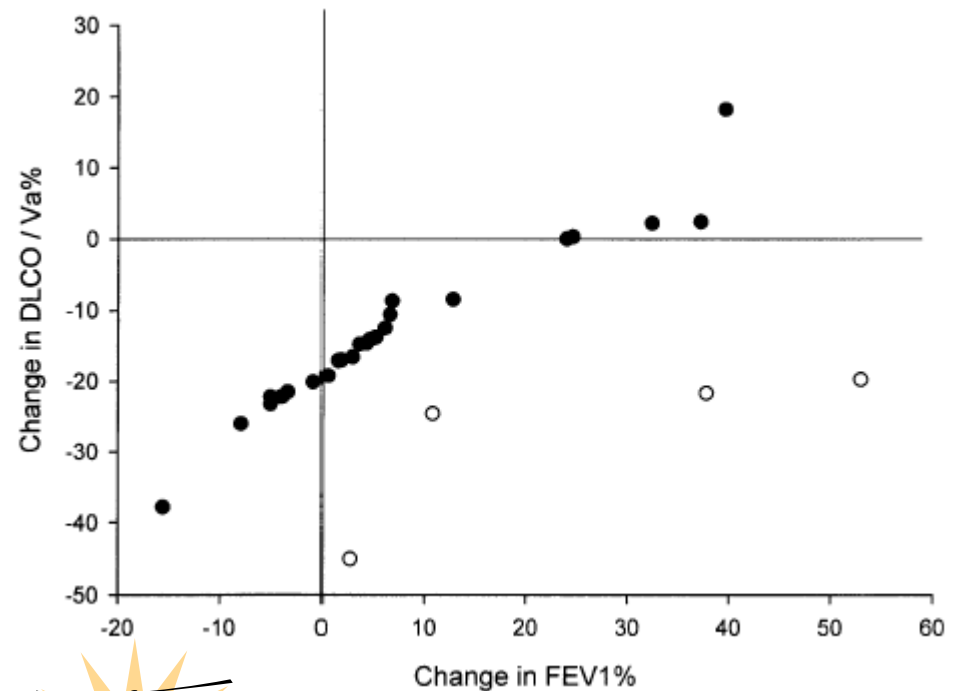


3 cures

Cisplatine (J1J21) Gemcitabine (J1J8J21)



Chirurgie



Chute DLCO/VA >15%

Changes in Pulmonary Function Tests After Neoadjuvant Therapy Predict Postoperative Complications

Robert J. Cerfolio, MD, FACS, Amar Talati, BS, and Ayesha S. Bryant, MSPH, MD
Division of Cardiothoracic Surgery, Department of Surgery, University of Alabama at Birmingham, Birmingham, Alabama



Ann Thorac Surg 2009;88:930-6

132 pts



2 cures

Carboplatine Paclitaxel



Chirurgie

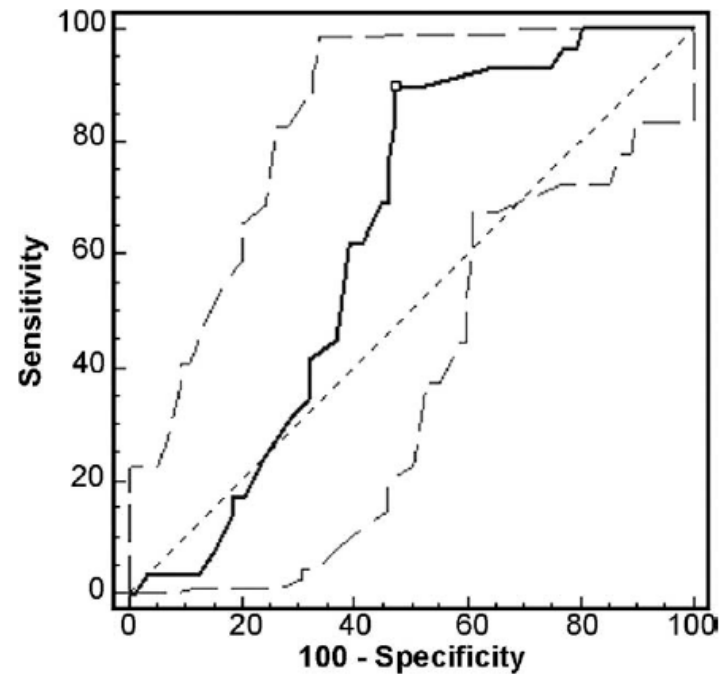
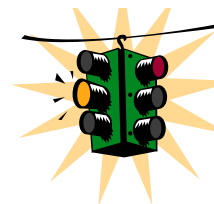


Fig 1. Receiver operator characteristics curve for the change in diffusion capacity of the lung for carbon monoxide corrected for the alveolar volume, which shows a fall of 8% or more predicted postoperative major or respiratory morbidity (area under the curve, 0.70; positive likelihood ratio, 2.0; $p = 0.013$). Dashed lines indicate 95% confidence interval.



Chute DLCO/VA >8%

2. Données factuelles

Stade et pronostic

| | T1 | T2 | T3 | T4 |
|----|-------------|-------------|-----------|--------|
| N0 | Light Green | Light Green | Red | Yellow |
| N1 | Red | Red | Dark Blue | Yellow |
| N2 | Dark Blue | Dark Blue | Dark Blue | Yellow |
| N3 | Yellow | Yellow | Yellow | Yellow |

Survie à 5 ans

stade I : 55 - 75 %

stade II : 30 - 50 %

stade IIIa : 10 - 25 %

stade IIIb : < 5 %

Intérêt de la chimiothérapie périopératoire

Neo-adjuvant

- 2 études randomisées >300 patients
- 1 arrêt prématuré (après résultats de l'adjuvant)
- 354 & 373 patients
- 0 étude positive
- 6 MA récentes sur données publiées

Adjuvant

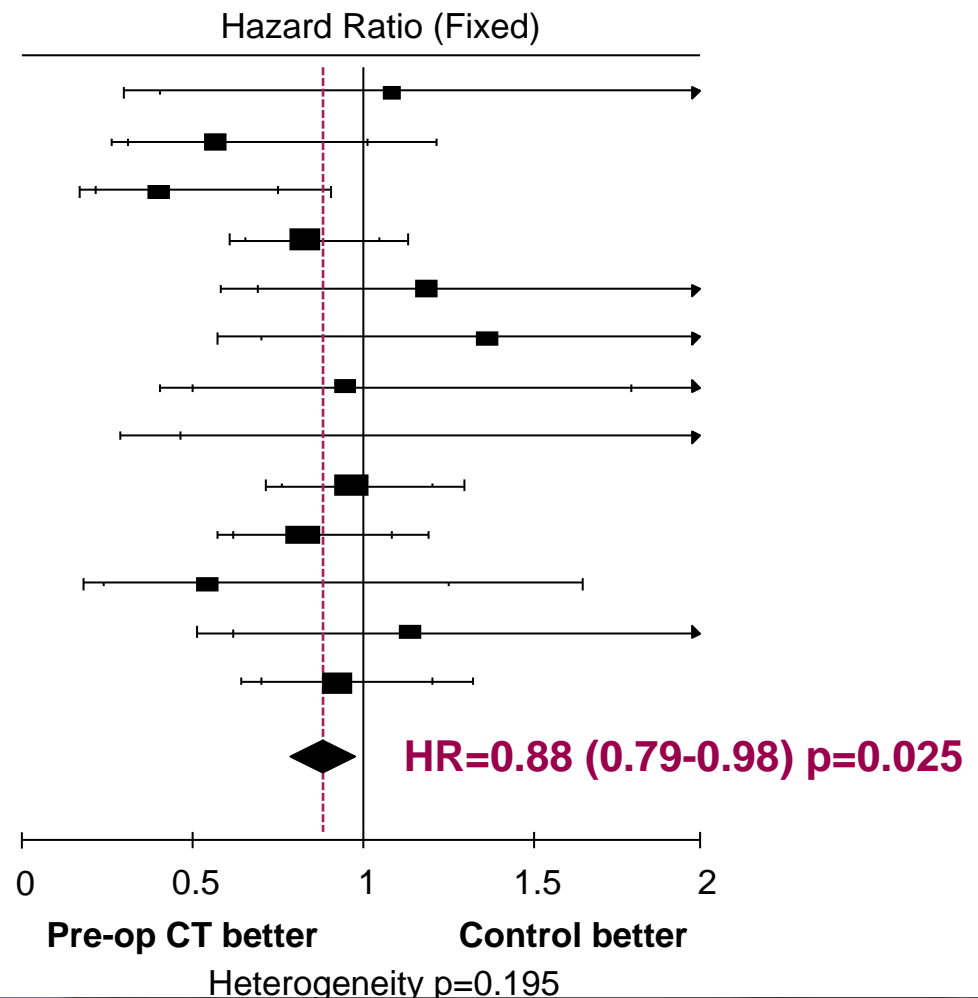
- 6 études randomisées >300 patients
- Chimiothérapie à base d'un sel de platine
- 307 à 1867 patients
- 2 études positives
- 8 MA récentes (dont sur données individuelles)

Courtoisie du Pr Westeel



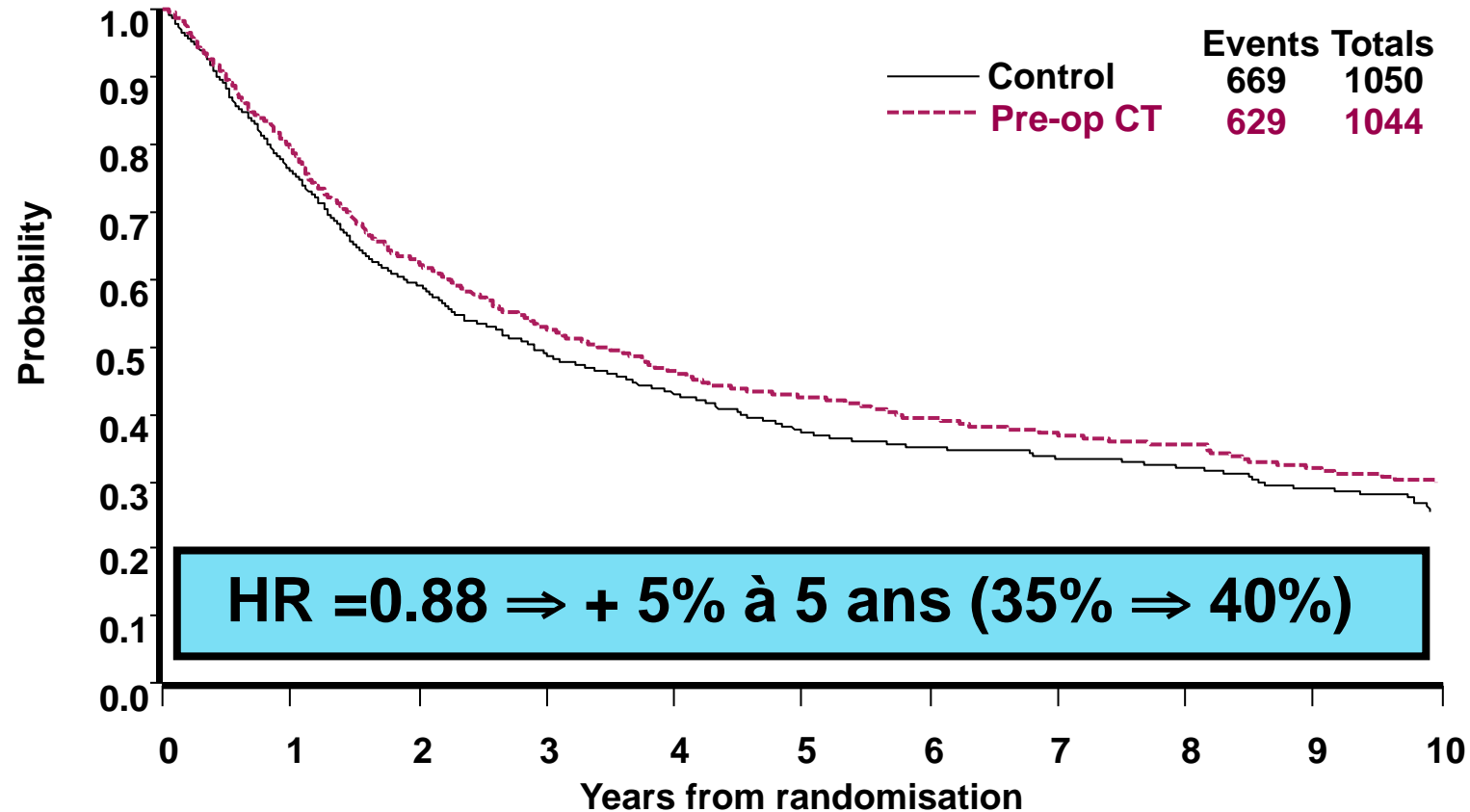
CT préopératoire: survie globale (13 essais, 2094 patients, 1298 décès)

| Trial Id. | [no. events/no. entered] | |
|----------------|--------------------------|-----------------|
| | Pre-op CT | Control |
| Dautzenberg | 8/13 | 8/13 |
| Roth | 19/28 | 27/32 |
| Rosell | 19/29 | 27/30 |
| Depierre | 137/179 | 146/176 |
| JCOG 9209 | 28/31 | 25/31 |
| Groen-Splinter | 21/39 | 15/40 |
| Mattson | 19/30 | 19/32 |
| MRC BLT | 4/5 | 3/5 |
| MRC LU22 | 148/258 | 155/261 |
| SWOG S9900 | 93/180 | 103/174 |
| Yang | 8/19 | 14/21 |
| Wu | 26/32 | 18/23 |
| NATCH | 99/201 | 109/212 |
| Total | 629/1044 | 669/1050 |



Burdett S, Lancet 2014

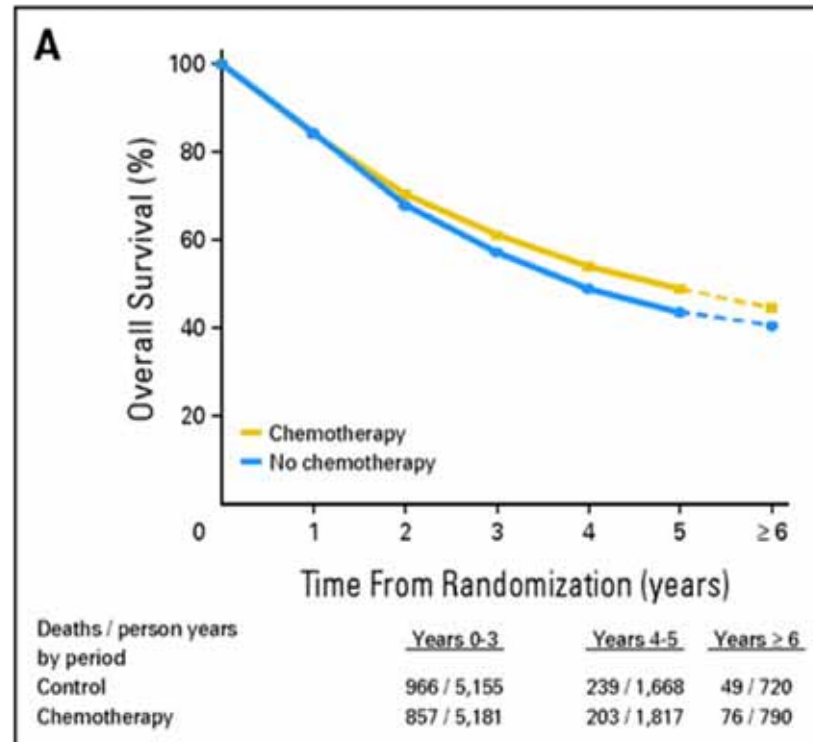
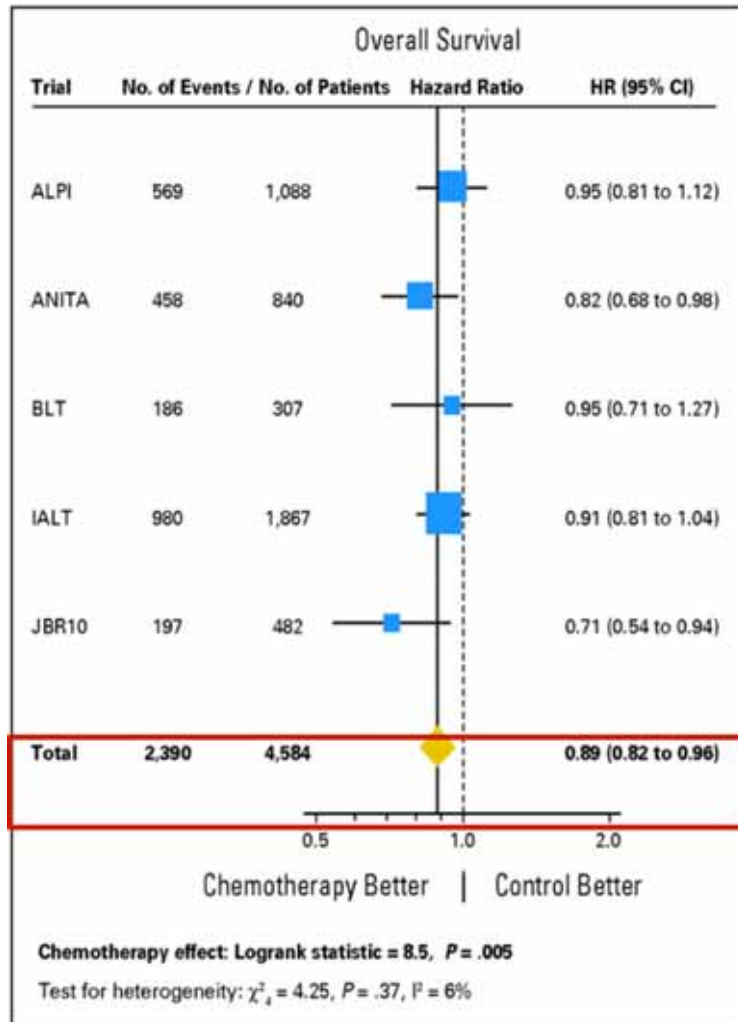
CT préopératoire: survie globale (13 essais, 2094 patients, 1298 décès)



Patients at Risk

| | | | | | | | | | | | |
|-----------|------|-----|-----|-----|-----|-----|-----|-----|-----|----|----|
| Control | 1050 | 780 | 584 | 460 | 365 | 267 | 185 | 131 | 88 | 64 | 48 |
| Pre-op CT | 1044 | 816 | 620 | 494 | 394 | 306 | 222 | 156 | 108 | 79 | 60 |

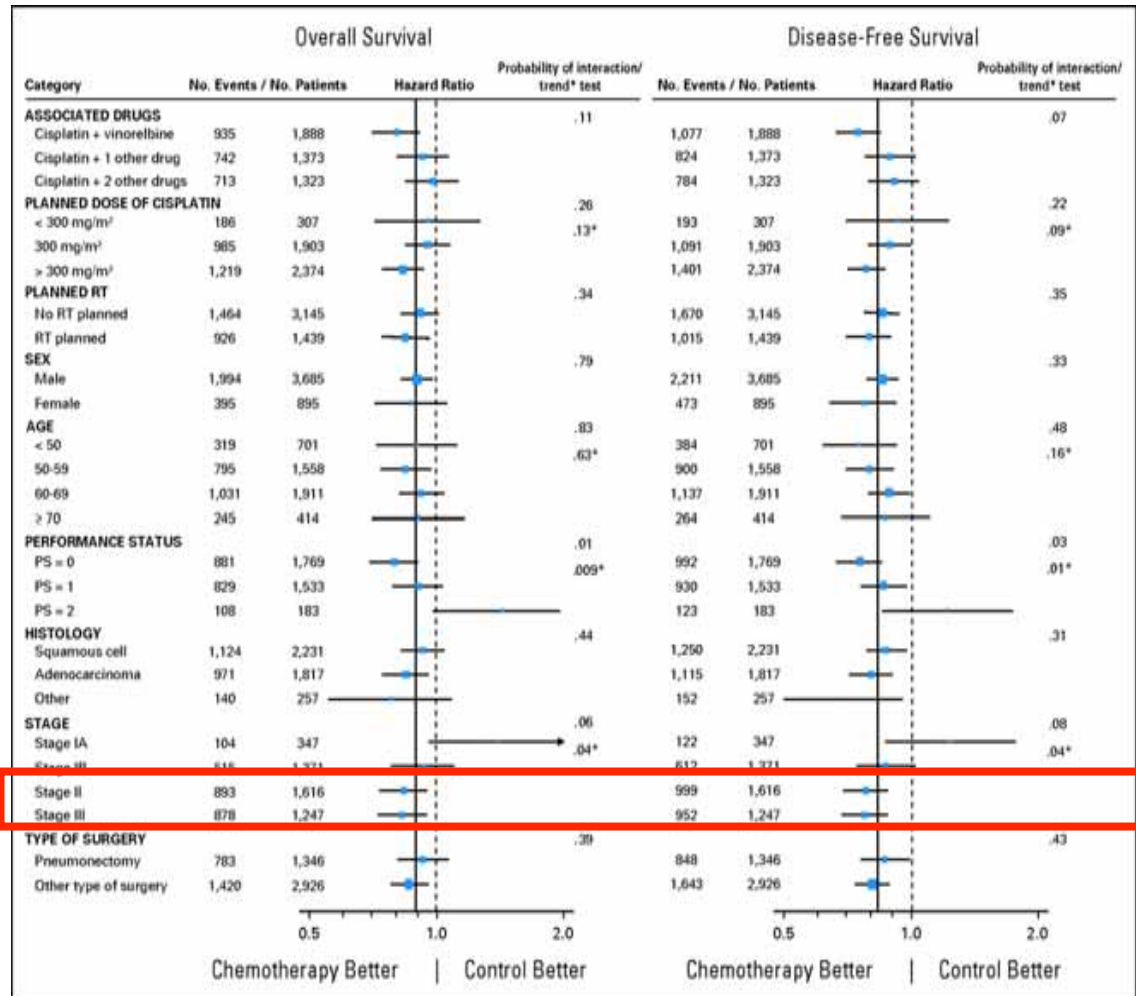
La méta-analyse LACE



+5,4 % à 5 ans

Pignon JP, J Clin Oncol 2008; 26:3552-9

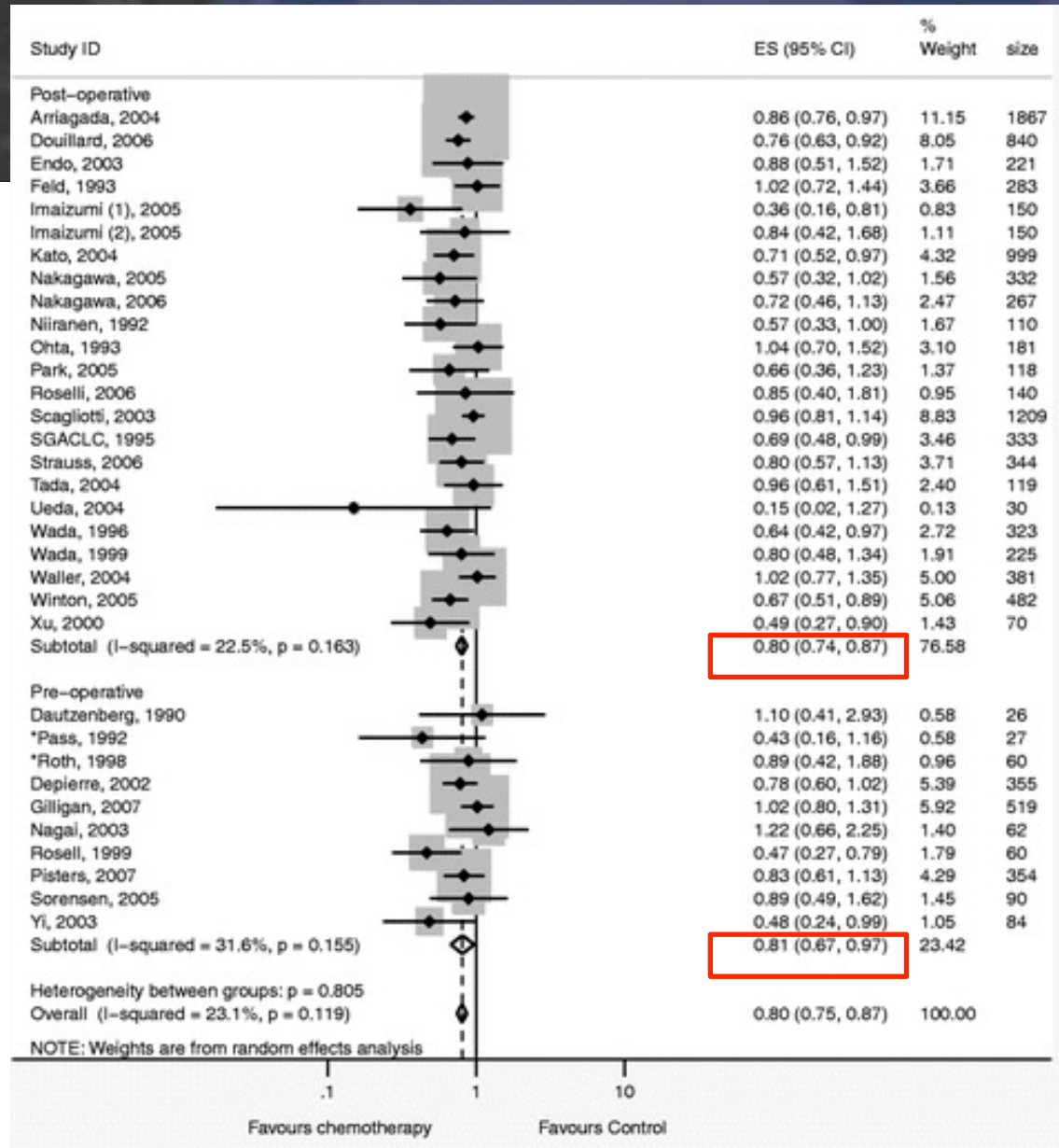
La méta-analyse LACE: pour QUI ?



Pignon, J Clin Oncol 2008; 26:3552-9

Méta-analyse : CT pré vs post

- 1 an avant NATCH !!!
- 32 trials
- 22 postop
- 10 preop
- Comparaison indirect



Lim E, J Thorac Oncol 2009;4:1380-8

Méta-analyse : CT pré vs post

HR relatif =0,99 (0,81-1,21; p=0,91)

TABLE 3. Estimated 5-yr Survival Probability, Impact on Survival and Limits of the Difference Between Postoperative and Preoperative Administration

| Stage | 5-yr Survival Reported | Postoperative Chemotherapy | | | Preoperative Chemotherapy | | | Difference (Postoperative versus Preoperative) | | |
|-------------|------------------------------|----------------------------|-----------------|-----------------|---------------------------|-----------------|-----------------|---|-----------------|-----------------|
| | | Expected | Lower 95% CI | Upper 95% CI | Expected | Lower 95% CI | Upper 95% CI | Expected | Upper 95% CI | Lower 95% CI |
| IA | 73 | 78.4 | 76.4 | 80.3 | 78.1 | 73.7 | 81.8 | -0.30 | -4.23 | 4.51 |
| IB | 54 | 63.2 | 59.8 | 66.4 | 62.7 | 55.2 | 69.0 | -0.51 | -7.20 | 7.68 |
| IIA | 48 | 58.5 | 54.6 | 62.0 | 57.9 | 49.4 | 64.9 | -0.58 | -8.14 | 8.68 |
| IIB | 38 | 50.5 | 45.9 | 54.7 | 49.8 | 39.7 | 58.2 | -0.69 | -9.71 | 10.35 |
| IIIA | 25 | 40.1 | 34.5 | 45.3 | 39.3 | 27.0 | 49.4 | -0.84 | -11.75 | 12.52 |
| IIIB | 19 | 35.3 | 29.3 | 40.9 | 34.4 | 21.2 | 45.3 | -0.91 | -12.68 | 13.53 |
| IV | 21 | 36.9 | 31.0 | 42.3 | 36.0 | 23.1 | 46.7 | -0.88 | -12.37 | 13.19 |

All numbers are given as a percentage. Bold font indicates the tumour stage for which the data is most applicable.

Lim E, J Thorac Oncol 2009;4:1380-8

Néoadjuvant ou adjuvant: rationnel

| | Néoadjuvant | Adjuvant |
|--------------------------------------|-------------|----------------------|
| Survie | + 5% | + 5% (niveau preuve) |
| Ajustement durée chimio | + | - |
| Acceptabilité - impact populationnel | + | - |
| Compliance | + (90%) | - (65%) |
| Augmenter résécabilité | + / - | - |
| Destruction micrométastases | + | + |
| Épargne Parenchymateuse | ? | - |
| Évaluation TNM | - | + |
| Morbi-mortalité post-op | + | + |
| Approche personnalisée / staging | - | + |
| Réponse à la CT | + | - |

Données factuelles

- Niveau de preuve supérieur pour l'adjuvant
- Néoadjuvant: applicable à une plus large population?
- Bénéfice de survie comparable
- Avantages pratiques différents
- **Pas d'augmentation globale du risque opératoire**
- Mais quelques situations particulières:
 - Radiochimiothérapie (vs. Chimiothérapie)
 - Pneumonectomie (vs. Lobectomie)
 - Pneumonectomie droite (vs. Gauche)
 - Pneumonectomie chez le non répondeur

***!! Analyses de sous-groupes!!
Pas de conclusions hâtives...***



3. Les données de la pratique clinique

Les risques de la pneumonectomie

| Author | Year | No. of pneumonectomies | In hospital mortality (%) | BPF (%) |
|-----------------------|-------------|------------------------|---------------------------|--------------|
| Fowler et al. | 1993 | 7 | 43 | 14 |
| Roberts et al. | 2001 | 20 | 0 | — |
| Martin et al. | 2001 | 97 | 24 | — |
| Doddoli et al. | 2001 | 33 | 9 | 15 |
| Matsubara et al. | 2005 | 68 | 6.2 | — |
| Doddoli et al. | 2005 | 100 | 12 | 6 |
| Siegenthaler et al. | 2001 | 8 | 0 | 0 |
| Stamatis et al. | 2002 | 125 | 7.2 | 8 |
| Van Schil et al. | 2005 | 69 | 7.2 | — |
| Perrot et al. | 2005 | 27 | 3.7 | 0 |
| Port et al. | 2005 | 15 | 2 | — |
| Manzour et al. | 2006 | 60 | 6.7 | 1.7 |
| Thibout et al. | 2009 | 228 | 5.3 | 6.6 — |
| D'Amato et al. | 2009 | 68 | 21 | 8.8 |
| Kim et al. | 2009 | 129 | 12 | 12.4 |
| Krasna et al | 2010 | 29 | 0 | 10.3 |

5 – 12%

Pneumonectomie droite

| Author | 30-Day mortality (%) | | | 90-Day mortality (%) | | |
|-------------------------|----------------------|------|------------|----------------------|------------|------------|
| | Right | Left | Overall | Right | Left | Overall |
| Martin et al. [1] | 13.0 | 0.0 | 6.2 | 23.9 | 0.0 | 11.3 |
| Doddoli et al. [4.6] | 16.4 | 6.7 | 12.0 | 25.5 | 15.5 | 21.0 |
| → Manzour et al. | 6.9 | 6.5 | 6.7 | 10.3 | 12.9 | 11.7 |
| Thibout et al. | | | 5.3 | 10 | 8.2 | 9.2 |
| D'Amato et al. | | | 21 | | | |
| Kim et al. | | | | 20 | 9 | 14.7 |

PD: 10-25%

PG: 5-15%

Registre national Epithor

TABLE 3. Univariate and Multivariate Analysis of Mortality within the 30 Days after Surgery

| | Univariate Analysis (<i>n</i> = 3741) | | Multivariate Analysis (<i>n</i> = 2962) | |
|------------------------------------|---|-----|---|--------|
| | % of Death | OR | aOR | 95% CI |
| Neoadjuvant TTT (<i>n</i> = 3888) | | | | |
| No ^{ref} | 2.9 | 0.0 | — | — |
| Yes | 3.6 | 1.2 | — | — |
| <i>p</i> | 0.38 ^a | | | ns |

TABLE 4. Univariate and Multivariate Analyses of Postoperative Morbidity

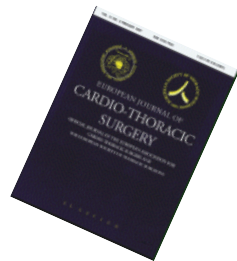
| | Univariate Analysis (<i>n</i> = 3741) | | Multivariate Analysis (<i>n</i> = 2962) | |
|------------------------------------|---|-----|---|--------|
| | % of Complications | OR | aOR | 95% CI |
| Neoadjuvant TTT (<i>n</i> = 3888) | | | | |
| No ^{ref} | 31.4 | 0.0 | — | — |
| Yes | 33.0 | 1.1 | — | — |

555 parmi 3888 patients de 51 établissements et opérés d'un cancer entre 2002 et 2004.



Brouchet et al. J Thorac Oncol. 2007;2: 626–631

Etude multicentrique cas-témoins



Refai M et al Eur J Cardiothorac Surg 2010

225 pneumonectomies

81 CT neoadj

Score de propension

Table 3

Case-matched comparison of outcomes (56 pairs): neo-adjuvant chemotherapy patients versus surgery alone patients.

| Outcomes | Neo-adjuvant chemotherapy (56 pairs) | Surgery alone (56 pairs) | <i>p</i> -value |
|--|--------------------------------------|--------------------------|-----------------|
| In-hospital mortality (<i>n</i>) | 4 | 4 | 1 |
| 90-day mortality (<i>n</i>) | 7 | 7 | 1 |
| 6-month mortality (<i>n</i>) | 8 | 8 | 1 |
| Cardiopulmonary morbidity (<i>n</i>) | 19 | 17 | 0.7 |
| Bronchopleural fistula (<i>n</i>) | 2 | 3 | 0.7 |

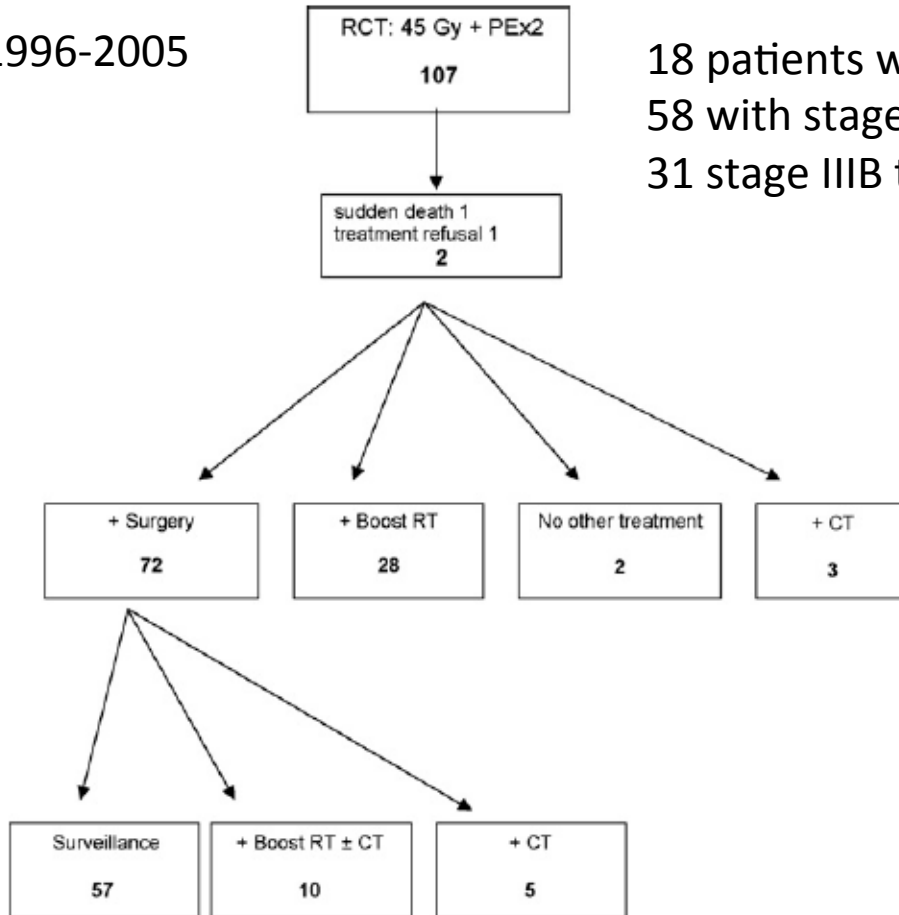
Table 4

Case-matched comparison of outcomes (21 pairs): neo-adjuvant chemo-radiotherapy patients versus surgery alone patients.

| Outcomes | Neo-adjuvant chemo-radiotherapy (21 pairs) | Surgery alone (21 pairs) | <i>p</i> -value |
|--|--|--------------------------|-----------------|
| In-hospital mortality (<i>n</i>) | 1 | 1 | 1 |
| 90-day mortality (<i>n</i>) | 2 | 1 | 1 |
| 6-month mortality (<i>n</i>) | 3 | 1 | 0.2 |
| Cardiopulmonary morbidity (<i>n</i>) | 5 | 5 | 1 |
| Bronchopleural fistula (<i>n</i>) | 1 | 0 | 1 |

Etude mono-centrique prospective

1996-2005



18 patients with stage IIB (17%, all T3N0 Pancoast)
 58 with stage IIIA (54%)
 31 stage IIIB tumors (29%)

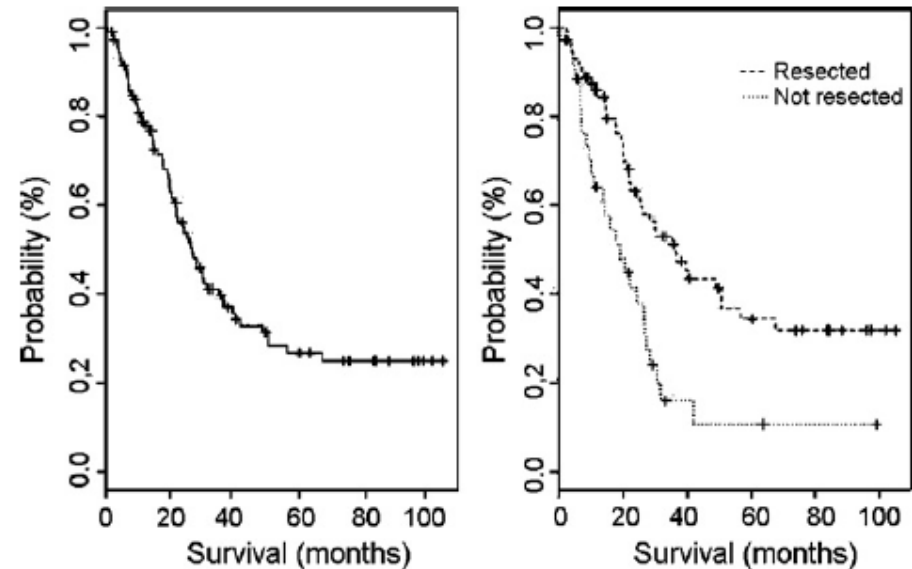


Fig. 2. (a) Overall survival (intention-to-treat population), $n = 107$ pts. (b) Overall survival (resected vs not resected pts), $n = 107$ pts.

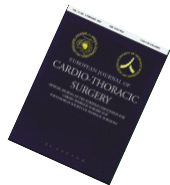
Fig. 1. Patterns of treatment.



Pourel N, Santelmo N, Naafa N et al. Eur J Cardio-thorac Surg 2008, 33:829-836

Mortalité à 90 jours

| | |
|---------------------------------------|--------------------------|
| Lobectomie / bilobectomie (n=50; 70%) | 1 (2%) |
| Pneumonectomie (n=21; 29%) | 4 (19%) (3D & 1G) |
| Thoracotomie explo. (n=1; 1%) | 0 (0%) |



Pourel N, Santelmo N, Naafa N et al. Eur J Cardio-thorac Surg 2008, 33:829-836

Does chemotherapy increase the risk of respiratory complications after pneumonectomy?

Francesco Leo, MD,^a PierGiorgio Solli, MD,^a Giulia Veronesi, MD,^a Davide Radice, PhD,^b Antonio Floridi, MD,^a Roberto Gasparri, MD,^a Francesco Petrella, MD,^a Alessandro Borri, MD,^a Domenico Galetta, MD,^a and Lorenzo Spaggiari, MD, PhD^{a,c}



J Thorac Cardiovasc Surg 2006;132:519-23

TABLE 2. Mortality and morbidity by preoperative chemotherapy

| | Overall (n = 202) | Chemo (n = 99) | No chemo (n = 103) | P value |
|-------------|------------------------------|---------------------------|-------------------------------|----------------|
| Mortality | 4% (8) | 3% (3) | 4.9% (5) | >.05 |
| Morbidity | 44% (88) | 50.5% (50) | 36.9% (38) | >.05 |
| Respiratory | 13% (26) | 19.1% (19) | 6.8% (7) | .008 |
| Cardiac | 17.5% (35) | 18.1% (18) | 17% (17) | >.05 |
| Fistula | 5.5% (11) | 5% (5) | 5.9% (6) | >.05 |
| Hemorrhage | 11.5% (23) | 15.1% (15) | 7.9% (8) | .06 |

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J Thorac Cardiovasc Surg 2006;132:519-23

TABLE 3. Logistic regression considering preoperative chemotherapy, age (>70 vs ≤ 70 years), and Dlco/VA% (> vs <88.5%, representing the median of the population) confirmed the role of these three factors

| Parameter | Estimate | SE | χ^2 | Point estimate | CL |
|-------------|----------|-------|----------|----------------|-----------|
| Intercept | -2.95 | 0.613 | <0.001 | | |
| Preop chemo | 1.48 | 0.608 | 0.014 | 4.419 | 1.34-14.5 |
| Age | 1.84 | 0.589 | 0.001 | 6.354 | 2-20.1 |
| Dlco/VA% | -1.10 | 0.568 | 0.051 | 0.331 | 0.1-1.007 |

Impact de la réponse

Table 3. Short-Term Outcomes

| Variable | Group 1 | Group 2 | <i>p</i> Value | Group 3 | <i>p</i> Value |
|-------------------------|---------|---------|----------------|---------|----------------|
| Patients | 28 | 32 | | 93 | |
| 30-day mortality | 10.7% | 3.1% | 0.257 | 4.3% | 0.201 |
| 90-day mortality | 10.7% | 12.5% | 0.577 | 9.7% | 0.558 |
| Empyemas | 0.0% | 3.1% | 0.533 | 2.2% | 0.589 |
| Bronchopleural fistulas | 3.6% | 0.0% | 0.467 | 3.2% | 0.656 |
| ARDS | 3.6% | 3.1% | 0.720 | 4.3% | 0.673 |

ARDS = acute respiratory distress syndrome; Group 1 = pN2-positive patients after induction chemotherapy; Group 2 = pN2-negative patients after induction chemotherapy; Group 3 = pN2-positive patients with exclusive surgery.



Mansour et al. Ann Thorac Surg 2008;86:228 –34

Données de la pratique clinique

- Quelques tendances dans un contexte très hétérogène
 - Complications respiratoires/anémie
 - Pneumonectomie
- **Maitrise possible par une évolution de la sélection des malades, des pratiques chirurgicales, et de la prise en charge globale (nutritionnelle)**





4. Evolution des pratiques chirurgicales

Couverture du moignon bronchique

Bronchial Stump Coverage With a Pedicled Pericardial Flap: An Effective Method for Prevention of Postpneumonectomy Bronchopleural Fistula

Shahrokh Taghavi, MD, Gabriel M. Marta, MD, Georg Lang, MD, Gernot Seebacher, MD, Gunther Winkler, MD, Katharina Schmid, MD, and Walter Klepetko, MD

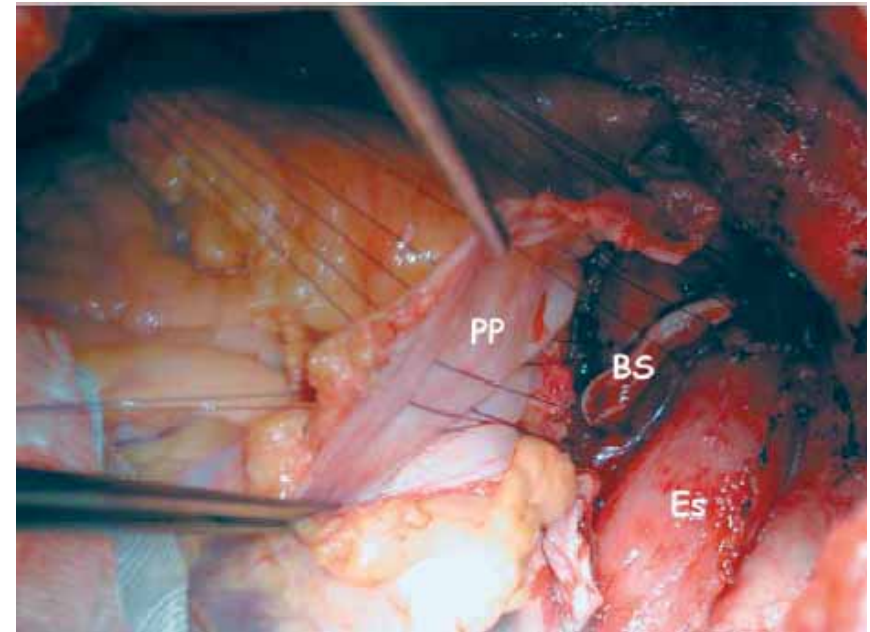
93 pneumonectomies (19 après CT néoadjuvante)

4 décès postopératoires dans les 30 jours

0 fistule



Taghavi S et al. Ann Thorac Surg 2005; 79:284-8

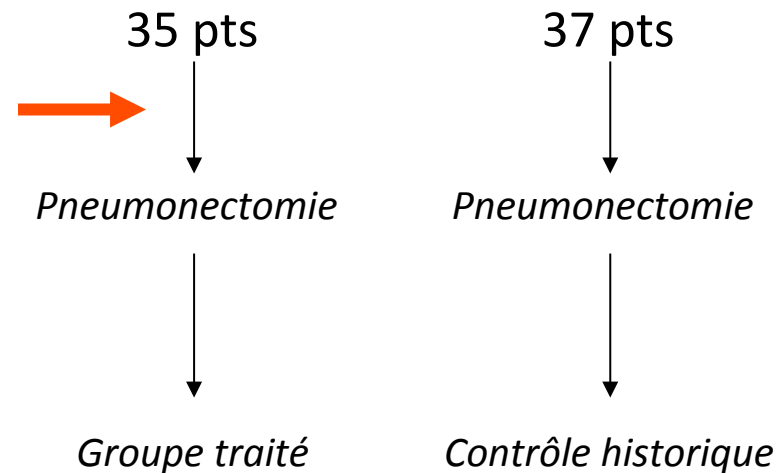


Oedème post pneumonectomie

Intraoperative solumedrol helps prevent postpneumonectomy pulmonary edema

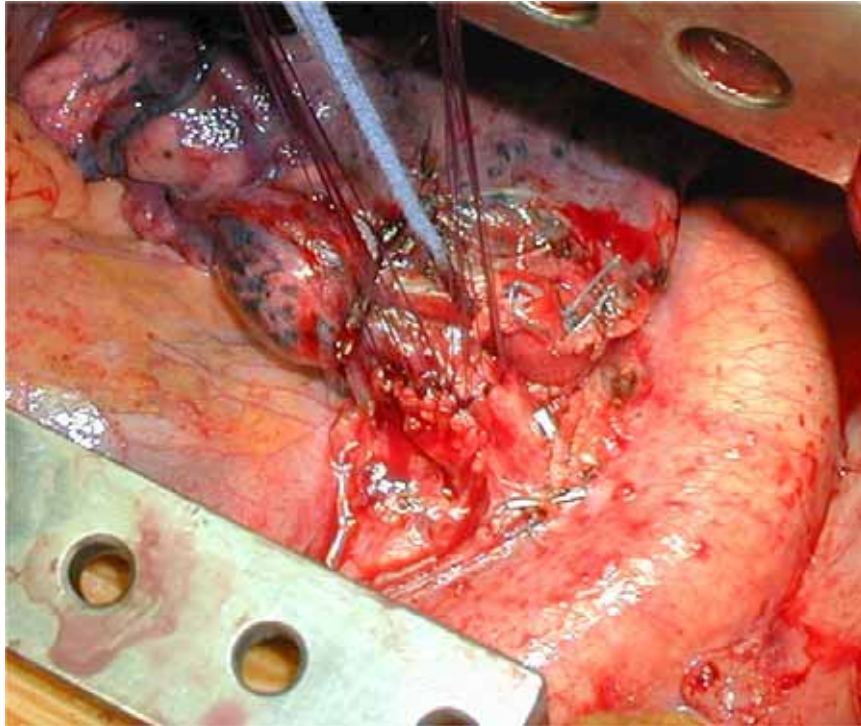
| | S Group N = 35 | Non-S Group N = 37 | p Value |
|--|----------------|-------------------------------|--------------|
| PPE/ARDS | (0) 0% | (5) 13.5% | 0.049 |
| Pneumonia | (1) 2.8% | (4) 10.8% | 0.354 |
| Overall complications | (11) 31.3% | (17) 46% | 0.237 |
| Overall complications excluding arrhythmia | (7) 20% | (16) 43.2% | 0.040 |
| Mortality | (1) 2.8% | (4) 10.8% | 0.354 |
| Bronchopleural fistulas | (0) 0% | (2 pt. both right sided) 5.4% | 0.496 |
| Mean length of hospital stay, days | 6.1 days | 11.9 days | 0.020 |

250 mg SOLUMEDROL IV avant ligatures

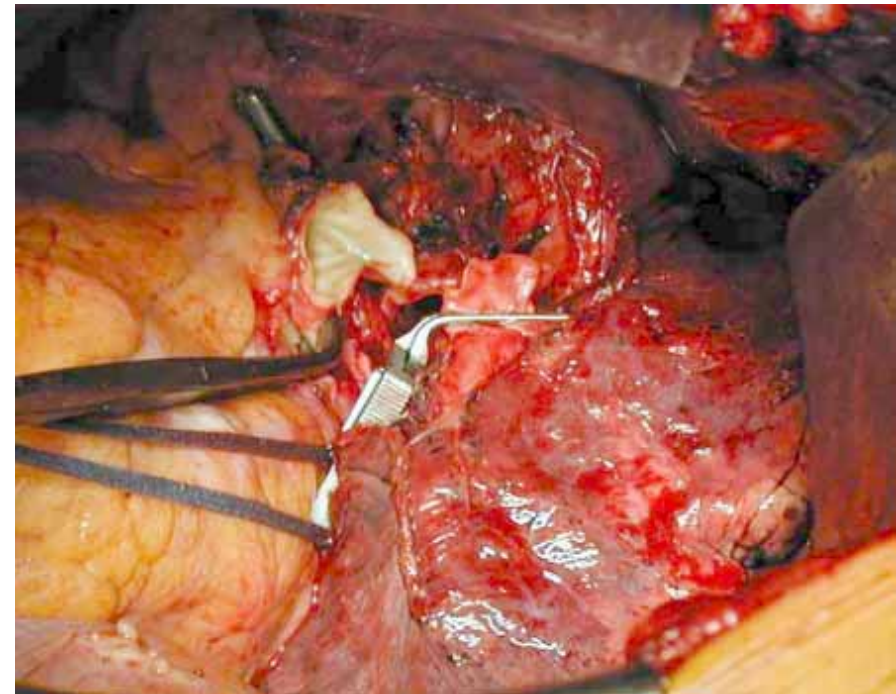


Cerfolio RJ et al. Ann Thorac Surg 2003; 76:1029-35

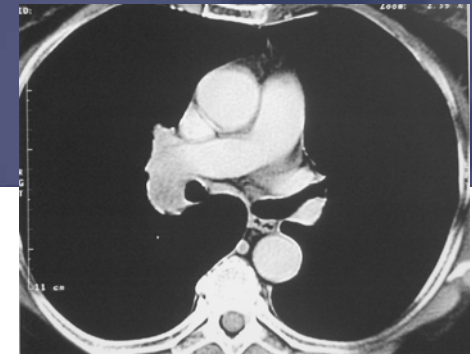
Lobectomies angioplastiques et bronchoplastiques



Lobectomie supérieure gauche élargie aux axes bronchique et artériel principaux



!!! Eviter la pneumonectomie !!!!

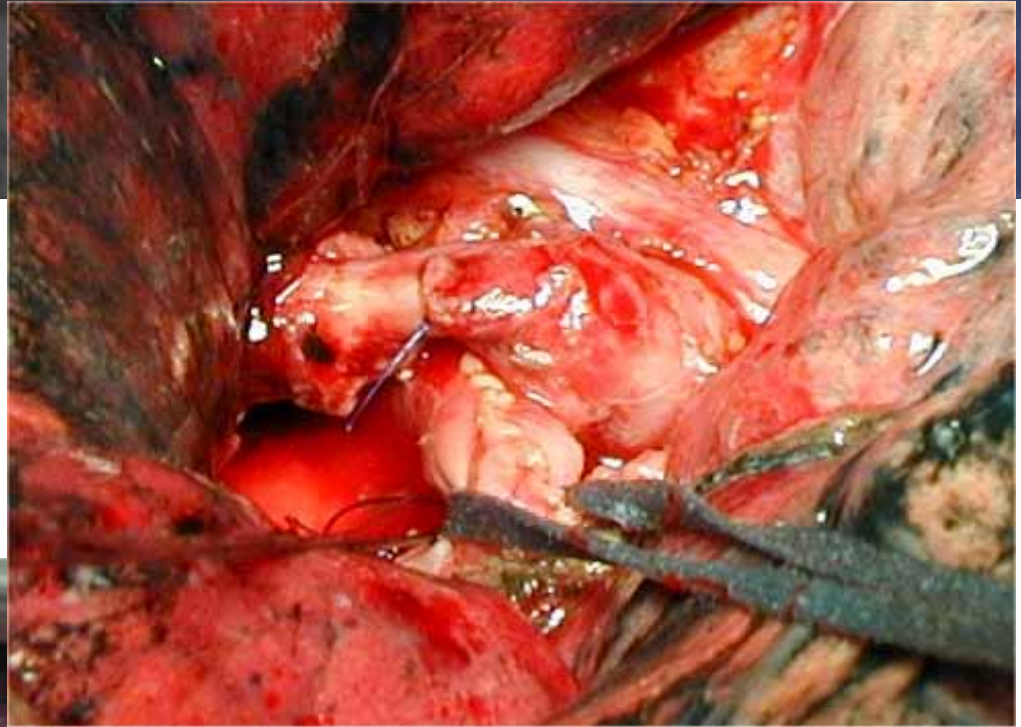


Bilobectomie
supérieure et
moyenne
bronchoplastique et
angioplastique

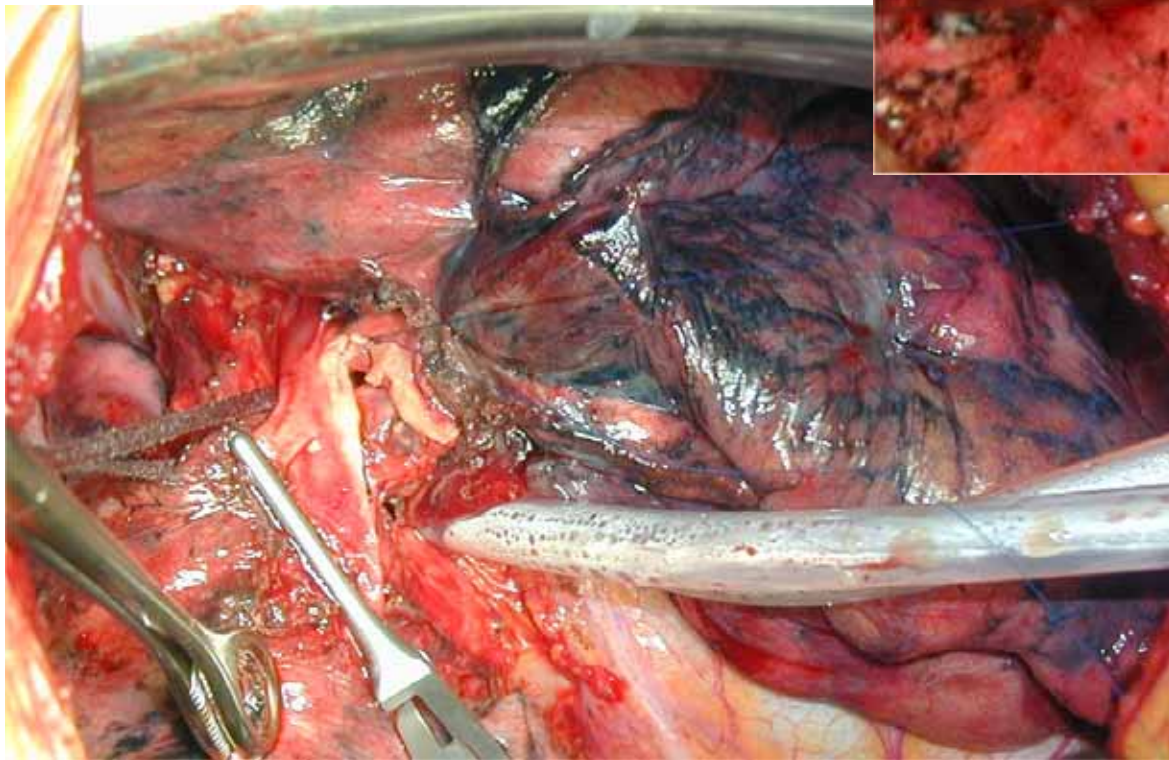


Eviter la pneumonectomie !!!!

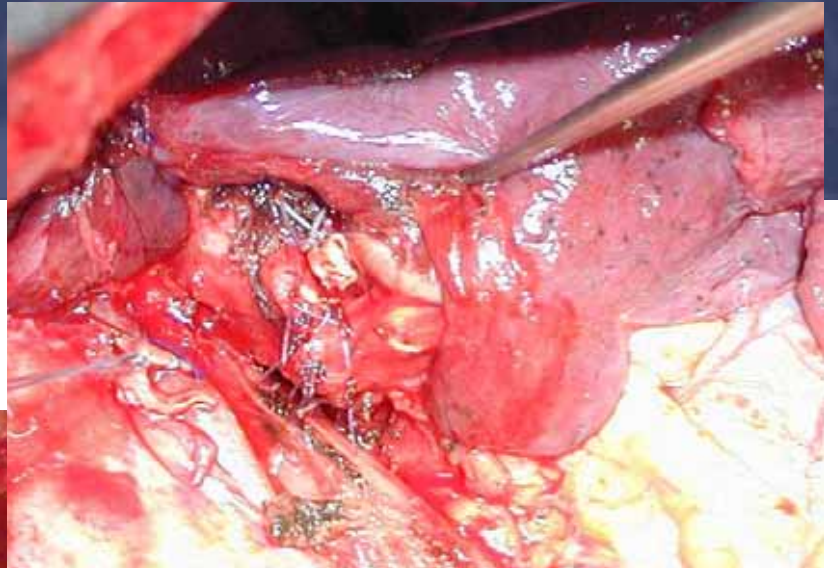




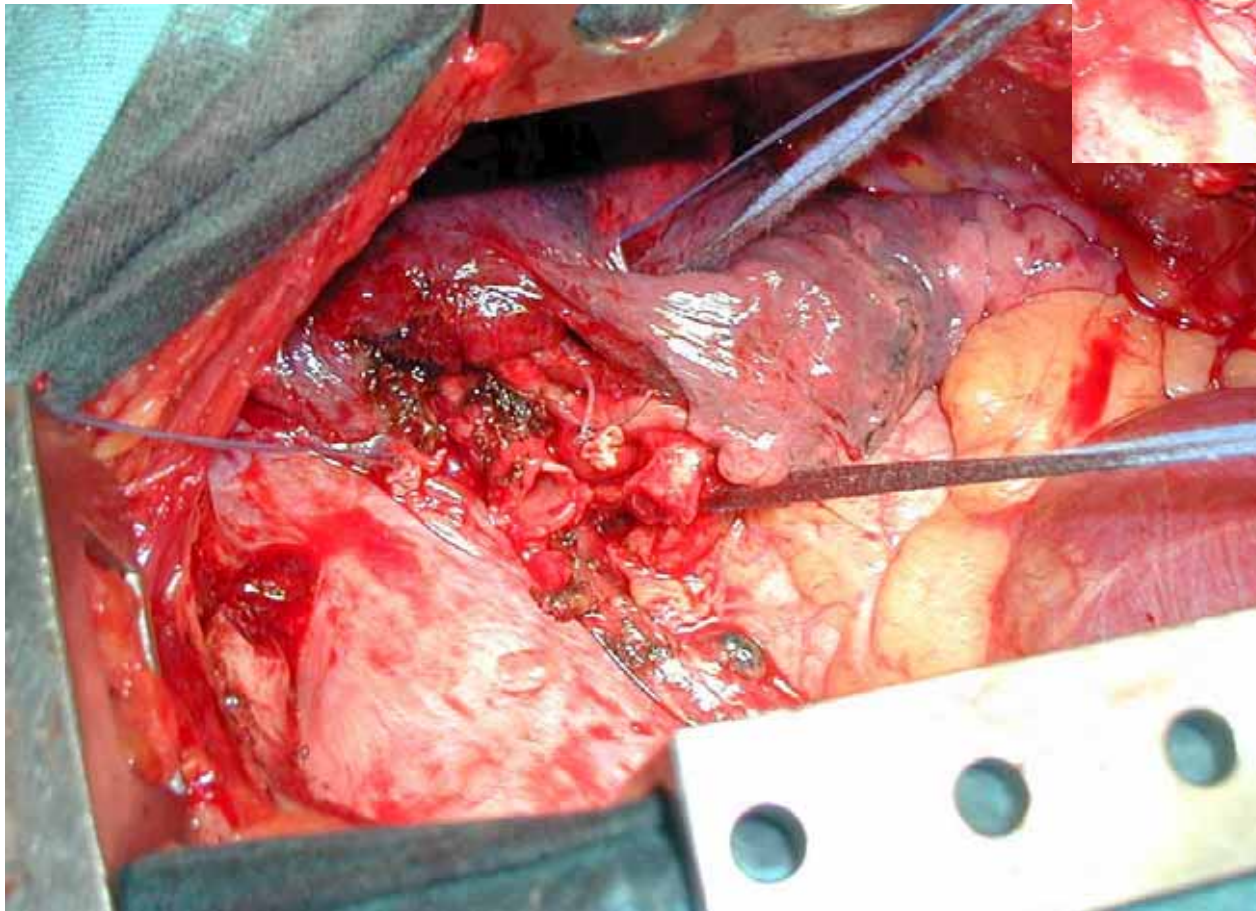
Eviter la pneumonectomie !!!!



Lobectomie moyenne élargie à la terminaison du TI, et latéralement à l'artère pulmonaire scissurale et à la racine supérieure de la veine pulmonaire supérieure

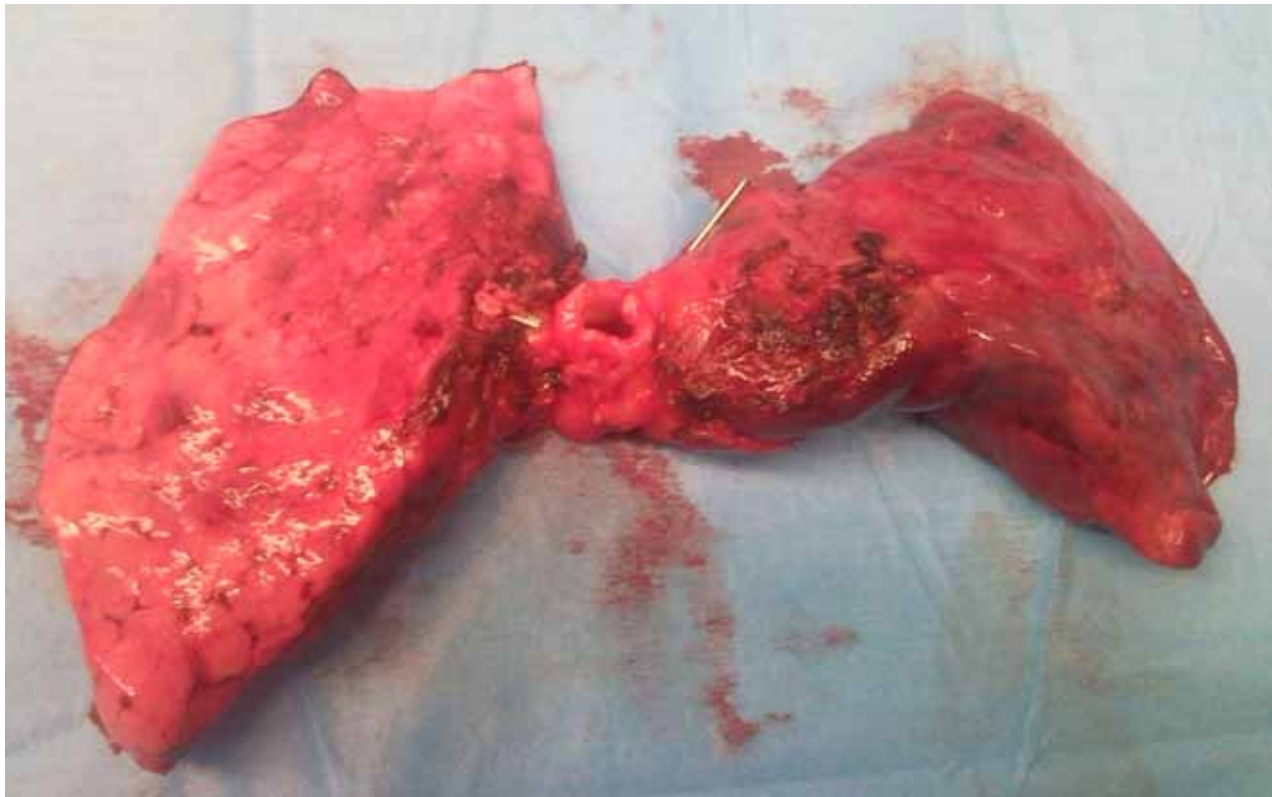


Eviter la bilobectomie !!!!



Lobectomie inférieure droite élargie à la terminaison du TI, et réimplantation de la BLM dans le TI

Eviter la bilobectomie !!!!

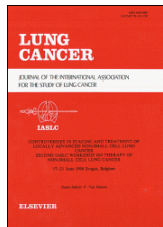


Lobectomie moyenne en «hélice » (+ segmentectomie Fowler) avec réimplantation de la BPB dans le TI

Morbi-mortalité dans le contexte de l'induction

Postoperative complication after sleeve resection ± induction treatment and pneumonectomy + induction treatment

| | Sleeve CT or CT/RT | Sleeve | Pneumonectomy CT or CT/RT | <i>P</i> -value |
|-----------------------|--------------------|------------|---------------------------|-----------------|
| Number of patients | 27 | 28 | 23 | |
| Median POH stay days | 7 (6–27) | 8 (5–14) | 8 (3–120) | 0.39 |
| Median ICU stay hours | 19 (0–62) | 19 (0–312) | 18 (0–201) | 0.52 |
| Mortality | 0 | 0 | 0 | |
| <i>Morbidity</i> | | | | |
| Minor complications | 6 (22%) | 9 (32%) | 4 (17.4%) | 0.48 |
| Major complications | 2 (7.4%) | 1 (3.6%) | 4 (17.4%) | 0.25 |
| Late complications | 2 (7.4%) | 2 (7%) | 3 (13%) | 0.78 |



Veronesi G et al. Lung Cancer 2002; 36:91-7

Induction Chemotherapy Before Sleeve Lobectomy for Lung Cancer: Immediate and Long-Term Results

Table 2. Postoperative Results After Surgery in Patients With Non-Small Cell Lung Cancer

| Characteristics | Group S | Group IC | p Value |
|---------------------------------|-------------|-------------|---------|
| Stage 0 | 1 | 10 | 0.00001 |
| Stage I | 72 | 14 | 0.01 |
| Stage II | 20 | 8 | 0.9 |
| Stage III | 20 | 9 | 0.84 |
| Stage IV | 1 | 1 | 0.86 |
| Morbidity (%) | 29 (24.7%) | 9 (21.4%) | 0.66 |
| Mortality (%) | 2 (1.7%) | 1 (2.3%) | 0.7 |
| Tumor size (mm) | 30.6 ± 21.3 | 17.5 ± 16.4 | 0.01 |
| Five-year survival (%) | 65.4% | 74% | 0.5 |
| Local recurrence (%) | 5 (4%) | 2 (4%) | 0.76 |
| Death as a result of cancer (%) | 23 (19%) | 5 (11.9%) | 0.26 |

IC group = surgery after induction chemotherapy group; S group = surgery group.



Bagan et al. Ann Thorac Surg 2009;88:1732– 6

The Incidence of Perioperative Anastomotic Complications After Sleeve Lobectomy Is Not Increased After Neoadjuvant Chemoradiotherapy

Table 3. Postoperative Complications

| Complication | NCR (n = 43) | CRS (n = 21) | <i>p</i> Value |
|--------------------|-----------------------------------|-----------------|-------------------|
| Mortality (%) | 2 (4.7) | 0 (0) | 0.45 |
| Morbidity (%) | 20 (46.5) | 9 (42.9) | 0.50 |
| Arrhythmia | 6 (14) | 2 (9.5) | 0.48 |
| Pulmonary | 16 (37.2) ^a | 4 (19) | 0.12 |
| Prolonged air leak | 6 (14) | 5 (23.8) | 0.26 |
| Anastomotic | 2 (4.7) | 0 | 0.45 |
| | 1 stenosis | | |
| | 1 Broncho PA fistula ^a | | |
| Other | | 1 RML syndrome | |

^a Mortality in the subgroup.

CRS = neoadjuvant chemoradiotherapy; NCR = resection alone; PA = pulmonary artery; RML = right middle lobe.



Milman et al. Ann Thorac Surg 2009;88:945–51

Quelques messages et pistes de reflexion

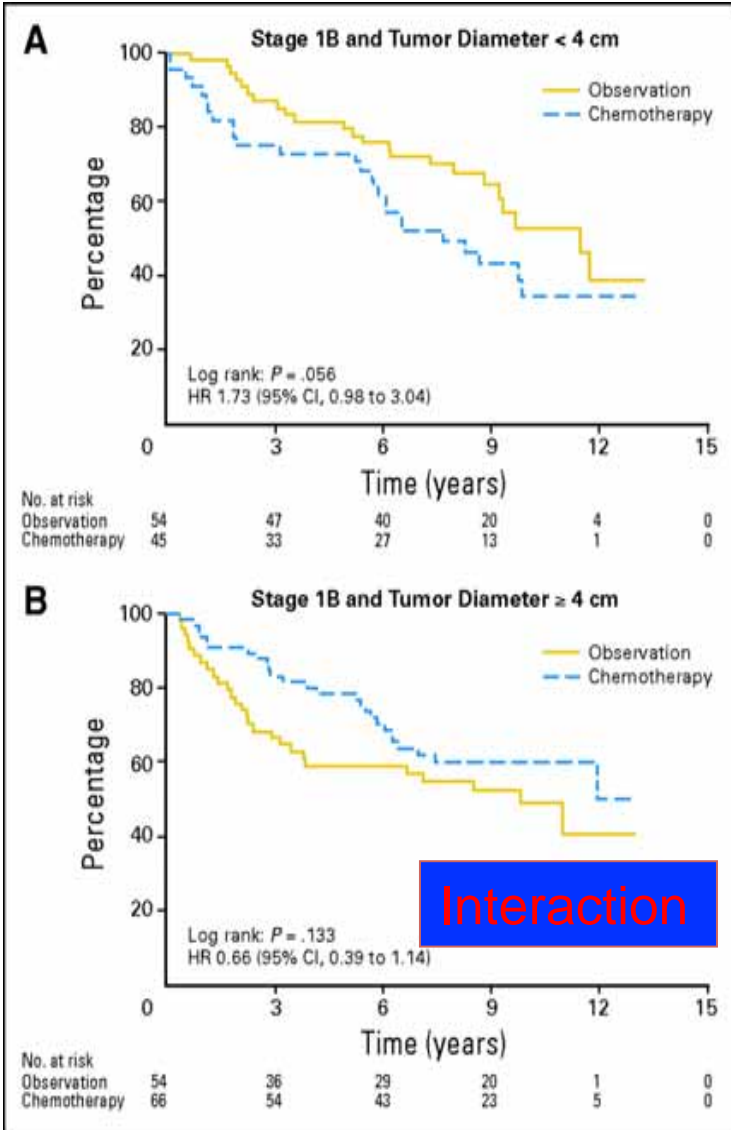


Connaître et prévenir la majoration du risque

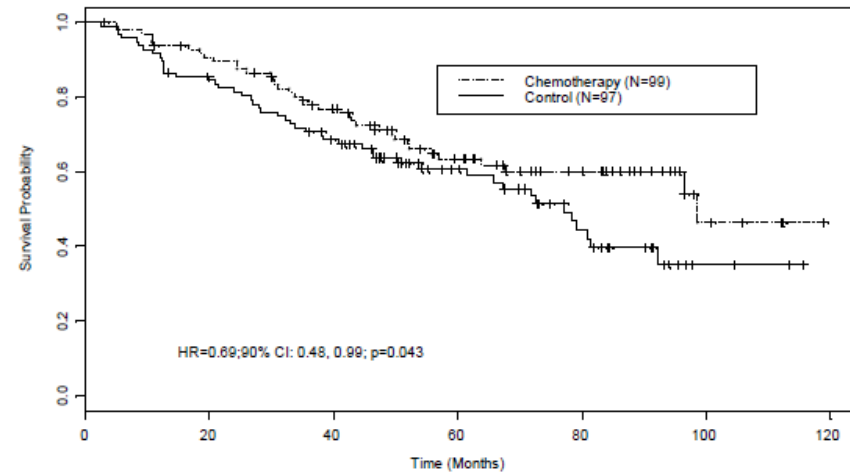
- Délai de 4-6 semaines CT – CHIR
- Délai maximum de 2 mois CHIR – CT
- TLCO/VA : 8 semaines
- Lobectomies angio-bronchoplastiques
- Pneumonectomie Dte chez les répondeurs
- Renfort de la suture/anastomose bronchique

Niveau de preuve: le T?

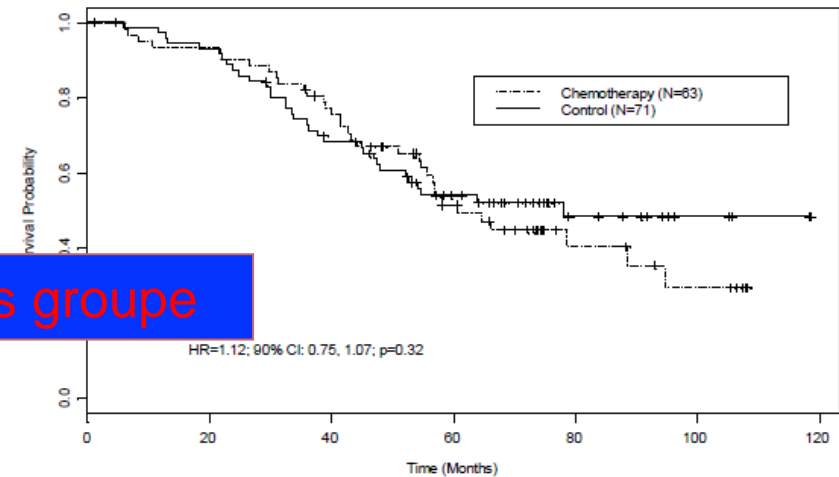
JBR10 et CALGB9633 Survie des stades Ib selon la taille



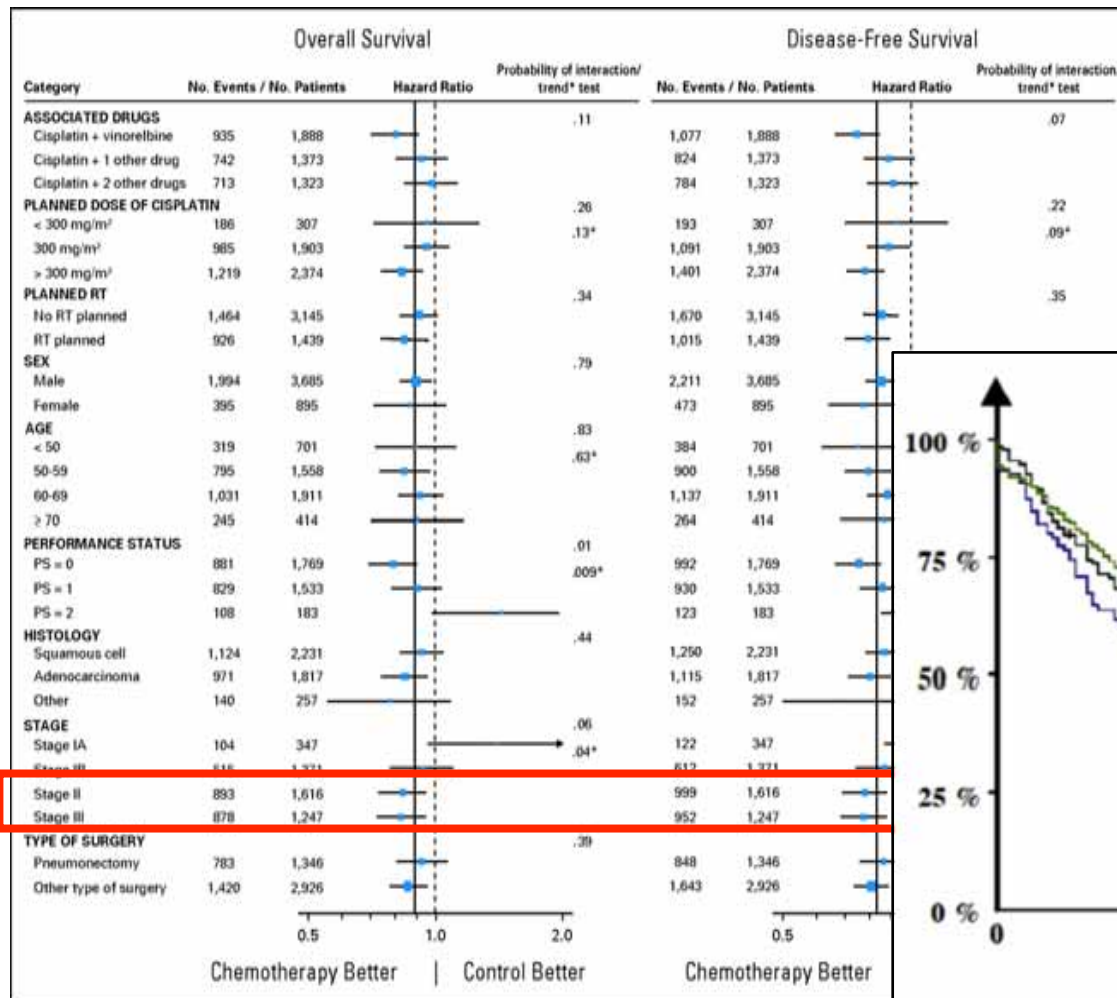
Overall Survival, Tumor Size ≥ 4 cm



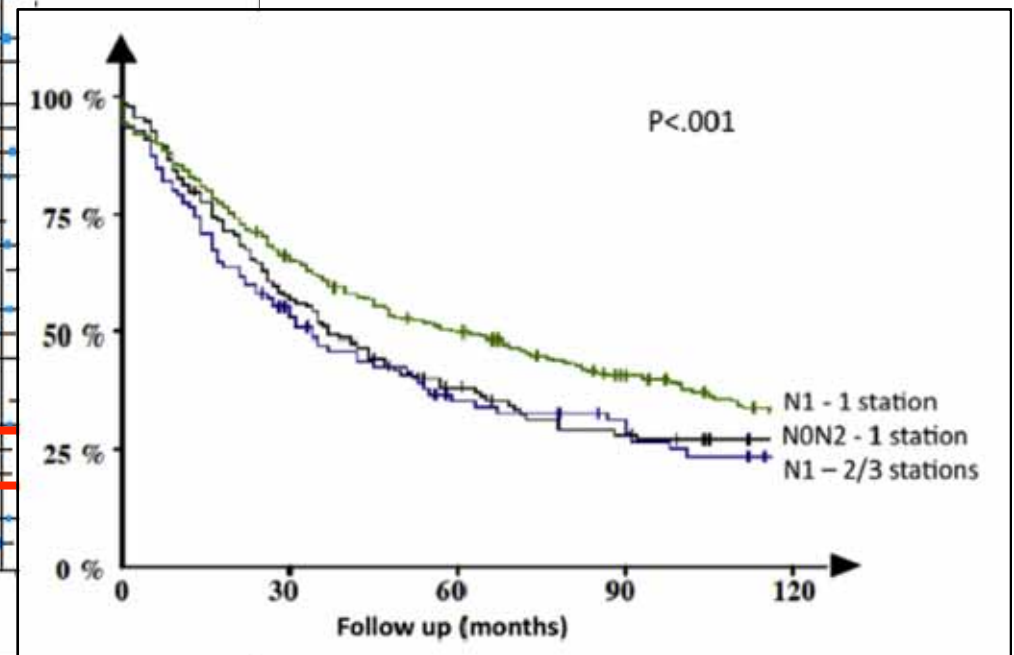
Overall Survival, Tumor Size < 4 cm



Niveau de preuve: et le N????



N1 extra vs. N1 intra
lobaire ???



Observance thérapeutique et survie...

« le bénéfice de la chimiothérapie adjuvante ne concerne que 2/3 des patients, alors que le bénéfice de survie de la chimiothérapie néoadjuvante est obtenu chez 90% des patients »

« la survie est cependant identique »

