



## Case presentation



**Paul De Leyn, MD, PhD**  
**Thoracic Surgery**  
**University Hospitals Leuven**  
**Belgium**

Perspectives in Lung Cancer  
Brussels 6-7 march 2009

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### LEUVEN LUNG CANCER GROUP

Department of Thoracic Surgery

P. De Leyn, W. Coosemans, H. Decaluwé,  
Ph. Nafteux, D. Van Raemdonck, G. Decker, T. Lerut

Department of Pneumology

J. Vansteenkiste, K. Nackaerts, C. Dooms

Department of Radiotherapy

Y. Lievens

Department of Nuclear Medicine

S. Stroobants

Department of Radiology

W. Dewever

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- **02-2003**
- **57-year lady**
- **3 months pain in left shoulder and upper arm**
  - Antiflogistics
  - Morphine
- **Horner syndrome**
- **Medical history**
  - 20 packyears



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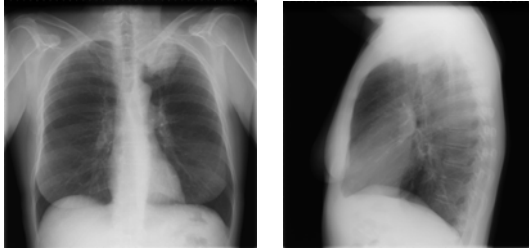
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## Chest X-ray



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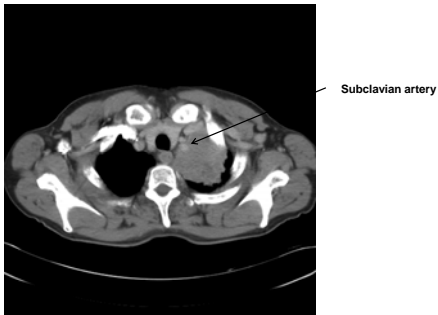
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## CT scan



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## Investigations

- **Laboratory**
  - CEA : 12.2 µg/L (< 3,4 µg/L)
- **Bronchoscopy : normal**
  - Aspirate : normal
  - Transbronchial biopsy : normal
  - Transthoracic puncture : large cell carcinoma
- **Bone scintigraphy : normal**
- **PET scan : T positive, N0M0**
- **Pulmonary function test : normal**

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## Diagnosis

- Pancoast tumor
- cT4 (Horner, subclavian artery) N0M0

THERAPY?

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## Further therapy?

1. Chemotherapy
2. Radiotherapy
3. Chemoradiotherapy
4. Induction radioTx + surgery
5. Induction chemoradioTx + surgery

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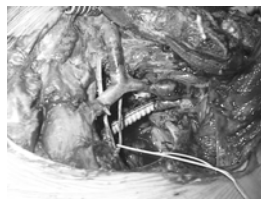
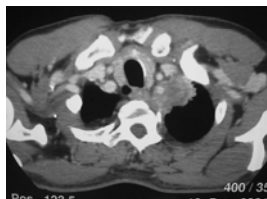
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## Superior sulcus tumours - Pancoast tumor

Major challenge : control of locoregional disease  
Low complete resectability rate despite major procedures  
Preoperative RT (30-35 Gy)

T3N0 : R0 : 66%,  
T4N0 : R0 : 18%, 5-year survival : 12%



Rush et al., J Thorac Cardiovasc Surg 2000;119:1147-1153

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**Induction chemoradiotherapy for pancoast  
(SWOG 9416)**

- Inclusion : cT3-T4N0 (mediast : neg) n=110
- Concurrent chemoradiotherapy (cis, etoposide; 45 gy)
- Surgery in responders and stable disease

Rusch et al. J Thorac Cardiovasc Surg, 2001;11:472-83  
Rusch et al. J Clin Oncol 2007;25:313-318

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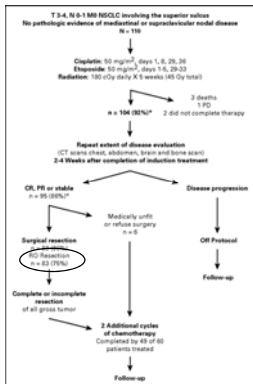
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**Induction chemoradiotherapy for pancoast  
(SWOG 9416)**



Rusch et al. J Thorac Cardiovasc Surg, 2001;11:472-83  
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**Induction chemoradiotherapy for pancoast  
(SWOG 9416)**

- Complete resectability : 75%
- Pathological complete response or minimal microscopic disease : 65%
  - Overall survival (5-yr) : 44%
  - Survival in R0 resections (5-yr) : 54%

Rusch et al. J Thorac Cardiovasc Surg, 2001;11:472-83  
Rusch et al. J Clin Oncol 2007;25:313-318

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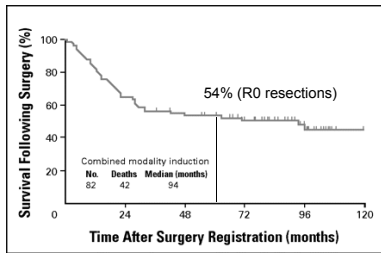
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**Induction chemoradiotherapy for pancoast  
(SWOG 9416)**



Rusch et al. J Thorac Cardiovasc Surg, 2001;11:472-83  
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- **20-02-2003 : Cervical mediastinoscopy**
  - Negative at levels 7, 4L, 4R and 2R
- **Concomitant chemoradiotherapy (start 10-03-2003)**
  - Cisplatin-etoposide (2 courses)
  - 45 gy (25 fractions of 1.8 gy)
- **Reevaluation 18-04-2003**
  - No pain
  - CT : yT4N0M0

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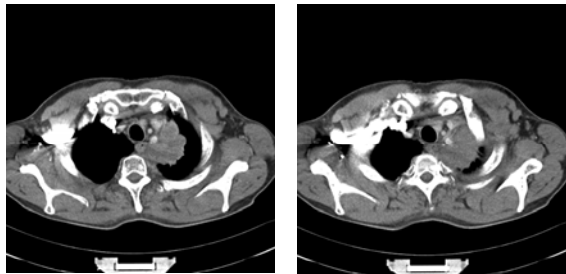
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**CT after induction chemoradioTx**



yT4N0M0

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CT after induction chemoradioTx



yT4N0M0

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Further therapy?

1. Surgery
2. Further radiotherapy
3. Stop therapy

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- 06-05-2003 : Left posterolateral thoracotomy (Paulson incision)
- Upper lobectomy + chest wall resection (rib 1 + 2).  
No reconstruction of chest wall
- Pathology : fibrosis +++  
Some small islands of viable tumor  
pT2N0M0, complete resection

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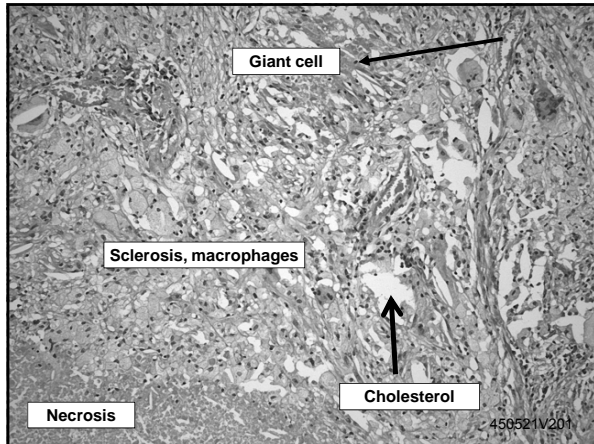
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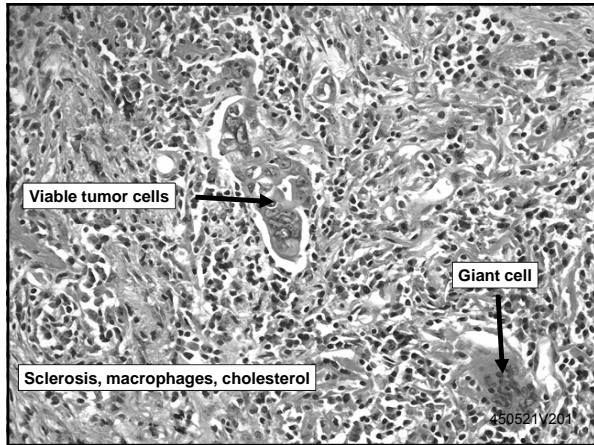
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**CT scan is poor predictor of response**

SWOG 9416  
cT3-T4N0M0 pancoast tumors (n=110)

Complete resectability : 75%

65% of specimens showed a pathologic complete response or minimal microscopic disease

32 (36%) pathologic complete response

17 partial response on CT  
15 stable disease on CT

Rusch et al. J Thorac Cardiovasc Surg, 2001;11:472-83  
Rusch et al. J Clin Oncol 2007;25:313-318

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- No postoperative problems (hospital stay : 11 days)
- 2 adjuvant courses of cisplatinum-etoposide (start 26-05-2003)
- March 2008 : No evidence of disease (CEA : 1,6 µg/L)



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## Materials and methods



- April 2002 – februari 2008
- 32 patients (prospective, consecutive)
- cT4 tumor (17) – Pancoast 15 (cT3-4)

cT4		Pancoast
Pulmonary artery :	5	cT3 : 5
Atrium :	5	cT4 : 10
Aorta :	3	
Extens mediastinal infiltration :	2	
Recurrent laryngeal nerve :	1	
Subclavian artery :	1	

- N0 – M0 (PET or CT/PET and mediastinoscopy)

De Leyn et al, J Thorac Oncol 2009;4:62-8

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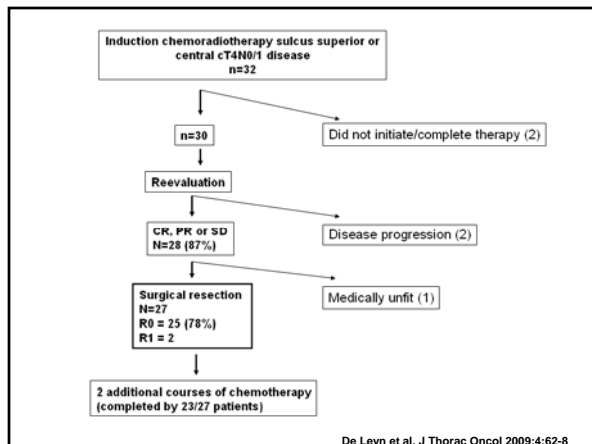
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De Leyn et al, J Thorac Oncol 2009;4:62-8

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### Postoperative morbidity/mortality



- Mean hospital stay : 9.2 days
- No hospital mortality
- ICU : 1 patient
- No bronchopleural fistulae or empyema

De Leyn et al, J Thorac Oncol 2009;4:62-8

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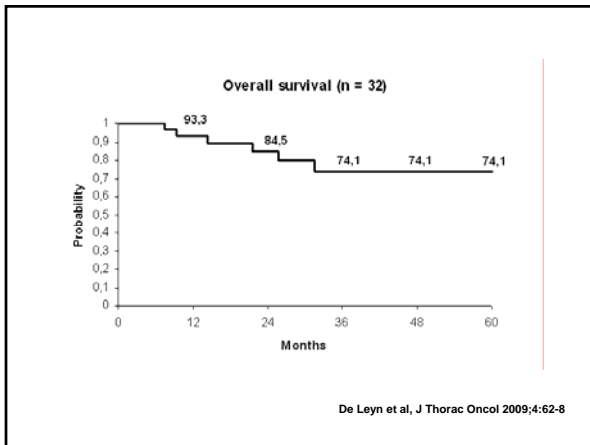
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De Leyn et al, J Thorac Oncol 2009;4:62-8

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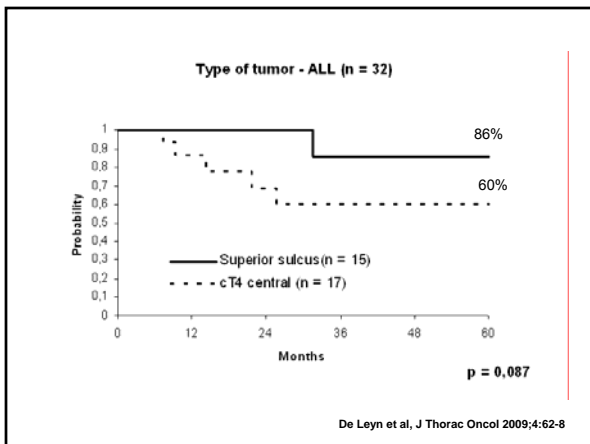
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De Leyn et al, J Thorac Oncol 2009;4:62-8

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### Remaining questions

- Improve induction therapy?
  - Increase radiation dose
  - Hyperfractionated accelerated RT
  - Third-generation chemotherapy?
- Prophylactic cranial irradiation?

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### High dose radiotherapy in trimodality treatment of pancoast tumors

N = 36

Preoperative chemoradiation (mean total radiation dose : 56.9 gy)

R0 resection : 97%

Pathological CR : 40%

Operative mortality : 2.7%

Kwong et al, J Thorac Cardiovasc Surg 2005;129:1250-7

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### Prophylactic Cranial irradiation?

Single site brain metastasis is most common site of recurrence (>40%)

Significant reduction in incidence of brain metastasis in patients with operable stage-IIIA NSCLC undergoing trimodal treatment

Control :	35%
PCI :	7.8%

Rusch et al, J Clin Oncol 2007;25:313-318  
Kwong et al, J Thorac Cardiovasc Surg 2005;129:1250-7  
Pöttgen et al., J Clin Oncol 2007;25:4987-92

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## Conclusion

- Trimodality treatment is feasible with low morbidity and mortality
- High complete resectability
- CT scan is poor predictor of response. Both patients with response or stable disease on CT should be explored
- Prophylactic PCI?
- Multidisciplinary approach

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