Surgery for oligometastatic lung cancer and liver or adrenal metastases

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Organisers IASLC International Association for the Study of Lung Cancer; ESMO GOOD SCIENCE BETTER MEDICINE BEST PRACTICE European Society for Medical Oncology

Partners ESTRO European Society for RADIOTHERAPY & ONCOLOGY; European Society of Thoracic Surgeons 1993; etop Information | Research

Disclosure slide
Paul E. Van Schil

- no disclosures
- no conflicts of interest

Surgery for oligometastatic lung cancer and liver or adrenal metastases

- General overview
- Contralateral pulmonary nodules
- Extrathoracic single or multiple metastases
  - M1 – extrathoracic metastases
  - M1 – liver
  - M1 – adrenal
- Conclusion

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Surgery for oligometastatic lung cancer and liver or adrenal metastases

NSCLC metastatic disease

- generally poor prognosis
- surgery rarely indicated except some subgroups
- no controlled randomised trials
- retrospective studies: selection bias
- long-term survivors : complete resection 1ary + metastatic site(s)

Definition oligometastases

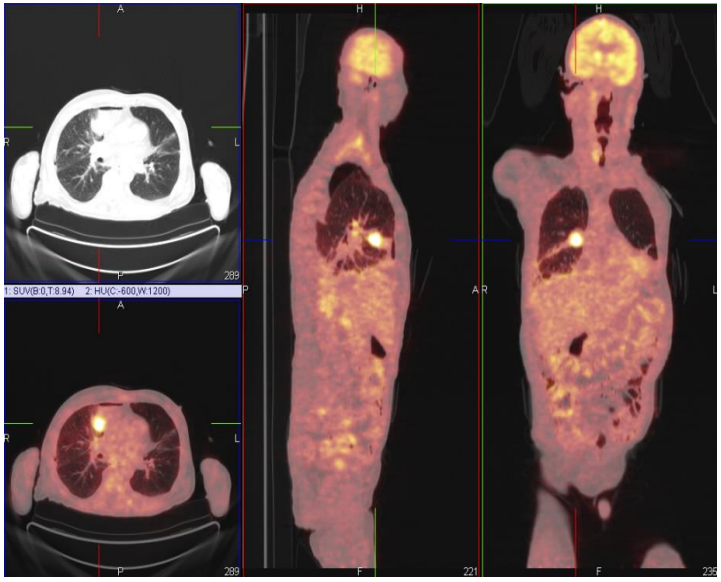
- Oxford dictionary: oligo- = having few, containing a relatively small number of units
- intermediate state: better prognosis than diffuse metastatic disease?
- < 5 lesions occurring in no more than 2 or 3 different organs
- 3 distinct entities:
  - limited n of mets at diagnosis
  - oligoprogressive disease after cytoreductive therapy
  - oligorecurrent disease after definite locoregional therapy

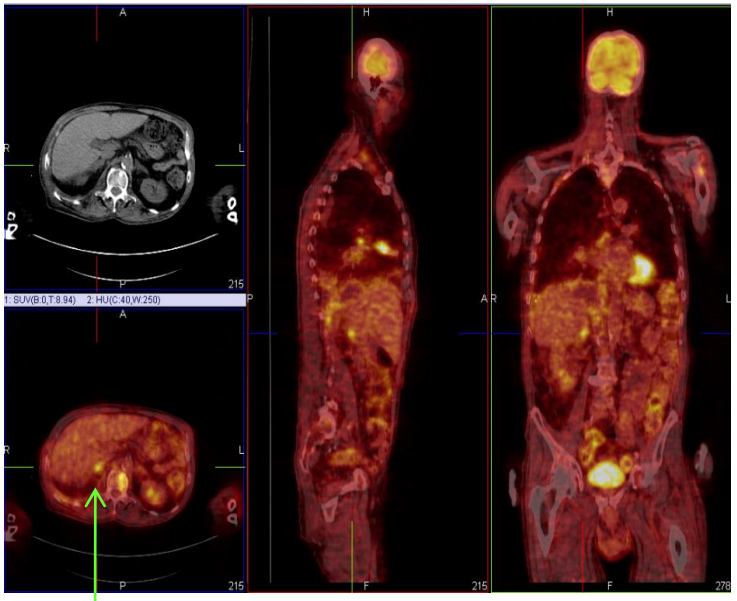
Surgery for oligometastatic lung cancer

- integrated PET-CT: detection occult metastases

  7.5% early stage – 24% advanced stage

Erasmus JJ, Sabloff BS. CT, PET and MRI in staging lung cancer.
Clin Chest Med 2008; 29:39-57





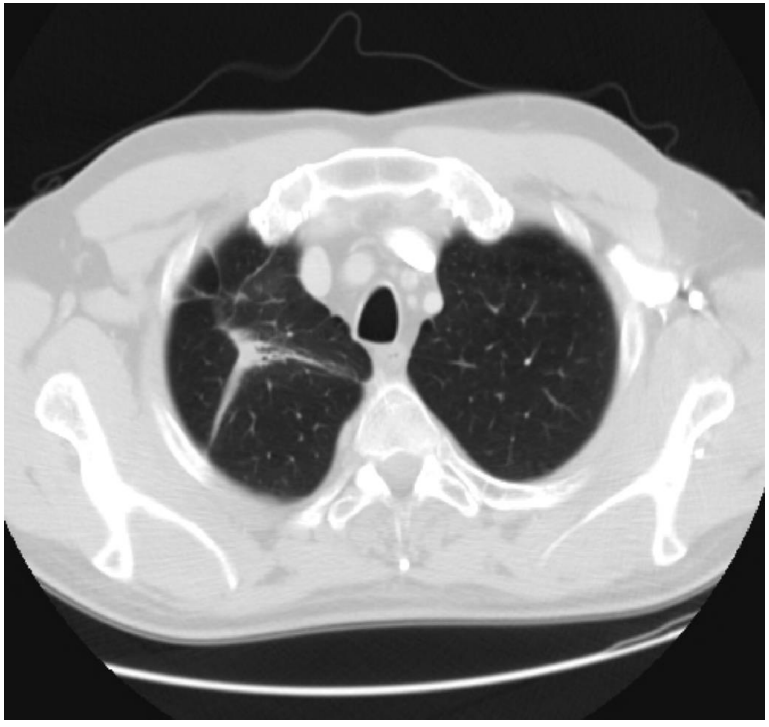
Surgery for oligometastatic lung cancer

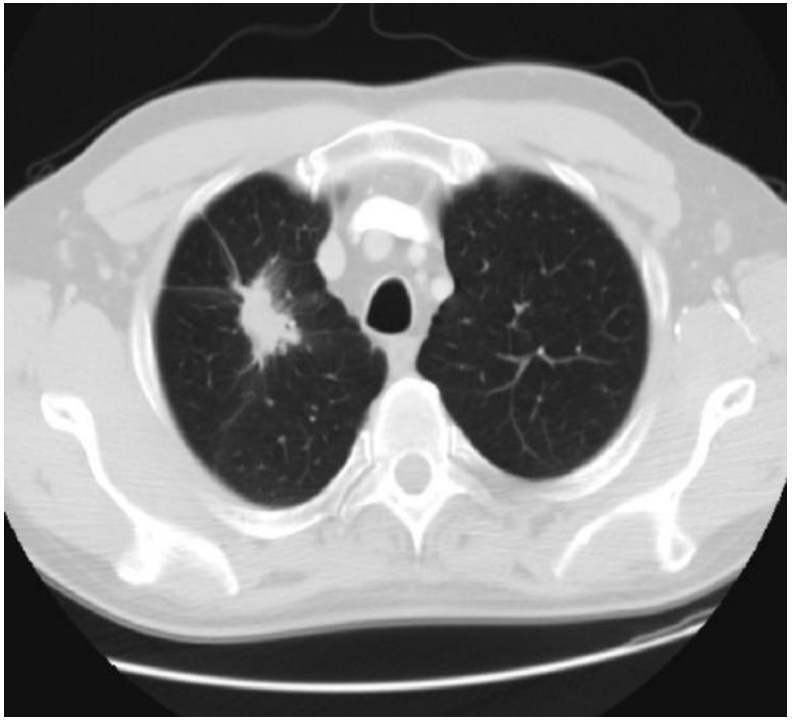
Case 52-year-old ♂: bone metastasis

- 2006: NSCLC RUL + bone met L femur
- stabilisation + RT L leg + 6 cycles CT - RT RUL

X-ray 300407

Case : bone metastasis

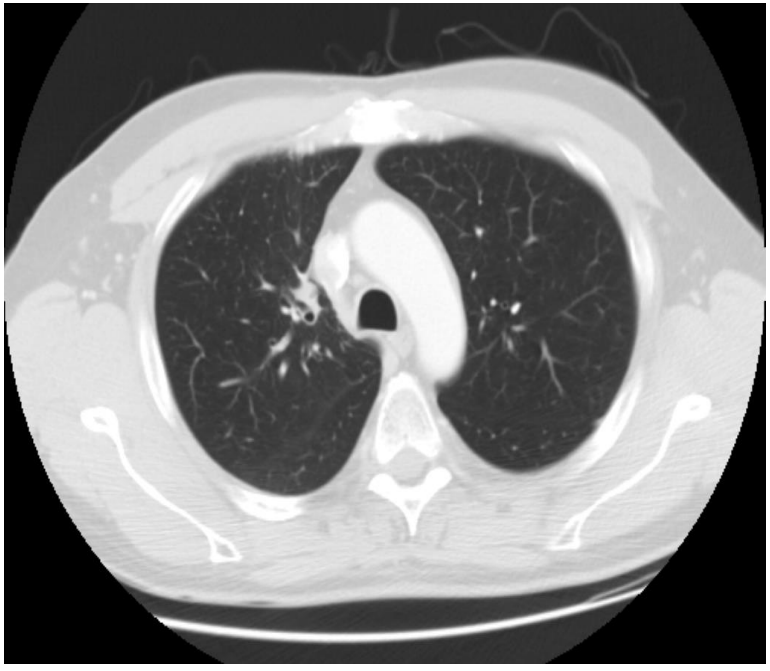




CT 281106

Case : bone metastasis

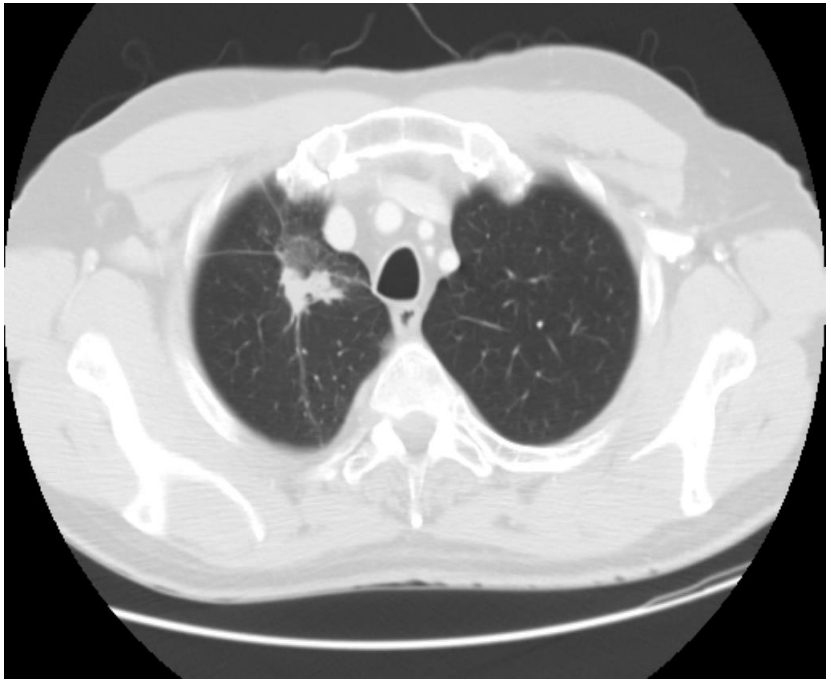
chest CT 0807 : partial response, stable disease

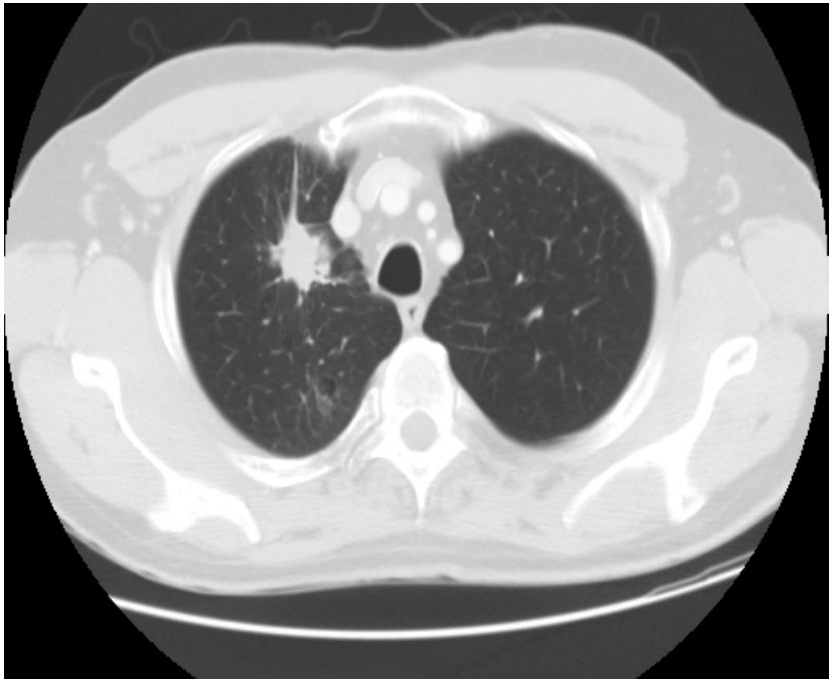


CT 130807

Case : bone metastasis

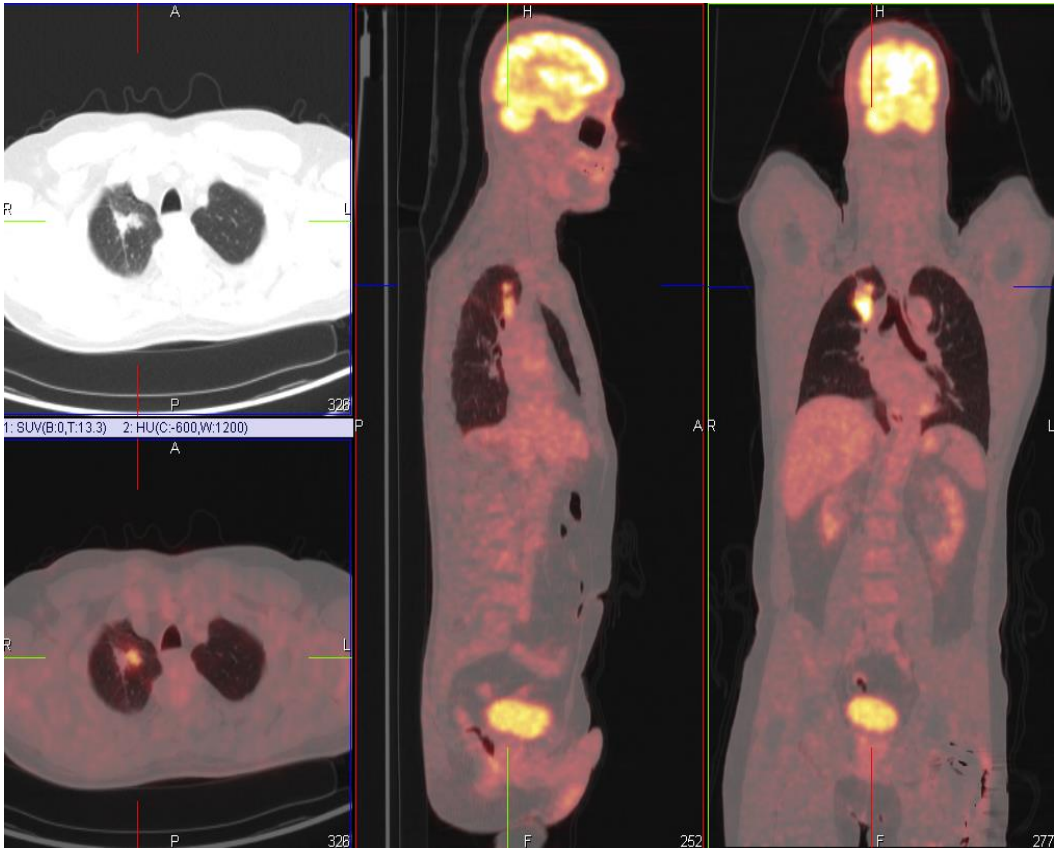
chest CT 1207 : progressive disease (locally)





CT 101207

Case : bone metastasis



PET 191207

- PET: only RUL +
- 210108 salvage surgery: lobectomy RUL
- pT1N1 R0
- postop.complication: wound infection Staph. aureus

Surgery for oligometastatic lung cancer

Prospective phase II study

- MSKCC – New York 10/92 – 12/99
  - NSCLC + solitary, synchronous metastasis
  - induction chemotherapy: 3x MVP (mitomycin vinblastine, cisplatin)
  - resection all disease sites + 2 postop. cycles VP
  - 23 pts enrolled (12 ♂, 11 ♀) median age 55 y
  - mediastinoscopy 22 pts + N2 in 12 (54.5%)

Downey RJ et al. Lung Cancer 2002; 38:193-7

Surgery for oligometastatic lung cancer

Prospective phase II study

- only 12 pts completed 3 cycles induction MVP
- resection 1ary lung cancer
  - 14/23 pts - 61%
  - 6 N0 1 N1 7 N2 = 50%!
  - 9 pts no lung resection: 5 brain recurrence
    4 PD during chemotherapy

Downey RJ et al. Lung Cancer 2002; 38:193-7

Surgery for oligometastatic lung cancer

Prospective phase II study

- 20 pts definitive treatment M1 site
  - adrenalectomy 1
  - splenectomy 1
  - partial colectomy 1
  - segmental bone resection 2
  - lung resection 1
  - *stereotactic radiotherapy* *1*
  - craniotomy 13
  - *no resection M1 – PD* *3*

Downey RJ et al. Lung Cancer 2002; 38:193-7

Surgery for oligometastatic lung cancer

Prospective phase II study

- 10 pts complete resection 1ary + M1 site
  - 8 had 3 cycles of preop. MVP
  - 6 had 2 cycles of postop. VP
- overall MST all pts 11 mos
- at 5 years: only 2/23 pts alive NED
- last FU 3 pts alive
  - 1 disease-free at 104 mos
  - 2 alive with disease at 31 and 77 mos

Downey RJ et al. Lung Cancer 2002; 38:193-7

Surgery for oligometastatic lung cancer

Prospective phase II study - conclusions

- n of pts who qualified for this approach ↓
- induction CT + surgery + adjuvant CT poorly tolerated

  but: MVP toxic !
- ↓ overall and disease-free survival
- *retrospective analysis same data*
  - 10 pts complete resection 1ary + M1 site *"shrinking denominator"*
  - 3 pts alive at last FU: 30%
  - 2 pts true 5-year survivors: 20%

Downey RJ et al. Lung Cancer 2002; 38:193-7

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Contralateral nodules

- IASLC database:

  c + p stage 5,592 selected T4M0 and M1 analysed

  best stage (p stage if available, otherwise c): 1,004 pts

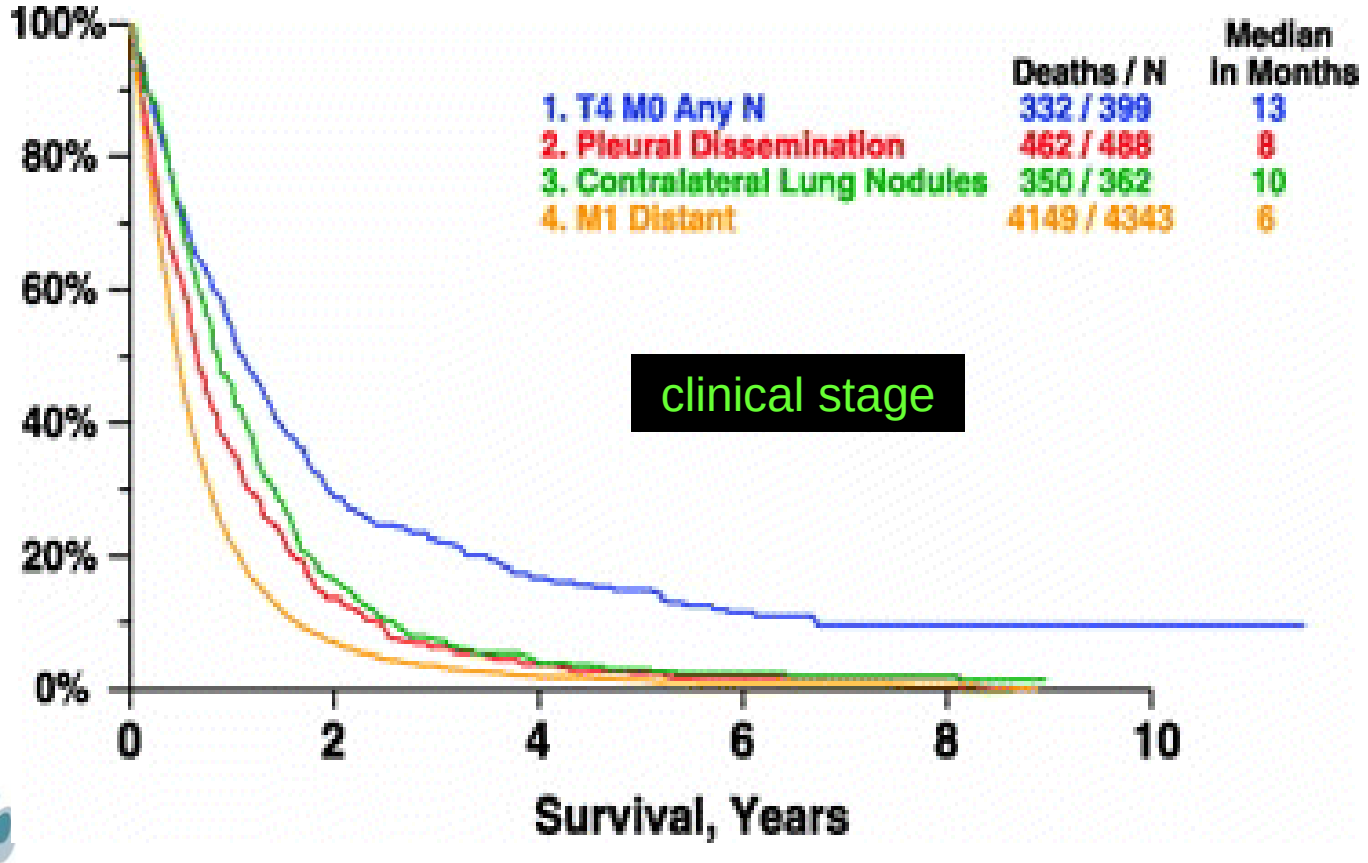
- pM1 contralateral nodules n=369, primarily c stage

  MST 10 mos 5-year survival 3%

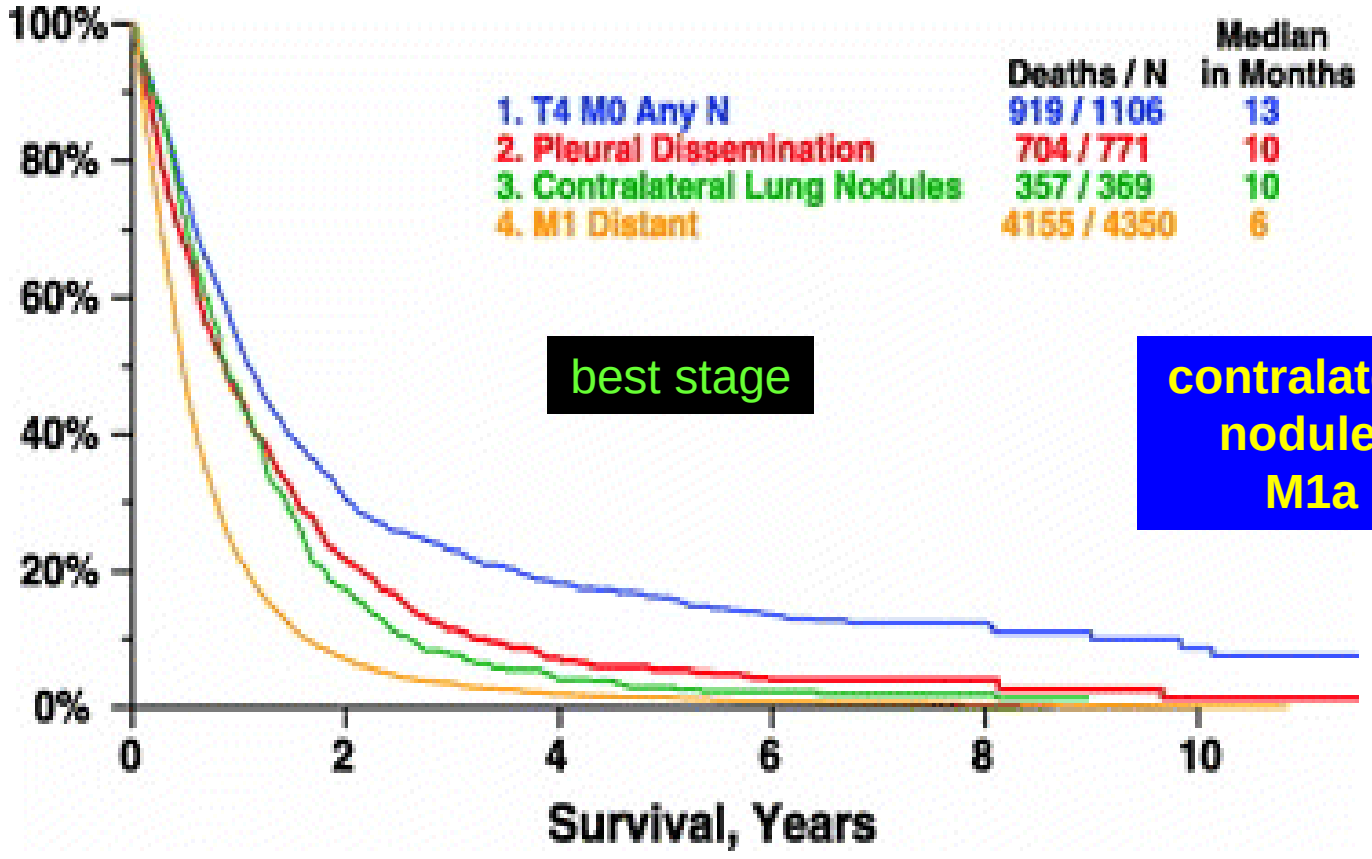
  ≈ pleural dissemination *≠ distant mets* *p< .0001*

Postmus P et al. J Thorac Oncol 2007; 2:686-93

Contralateral nodules



Contralateral nodules



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Distant extrathoracic metastases

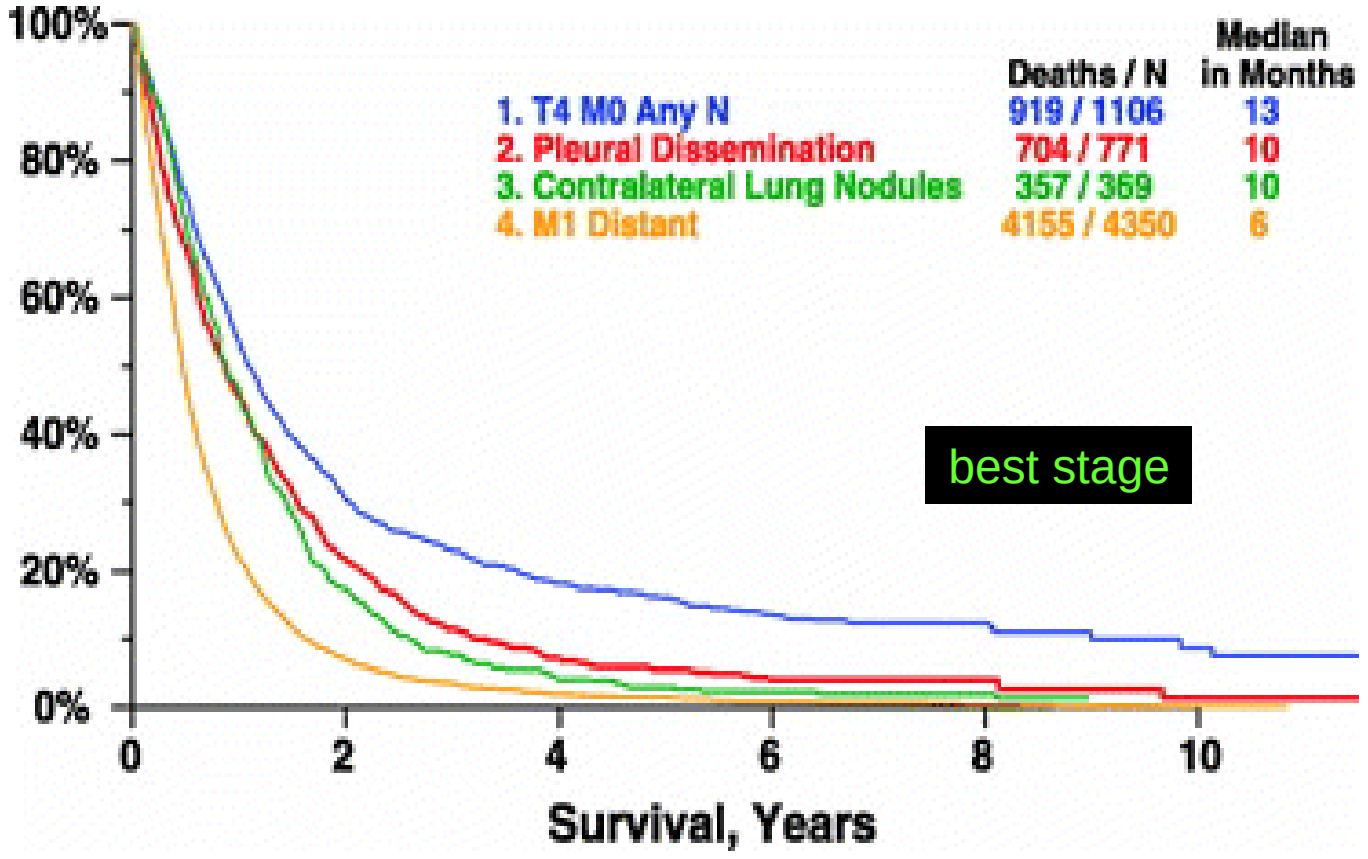
- IASLC database: 4,350 pts distant extrathoracic metastases

		%
• reported sites	multiple	43
	bone	24
	liver	10
	brain	9
	adrenal	6
	skin	<1
	other single sites	7

skin metastasis

Postmus P et al. J Thorac Oncol 2007; 2:686-93

Distant metastases



Distant extrathoracic metastases

- poor prognosis — MST 6 mos — 1-year survival 22%

  single distant metastasis — MST 6 mos — 1-year survival 20%

  multiple — 5 mos — 23%

  p= .006

- no difference single-site locations MST 6 mos

  exception brain MST 5 mos

- not possible to evaluate prognostic differences between

  single ↔ multiple brain mets

  single ↔ multiple sites in any extrathoracic organ

Postmus P et al. J Thorac Oncol 2007; 2:686-93

Liver metastases

- liver common site for mets of gastrointestinal, lung and breast cancer
- 70-90% of liver metastases unresectable
- other ablative treatment options

  SART, RFA, transarterial chemoembolisation, percutaneous ethanol injection
- most experience colorectal cancer ± lung mets; 1ary NSCLC: limited data
- SART local control rates 60-90% and OS 30-83% after 2 years

  best for lesions ≤ 3 cm, oligomets n ≤ 3
- SART well-tolerated and effective for unresectable lesions
- more prospective data needed

Scorsetti M. J Gastrointest Oncol 2014; 5:190-97

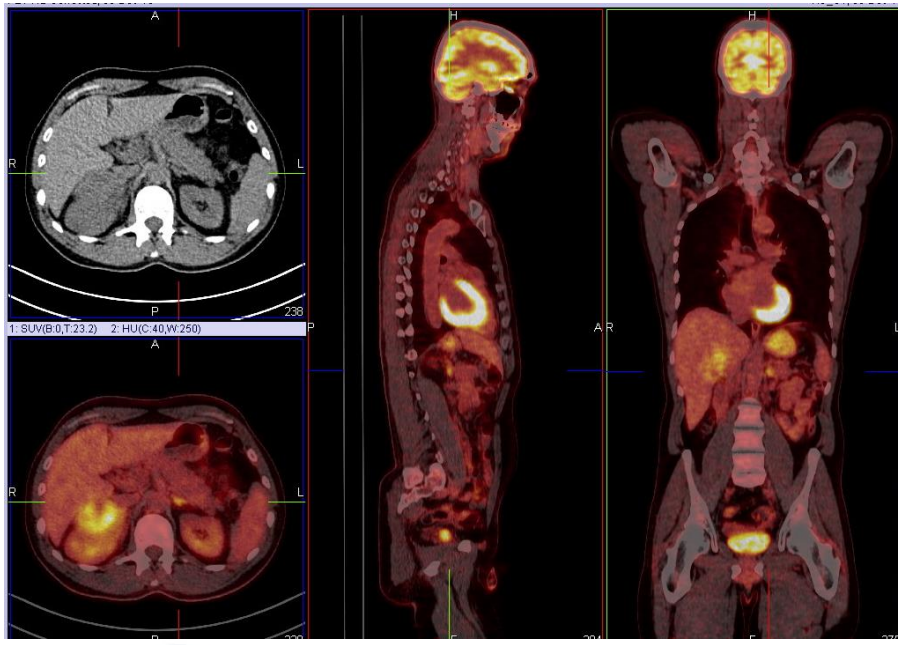
Senan S. IASLC Multidisciplinary Approach to Thoracic Oncology Chapter37 pp. 487-490

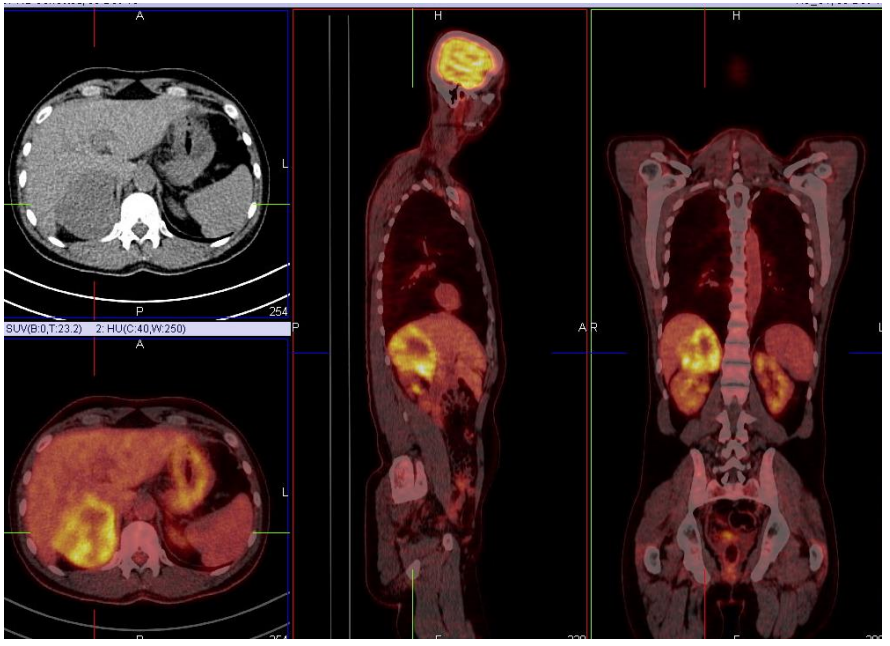
Adrenal metastases

all distant extrathoracic metastases M1 → M1b

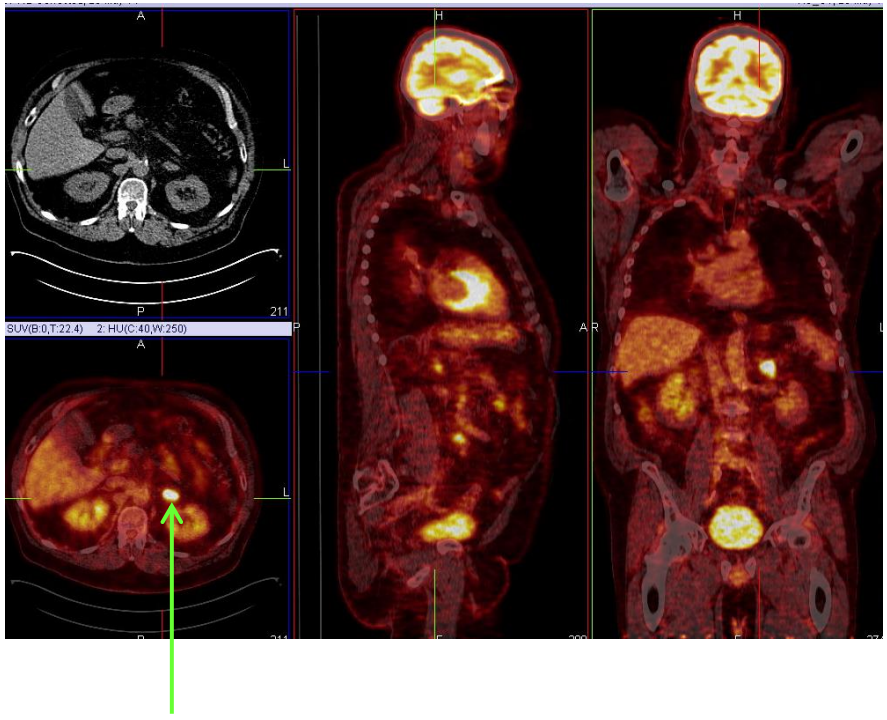
Postmus P et al. J Thorac Oncol 2007; 2:686-93

♂ 48-year-old
07/12 NSCLC M1b, CRT
02/14 PD R adrenal gland
→ adrenalectomy





Adrenal metastases



- ♂ 70-year-old
- 08/06 lobectomy LLL, stage IB, adjuvant chemotherapy
- 06/14 solitary adrenal metastasis ⟶ L adrenalectomy

Adrenal metastases

- highly selected patients: resection lung cancer + adrenal met
- histological diagnosis to be obtained
- invasive mediastinal staging, extrathoracic imaging (CT-PET)
- contra-indications: N2,3 other mets
- adrenalectomy: laparoscopy safe, effective, advantageous

Ariyan C. Adv Surg 2007; 41:133-53

- 23 pts isolated adrenal metastasis

synchronous 6 metachronous 17

5-year survival 23.3%

↑ prognosis: DFI > 6 mos 5-year survival 38%

↓ DFI < 6 mos † < 2 years

Mercier O. J Thorac Cardiovasc Surg 2005; 130:136-40

Adrenal metastases

- systematic review
- 10 publications 114 patients

  42% synchronous 58% metachronous median DFI 12 mos
- synchronous: younger
- complications adrenalectomy infrequent
- MST synchronous 12 mos metachronous 31 mos *p=0.02*
- 5-year survival synchronous 26% metachronous 25%
- conclusion synchronous shorter MST

  but: durable long-term survival in both groups

Tanvetyanon T. J Clin Oncol 2008; 26:1142-7

Isolated adrenal metastasis
ACCP guidelines

- planned curative-intent surgical resection: invasive mediastinal staging + extrathoracic imaging (head CT/MRI + PET) recommended

- synchronous met with resectable 1ary NSCLC N0,1
  resection 1ary tumour + adrenal met recommended

- metachronous adrenal met: resection recommended
  if 1ary lung cancer was completely resected

- after curative resection adrenal met: adjuvant chemotherapy

Kozower BD. Special treatment issues in NSCLC.
ACCP guidelines. Chest 2013; 143(5) suppl e369S – e399S

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- metastatic NSCLC: poor prognosis
  surgery rarely indicated
- 'oligomets': complete resection 1ary tumor + mets
- combination: surgery, SART, chemotherapy, targeted therapies

NCCN guidelines version 5.2015

definitive local therapy to isolated or limited metastatic sites (oligometastases) (including but not limited to brain, lung, and adrenal gland) achieves prolonged survival in a small proportion of well-selected patients with good performance status who have also received radical therapy to the intrathoracic disease