



國立成功大學醫學院附設醫院
National Cheng Kung University Hospital
生命·愛心·卓越·創新



Low-dose CT for lung cancer screening Surgeon's perspective – management of positive scan

主辦單位：台灣肺癌學會、台灣胸腔暨重症醫學會、中華民國放射線醫學會
協辦單位：台灣臨床腫瘤醫學會、中華民國癌症醫學會

日期：2013/08/31 (W6)

時間：15:20-15:50

地點：高雄金典酒店42樓會議室

國立成功大學附設醫院
外科部/胸腔外科/外科加護病房
賴吾為 醫師

世說新語

perspective

- You have a way of looking at the world that makes sense to others and yourself.
- Others seek you out to draw on your experience, and
- You are often able to help them solve problems and gain perspective
- You have a good sense of what is really important in life.
- 別人會來找你，請求你用你的經驗來幫助他們解決問題，得到正確的觀點。你看世界的方式對別人和對你自己都有意義。有智慧的人是生活中最重要，破解難題的專家。



大 綱

- 如何定位？
- 手術切除的結果為何？
- 思考邏輯：
 - 甚麼是GGO的自然史呢？談GGO腫瘤倍增時間。
 - 是不是”寧可錯殺一萬，不可放過一個”呢？
 - 若外科介入的風險低，乾脆手術切除，求個明白。好嗎？
- 台灣的肺癌高危險群何在？
 - 從成大醫院推展國健局四大癌症篩檢的結果
 - 推估若實施”無特定”族群的肺癌篩檢的可能結果。
- 結論。



定位方式 (1/3)

- 迷你開胸
- 手或指頭觸摸，但
 - GGO無從摸起。



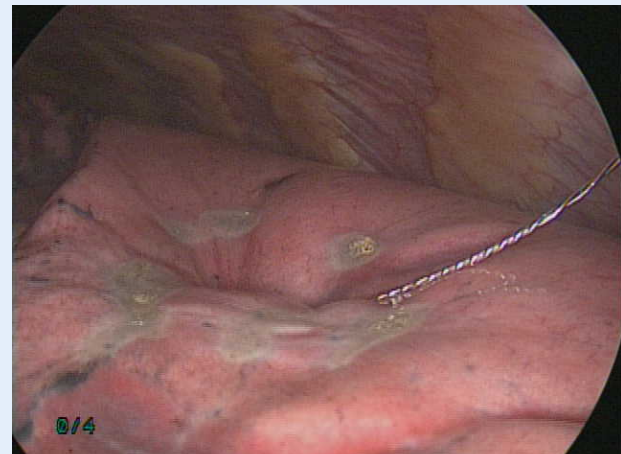
定位方式 (2/3)

胸腔鏡手術

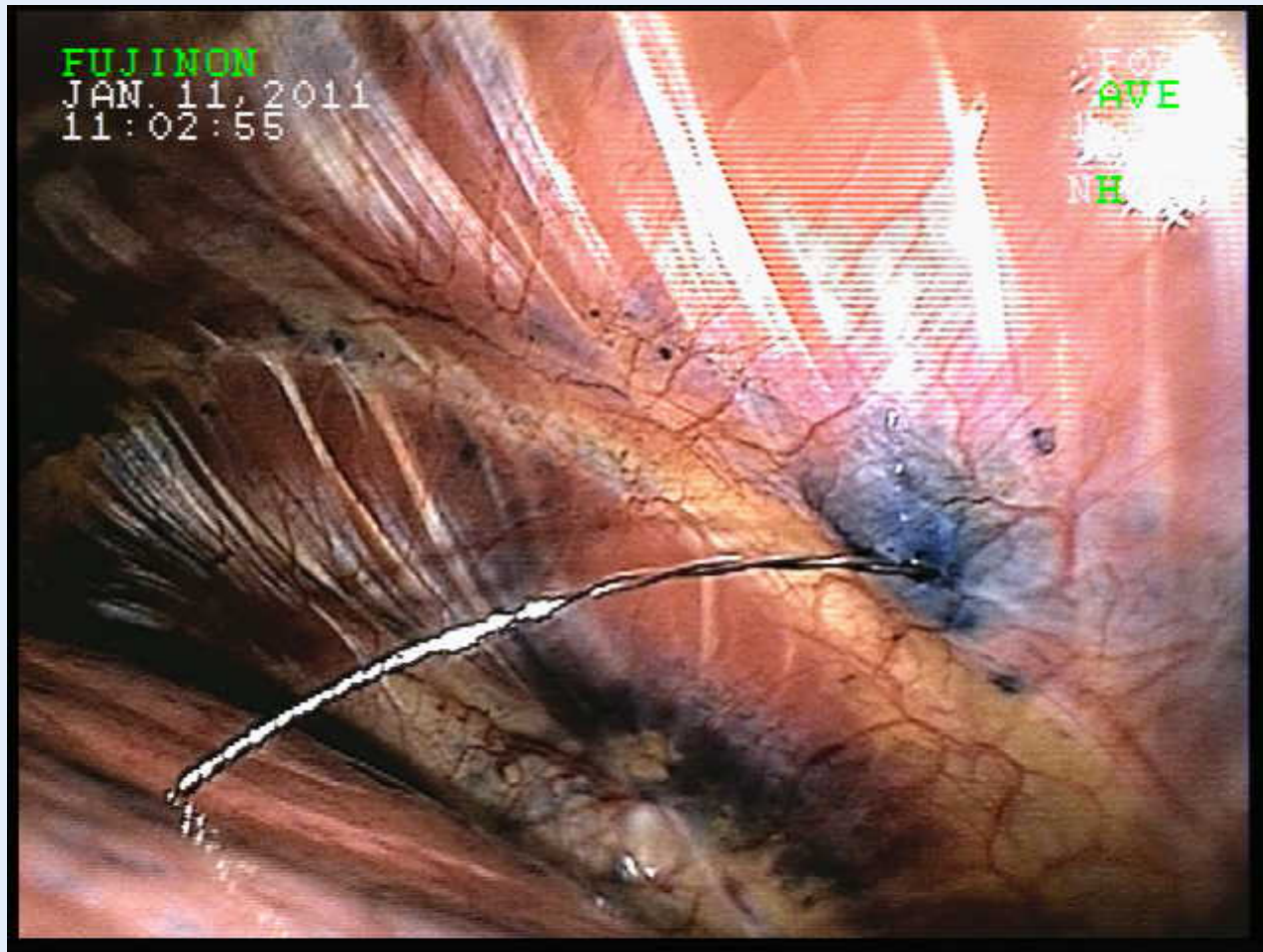
- 定位針、染劑：
 - Wires,
 - Dye:
 - plain methylene blue, colored collagen, indigo carmine, India ink,
 - video-assisted thoracoscopic wedge resection
- 顯影劑：
 - Barium, iodized oil, water-soluble contrast material.
 - fluoroscopy-assisted thoracoscopic



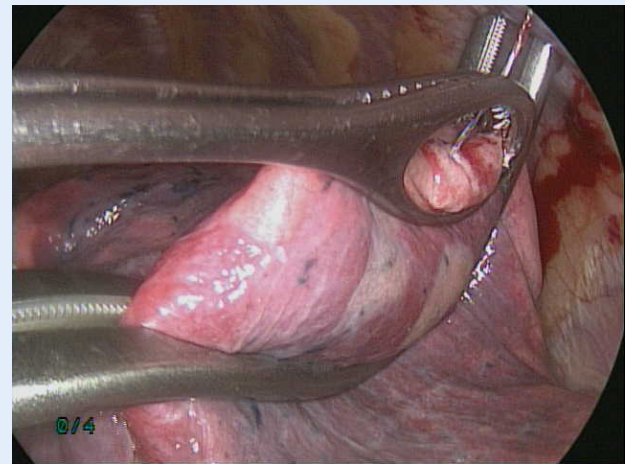
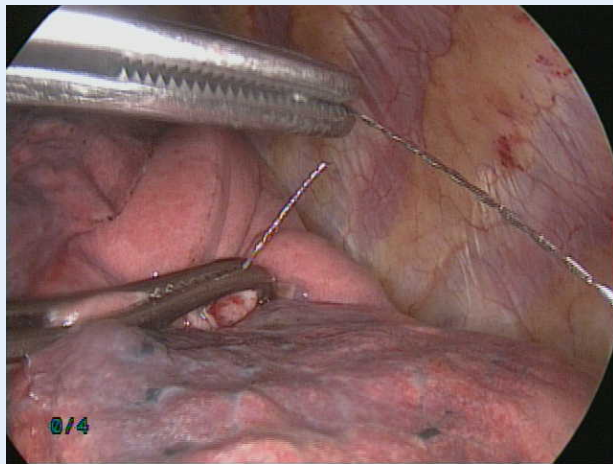
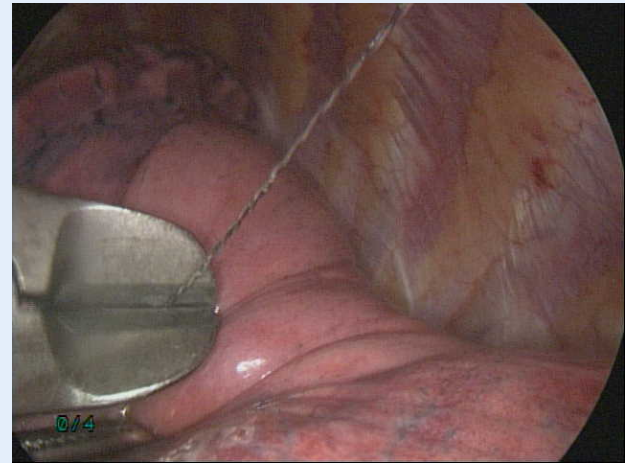
CT-guided hook wire localization



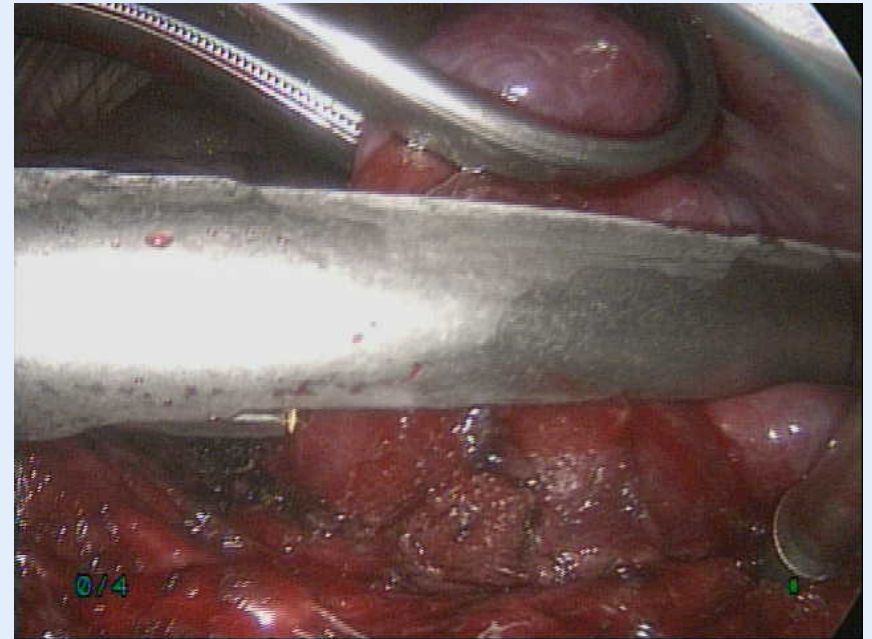
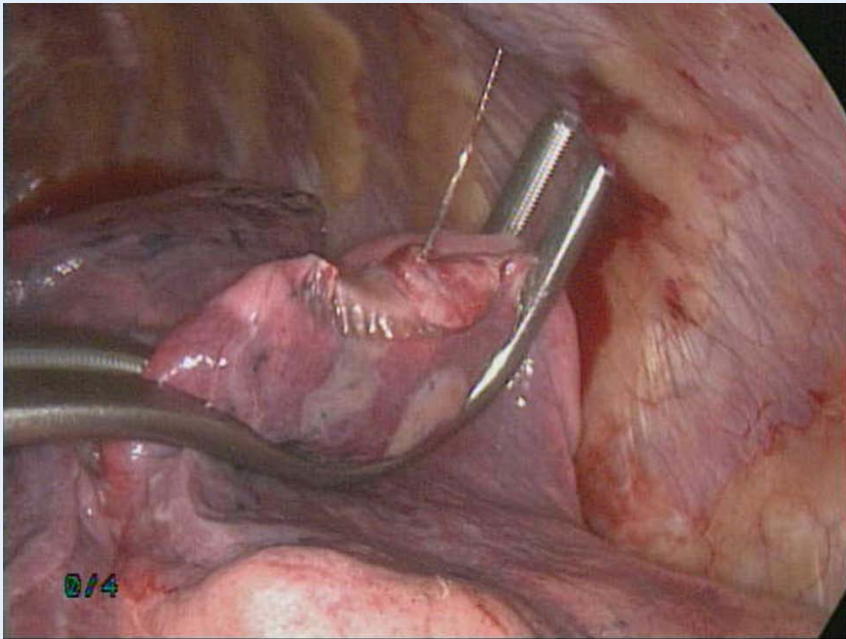
定位針 + 染劑



CT-guided hook wire localization (1/2)

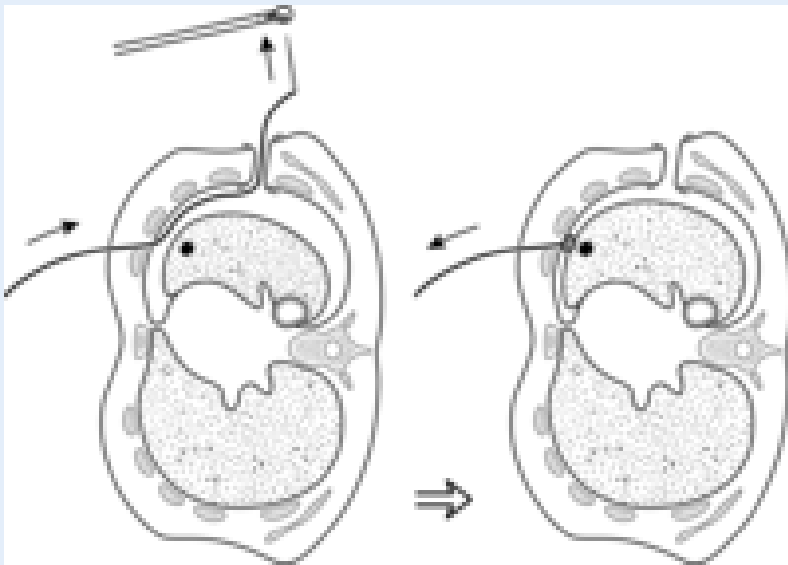


CT-guided hook wire localization (2/2)



定位方式 (3/3)

Intrathoracic stamping method



Intracavitary Thoracoscopic Ultrasound

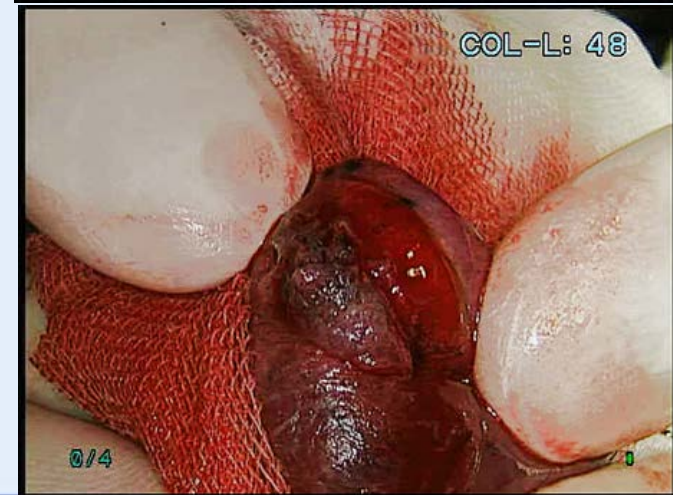
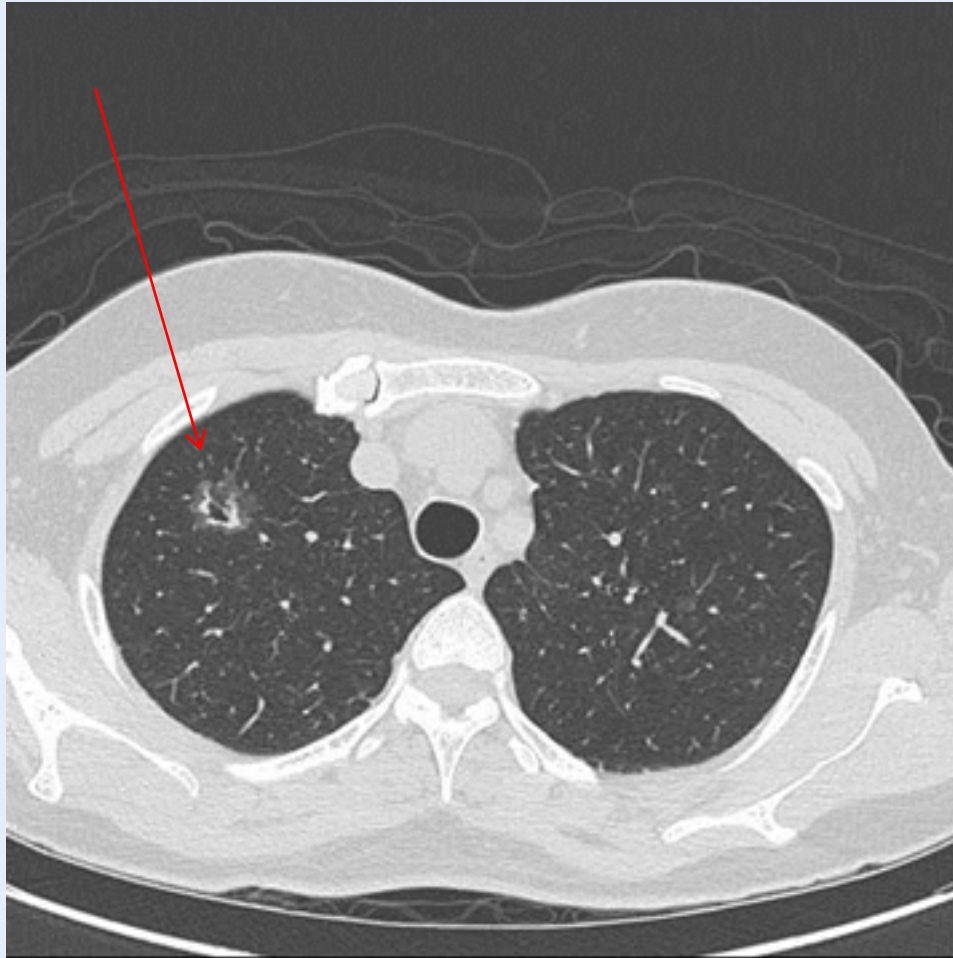
- Minimally invasive thoracoscopic ultrasound (MITUS)
 - A sterile, flexible, linear (10mm diameter, 5-10MHz) ultrasound transducer

手術切除的結果為何？

案例說明



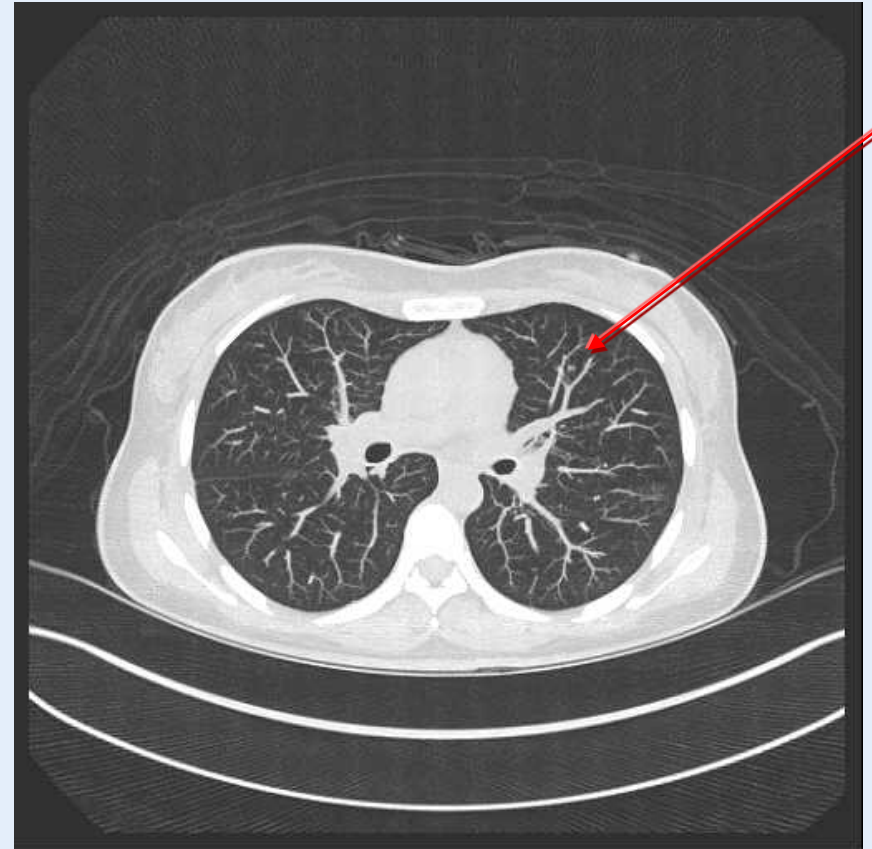
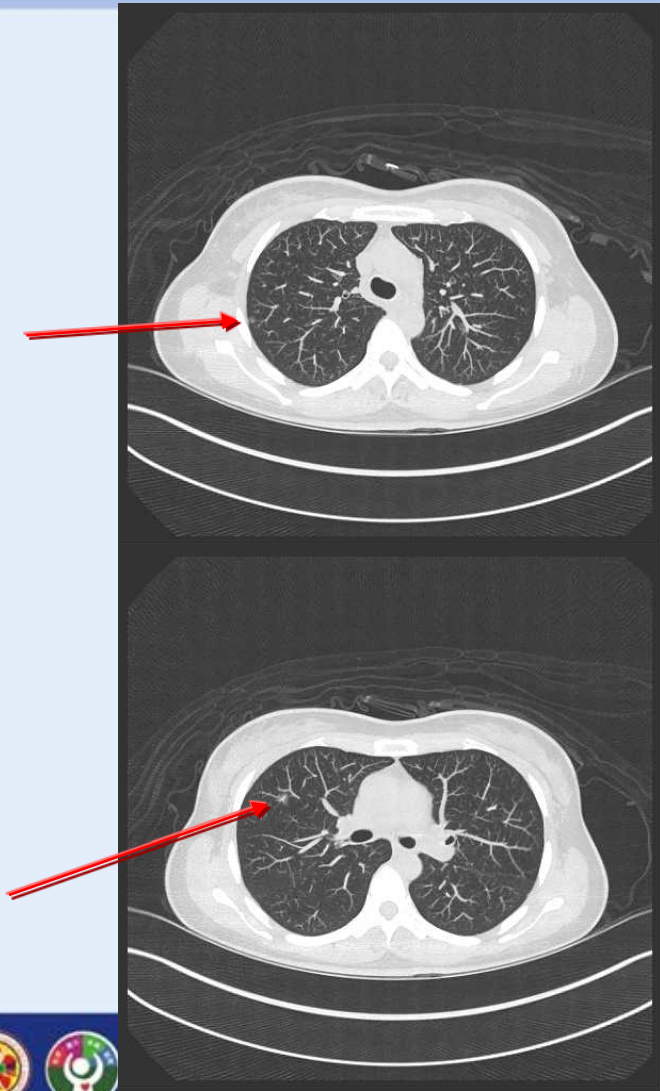
Right upper lobe Atypical Adenomatous Hyperplasia (AAH)



蔡XX, 0740xxxx, 46 y/o, F

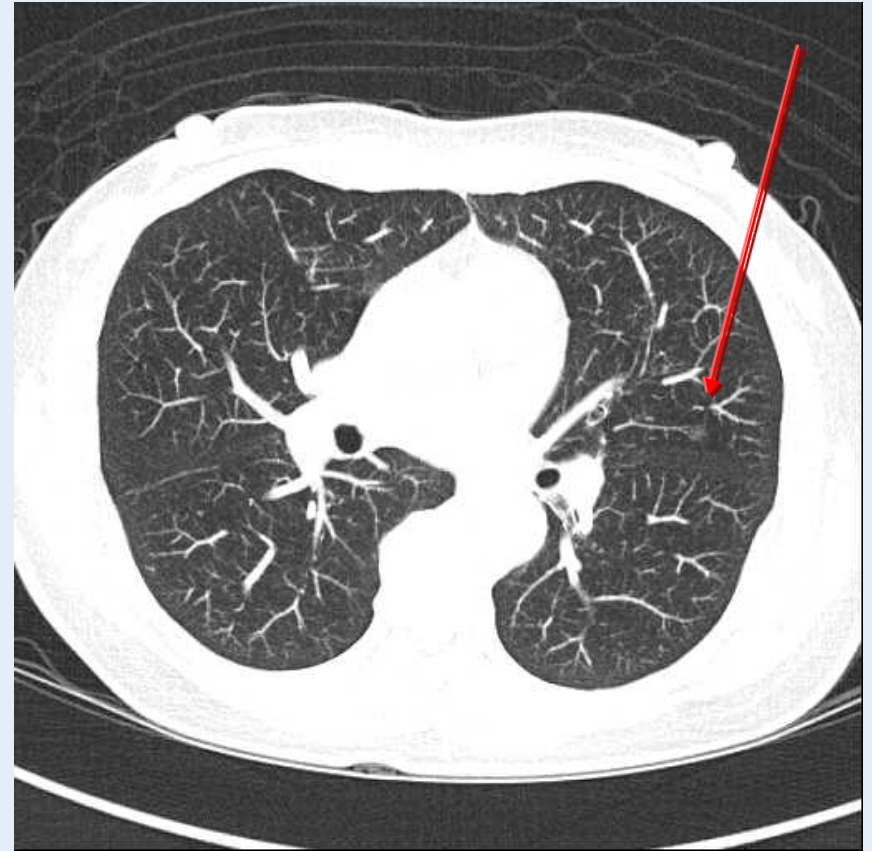
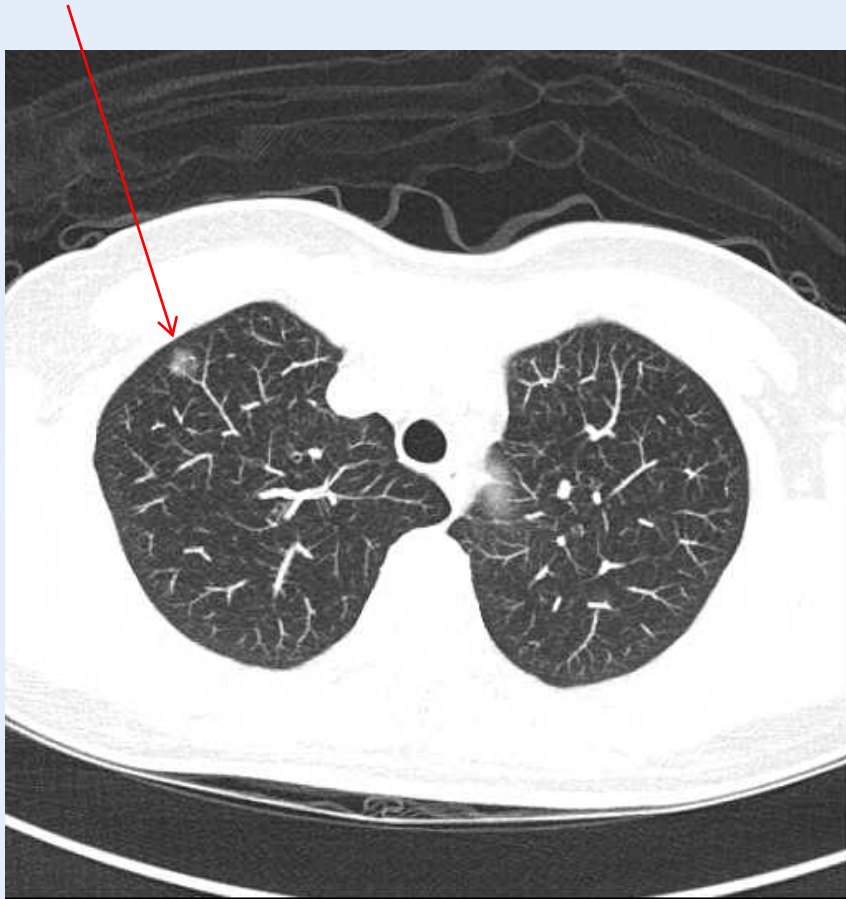
RUL & RML: adeno. in situ (AIS),

LUL nodule: stationary after 1year's FU.



吳XX，0379XXXX, 47歲，女性

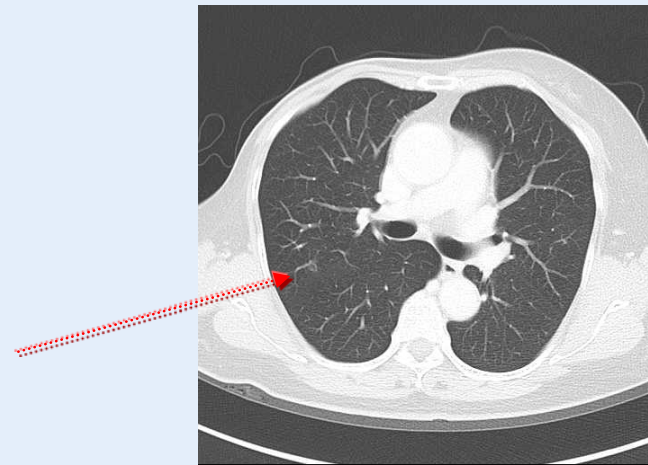
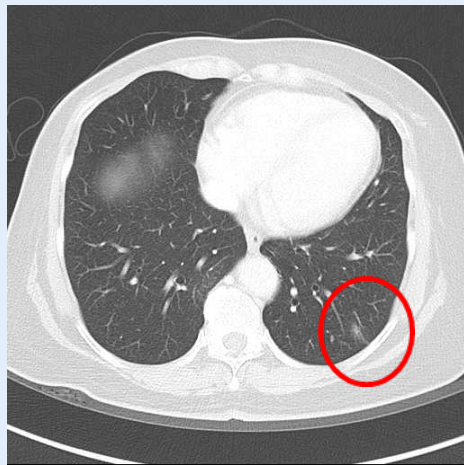
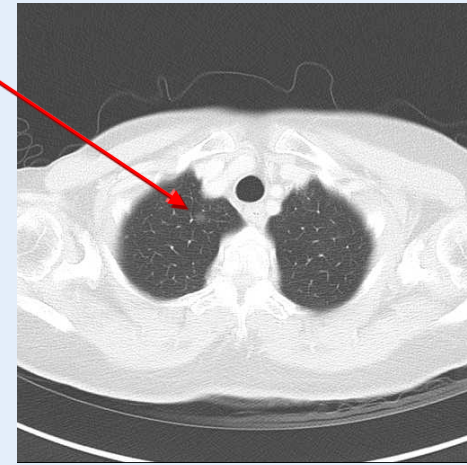
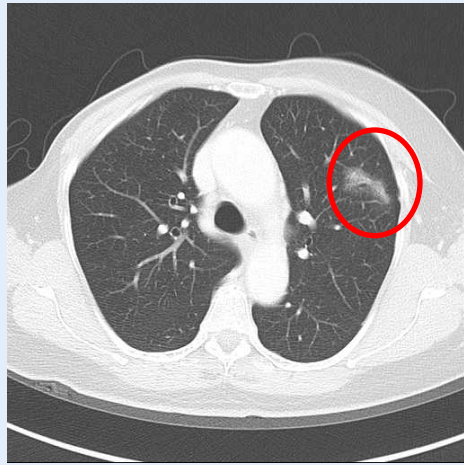
RUL minimally invasive adeno. (MIA). LUL nodule: stationary after 2yr 07mo FU.



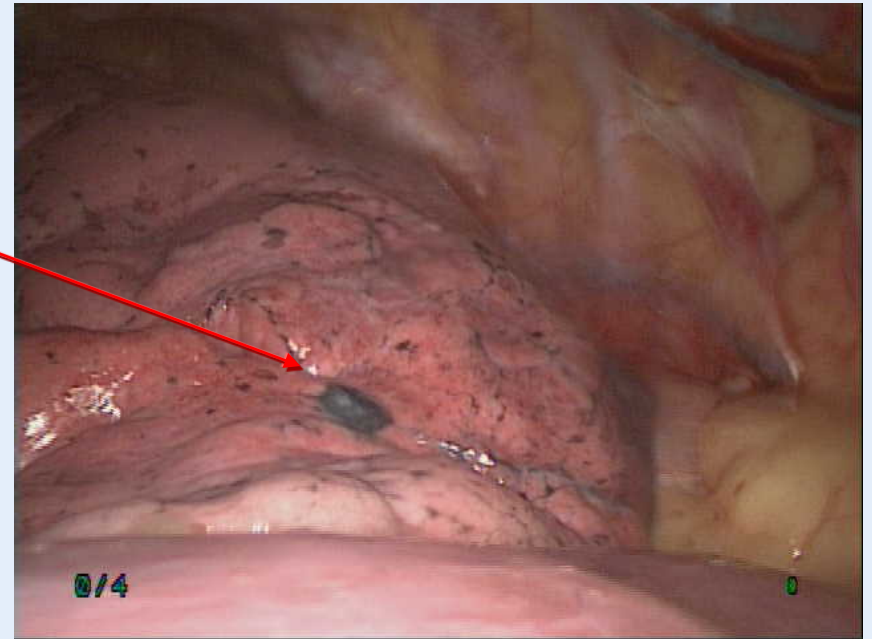
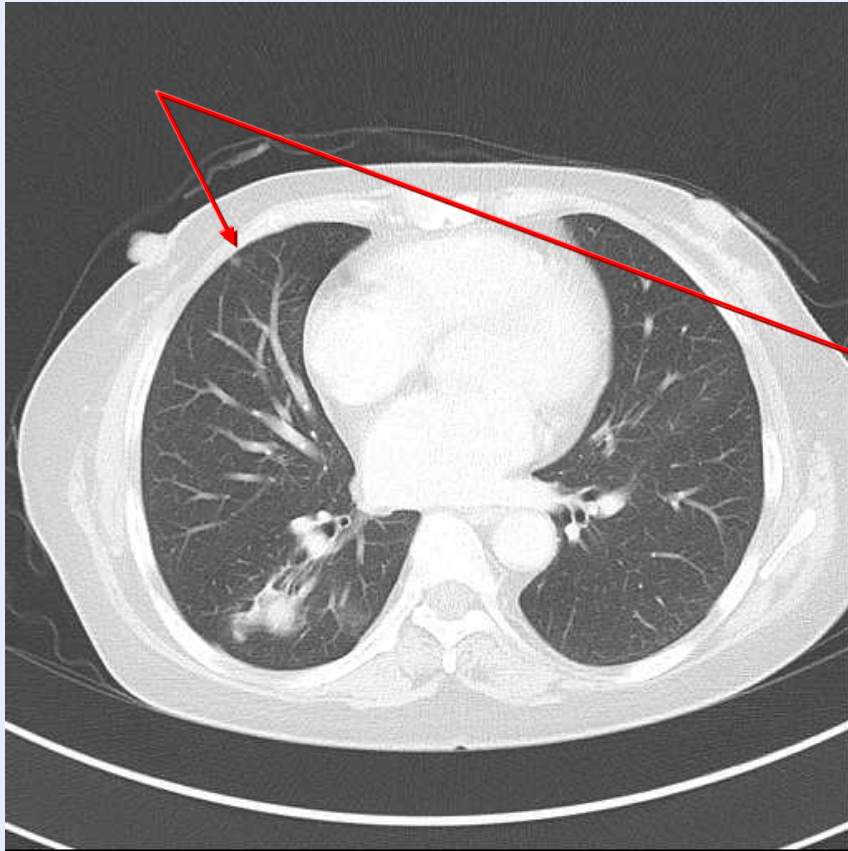
杜XX, 64 y/o, F. 0074xxxx

LUL, adeno, EGFR exon 21 mutant; LLL, adeno, EGFR wild type.

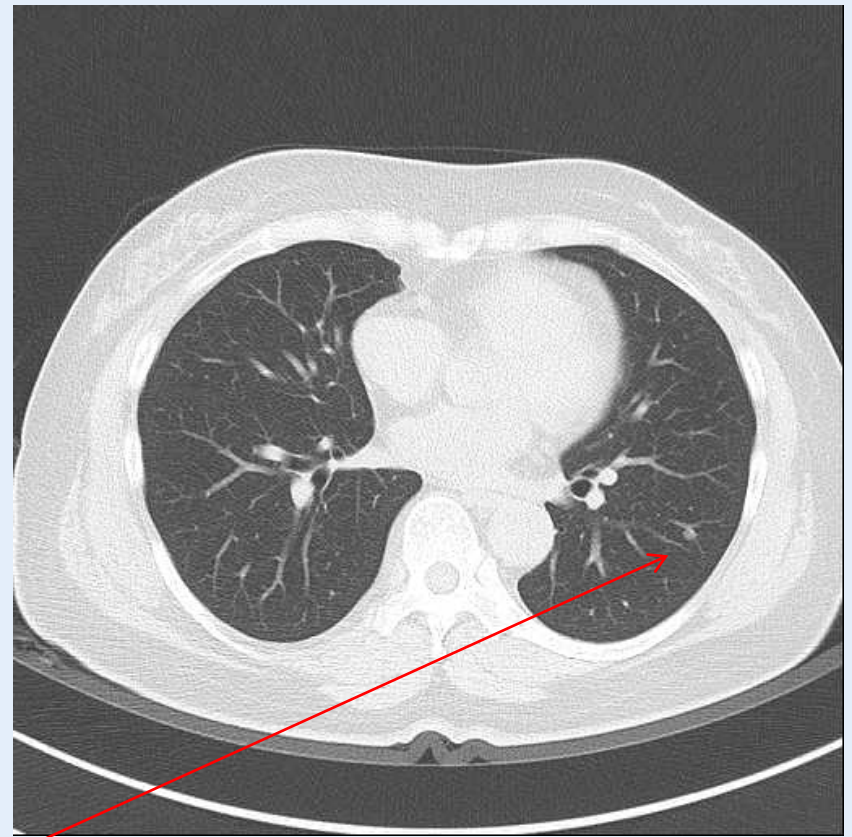
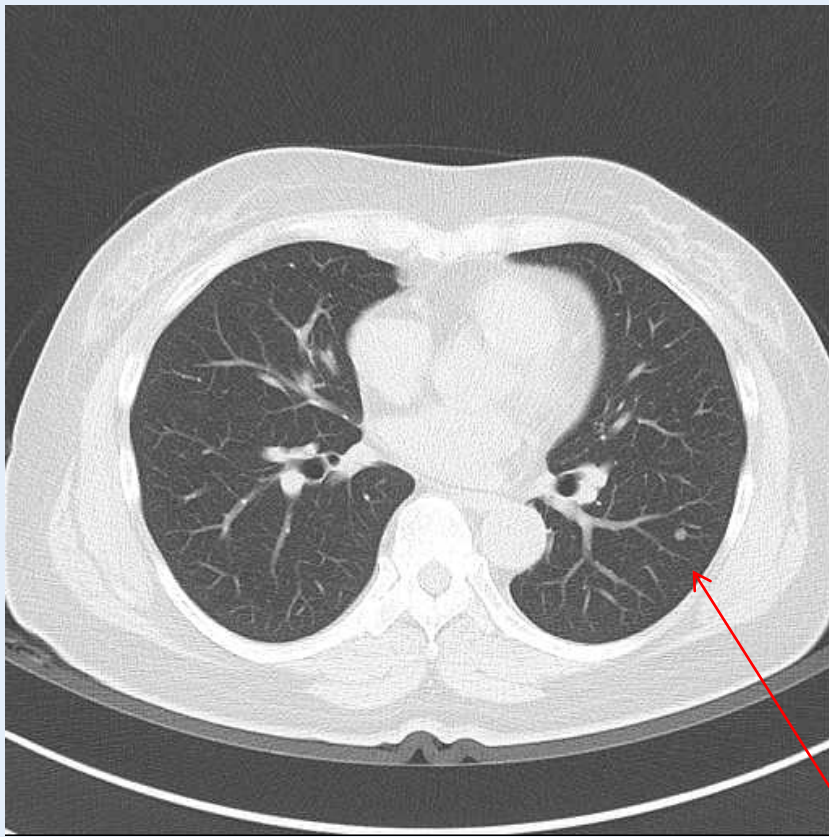
Rt lung nodules: observation.



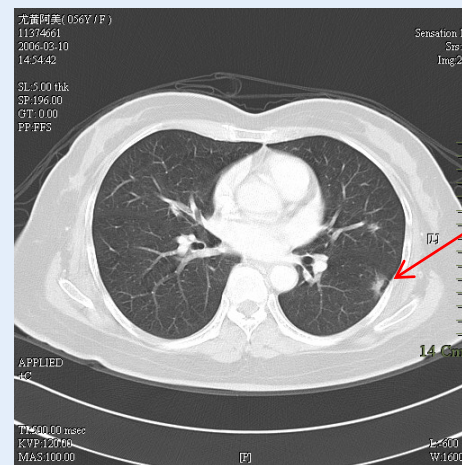
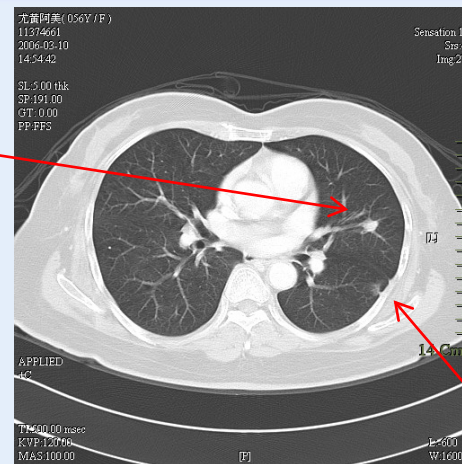
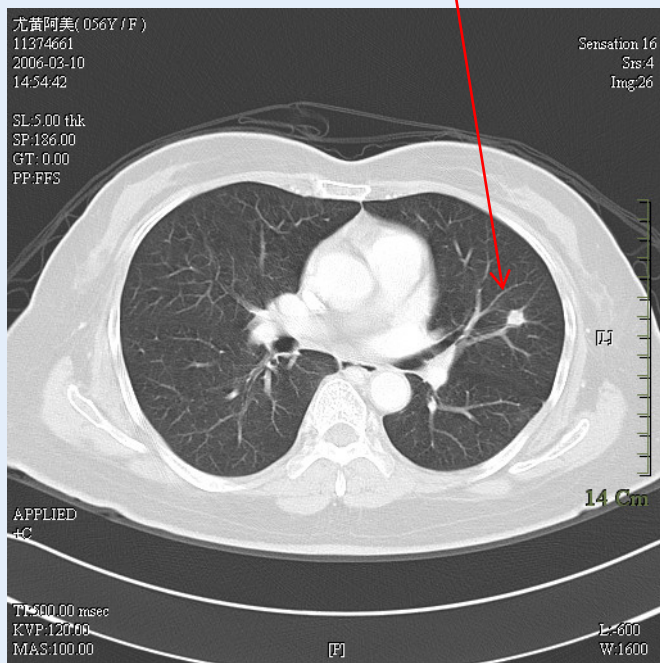
Subpleural or intrapulmonary LN



董XX, 56 y/o, F
Sclerosing hemangioma



尤XXX, 1137xxxx, 56 y/o, F. LUL, caseous necrosis. LLL adeno.



癌篩陽性，確診後病理的可能結果

惡性 (於特定族群：2~4%,)

- 侵襲癌
 - Invasive adenocarcinoma

良性或相對良性 (>90%)

- 癌前病變
 - Atypical adenomatous hyperplasia
- 原位癌
 - Adenocarcinoma in situ.
- Sub-pleural or intra-pulmonary LN.
- Granulomatous inflammation.
 - TB, cryptococci, aspergilloma
- Organizing pneumonia.
- Sclerosing hemangioma
- Hamatoma



在有肺癌家族史的成員中做肺癌低劑量電腦斷層篩檢
~國衛院計畫：台大、北榮、**長庚**、中榮、成大、高醫~

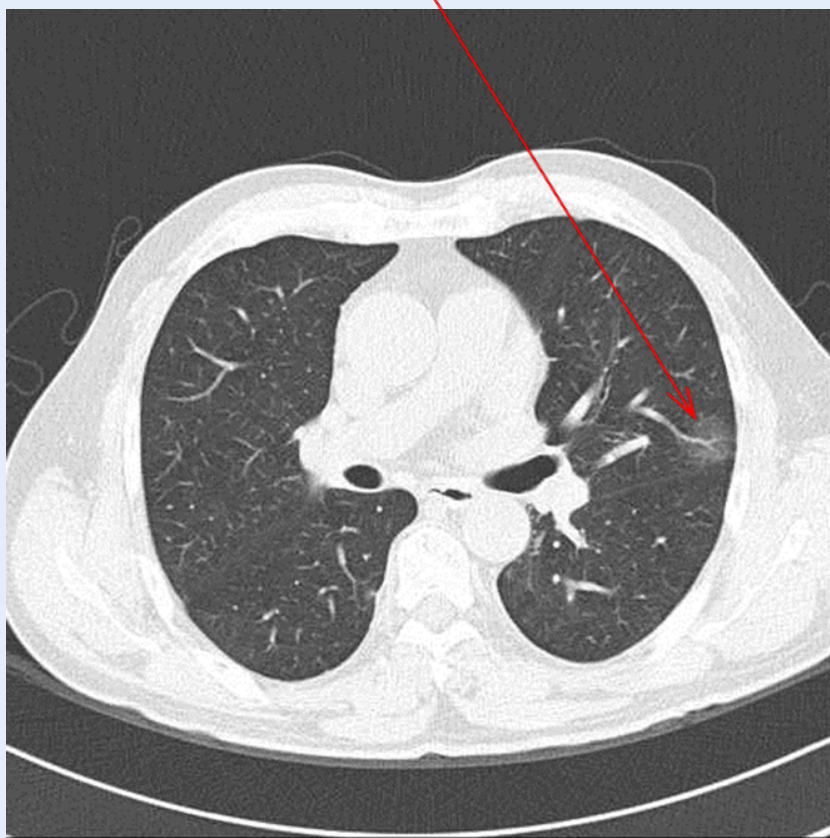
Lung cancer detection

- 盛行率(prevalence)=23/1125 (2.04%)
 - Baseline screen: 20 lung cancers
 - Annual follow-up screen 1st : 1 (progress)
 - Annual follow-up screen 2nd : 2 (progress)
- Interim cancer=1/1125 (0.08%)
- False positive rate: 353/384 (91.9%)

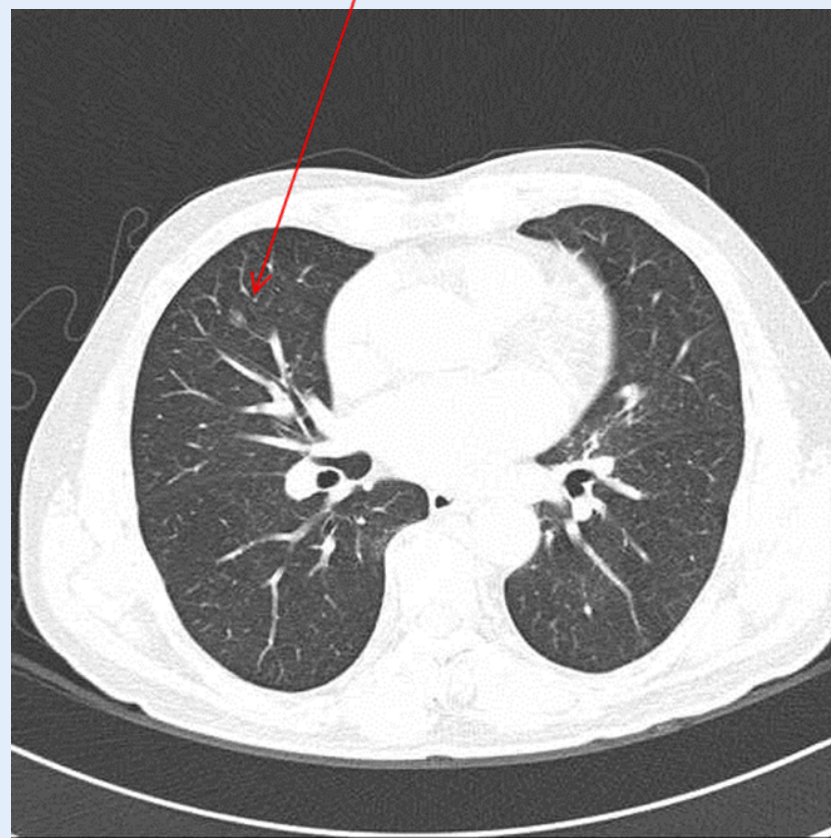


劉XX, 0200xxxx, 73 y/o, M, 有家族史(兄)
Detected by LDCT.

2009/07/02, LUL, 2.0cm, AIS

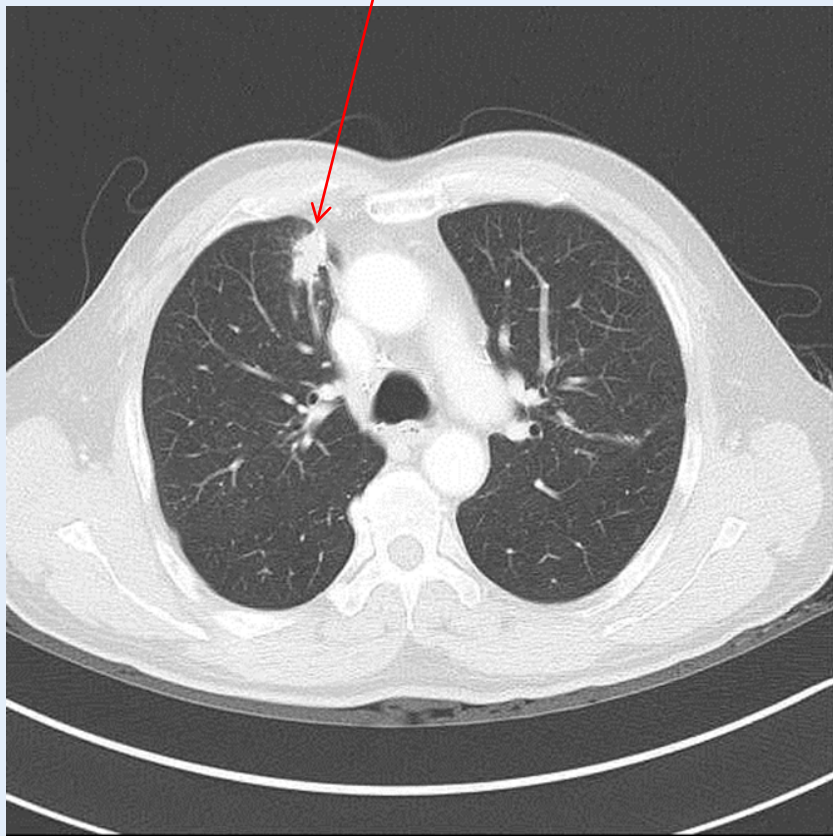


2009/08/17, RUL, 0.6cm, AIS

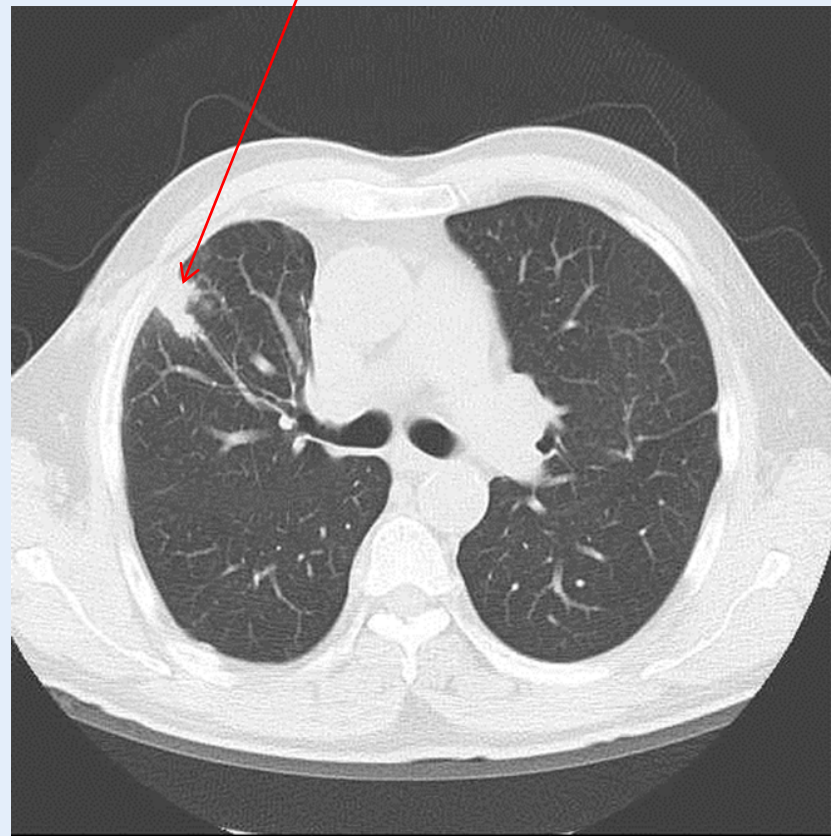


劉XX, 0200xxxx, 73 y/o, M, 有家族史(兄)

2年八個月後，2012/04/16 thoracoscopic biopsy: granulomatous inflammation.



又一年後，2013/04/10, CT-guided biopsy: chr inflammation.



Definition of ground glass opacity (GGO)

- HRCT:
 - shadow completely occupied with a hazy increased attenuation of the lung, with preservation of the bronchial and vascular margins in the lesion
 - Decreased lung parenchyma air fraction without totally obliterating the alveoli



Natural History of Pure Ground-Glass Opacity After Long-Term Follow-up.

Ann Thorac Surg

2002;73:386–93

- When the size of PGGO remains stable or increases only slightly over the long term (3~12M),
 - a variety of histologic entities, from BAC (AIS) to benign lesions such as lymphoproliferative disorder or focal fibrosis, should be considered.
- The pure GGOs in patients with a previous history of lung cancer
 - have a high rate (80%) of malignancy

中國醫大 陳志毅 2009.08.16

- 中國醫藥大學系列N=128：
 - 以TDR分層
 - A: pure GGO, n=66;
 - B: TDR \geq 0.5, n=28;
 - C: TDR<0.5, n =60.
 - 67% (103/154) GGO 證實為惡性
 - A: 62%; B:75%; C:68%。
 - AIS: A:70.7% (29/41); B: 52.3% (11/21); C: 0% (0/41)
 - Adeno: A: 21.9% (9/41); B: 47.6%(10/21); C: 92.6% (38/41)
 -



2011, IASLC/ATS/ERS (1/2)

International multidisciplinary lung adenocarcinoma classification

癌前病變 → 原位癌 → 侵襲癌

Preinvasive lesions

非侵襲癌

Atypical adenomatous hyperplasia 癌前病變

Adenocarcinoma in situ (≤ 3 cm, formerly BAC) 原位癌

Nonmucinous

Mucinous

Mixed mucinous/nonmucinous

Minimally invasive adenocarcinoma (≤ 3 cm lepidic predominant tumor with ≤ 5 mm invasion)

Nonmucinous

Mucinous

Mixed mucinous/nonmucinous



2011, IASLC/ATS/ERS (2/2)

International multidisciplinary lung adenocarcinoma classification

癌前病變 → 原位癌 → 侵襲癌

Invasive adenocarcinoma 侵襲癌

Lepidic predominant (formerly nonmucinous BAC pattern, with >5 mm invasion)

Acinar predominant

Papillary predominant

Micropapillary predominant

Solid predominant

Variants of invasive adenocarcinoma

Invasive mucinous adenocarcinoma (formerly mucinous BAC)

Colloid

Fetal

Enteric

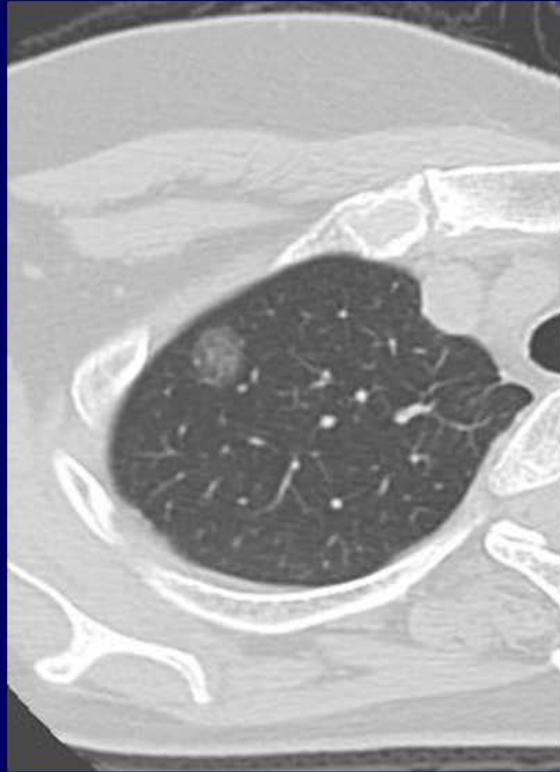
癌前病變 → 原位癌 → 侵襲癌



由GGO演變到part-solid (complex) GGO

於一年四個月中

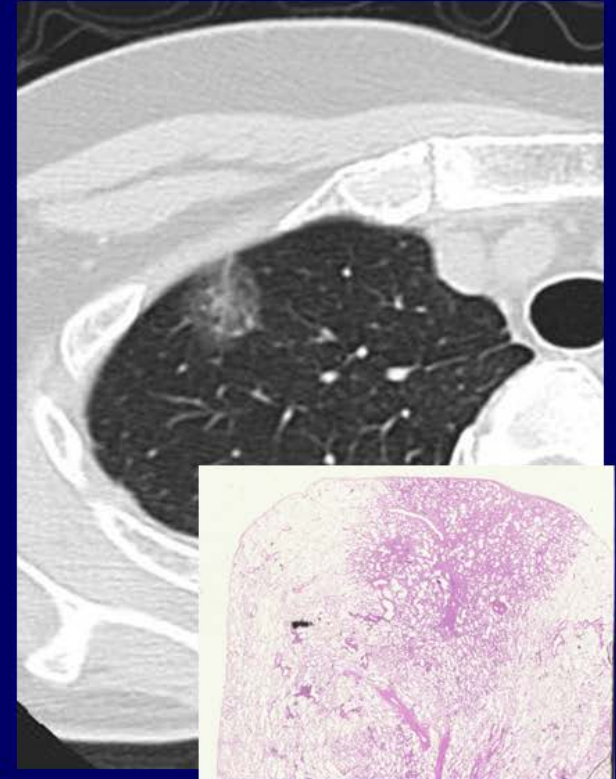
圖來自日本國立癌中心 Dr. Asamura



Nov., 2001



May, 2002



March, 2003
(16 months later)



成大醫院

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但也有歷經九年， pure GGO 仍維持不變

圖來自日本國立癌中心 Dr. Asamura



Feb 5/ 1998

March 4/ 2007

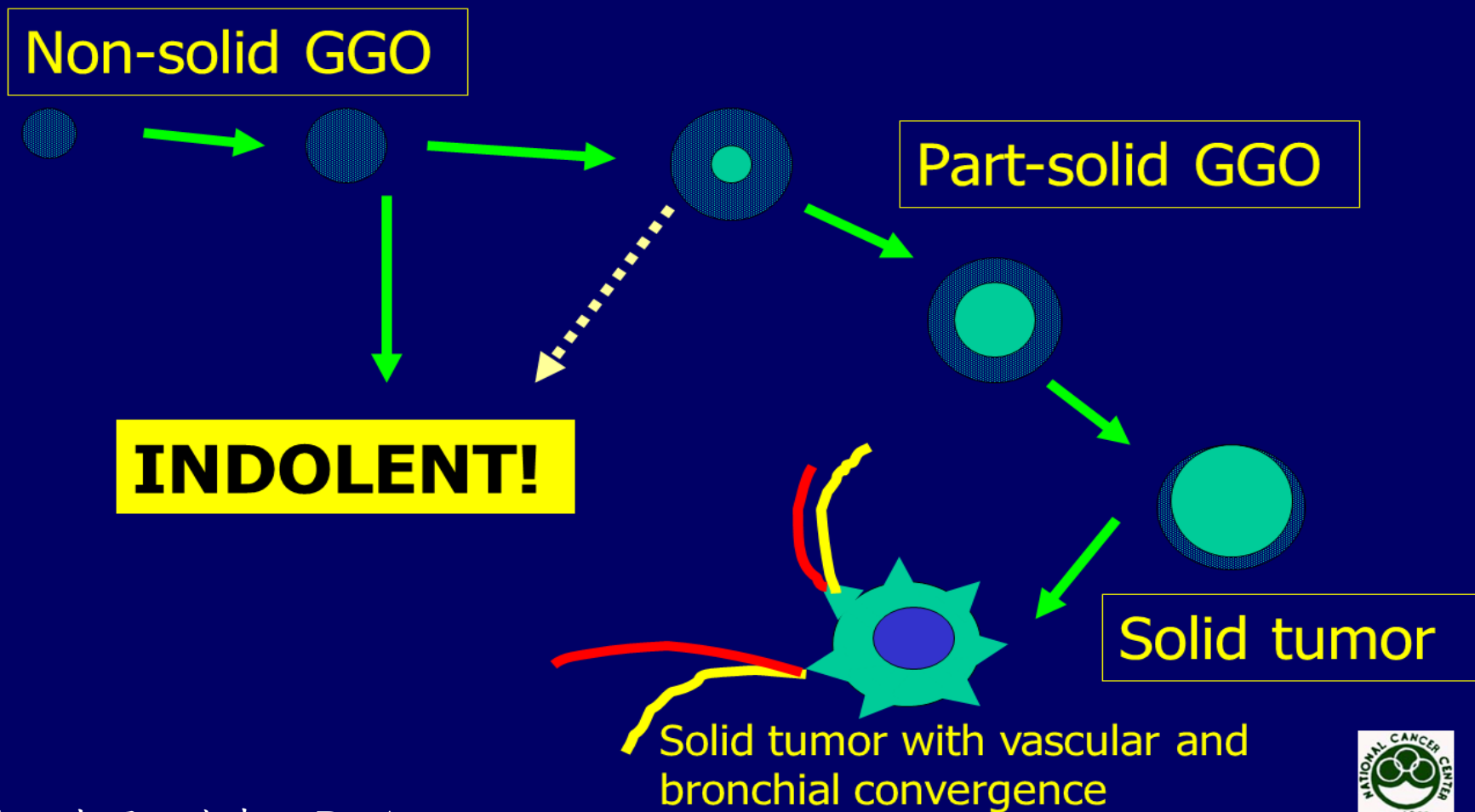


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Pure (non-solid) GGO的可能自然史

Nodule growth was significantly associated with initial size and new development of an internal solid portion



圖來自日本國立癌中心 Dr. Asamura



GGO腫瘤倍增時間

- 平均約兩年(730天)。



Natural history of pure ground-glass opacity lung nodules detected by low-dose CT scan.

No history of malignancy

- About 90% of the screening-detected pure GGO lung nodules did not grow during long-term follow-up.
- most growing nodules had an indolent clinical course.
- A strategy of long-term follow-up and selective surgery for growing nodules should be considered for pure GGO lung nodules.
- Chest. 2013 Jan;143(1):172-8

Recommendation

- Pure GGO, > 1公分就開。
 - < 5mm, observation
 - 5~10mm, stable – observation
 - Enlarged: resection
 - >10mm, resection
 - 10.1148/radiol.2533090179, December 2009 Radiology, 253, 606-622.

何謂肺癌高危險群？

- Aged 55-74 with a 30+ pack-year smoking history
 - the entry criteria for the National Lung Screening Trial, (NLST) to undergo low-dose CT scanning to detect early lung cancer.



台灣肺癌篩檢對象應為何？

西方社會

- 高危險群的定義：
 - 針對年齡50歲（含）以上，
 - 每日抽菸包數（pack）x 抽煙年（year）>30，或/且
 - 有肺癌家族史；
 - 年齡40歲（含）以上，
 - 最近半年內有喀血史且
 - 胸部影像學檢查為陰性的民眾。
 - 職業暴露史
 - asbestos, beryllium, uranium, or radon

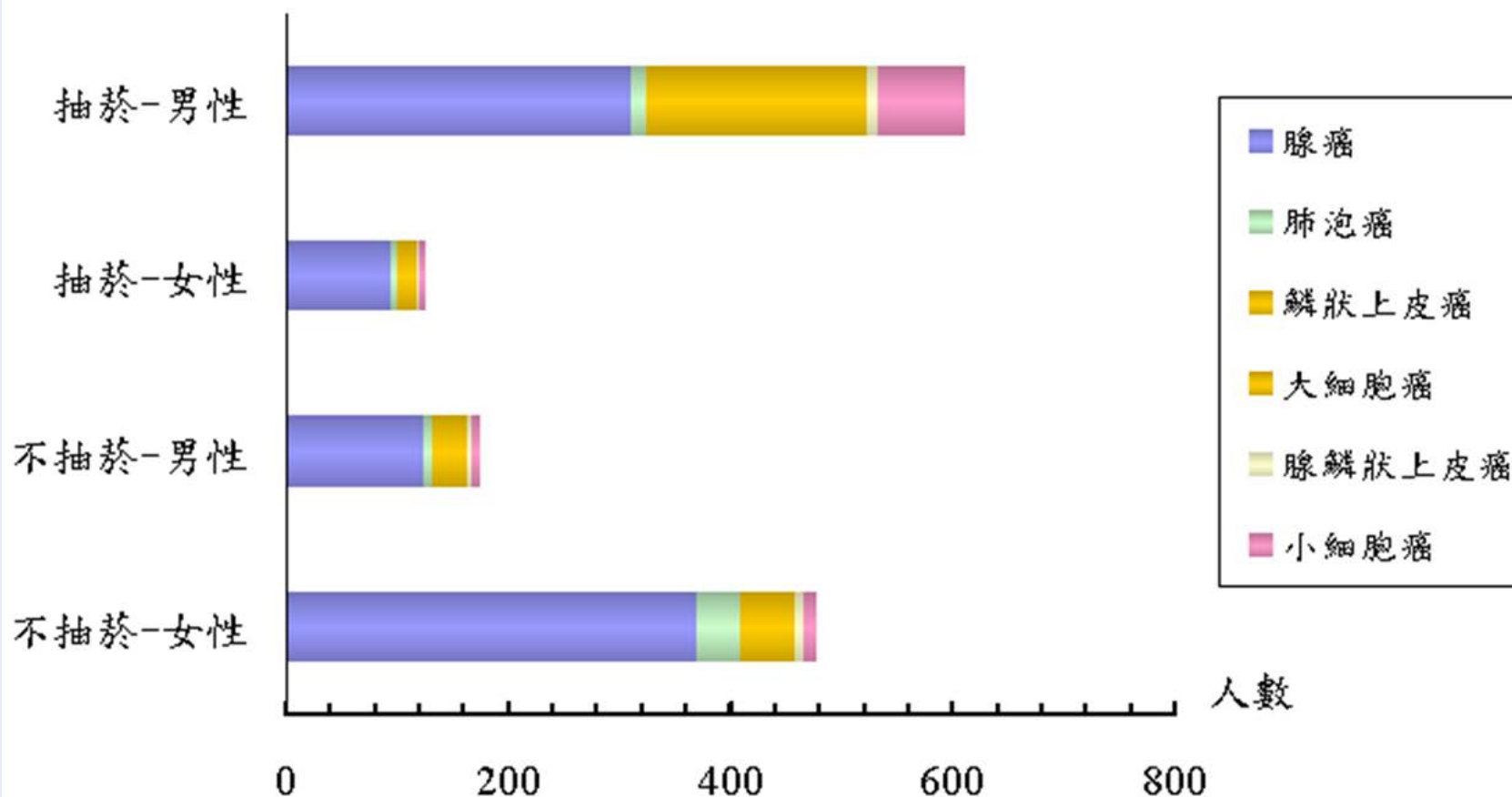
台灣

- 家族史？
- 抽煙史？
- 不限制？



抽菸是肺癌的重要原因，但不是唯一的因素。肺癌的成因是多因素的。
在肺癌確診案例中，僅約50%有抽菸史。且女性很少抽菸。

2005-2009年肺惡性腫瘤-抽菸、性別、組織型態關係圖



成大醫院資料顯示 肺癌病人：不抽煙為多

- 2011癌登資料(2011開始登錄抽煙史)
 - N=397
 - Smoking: 147 (37%)
 - No smoking: 250 (63%)
- 2010~2012生活品質問卷
 - N=602
 - Smoking:121(20%).
 - No smoking:481(80%).

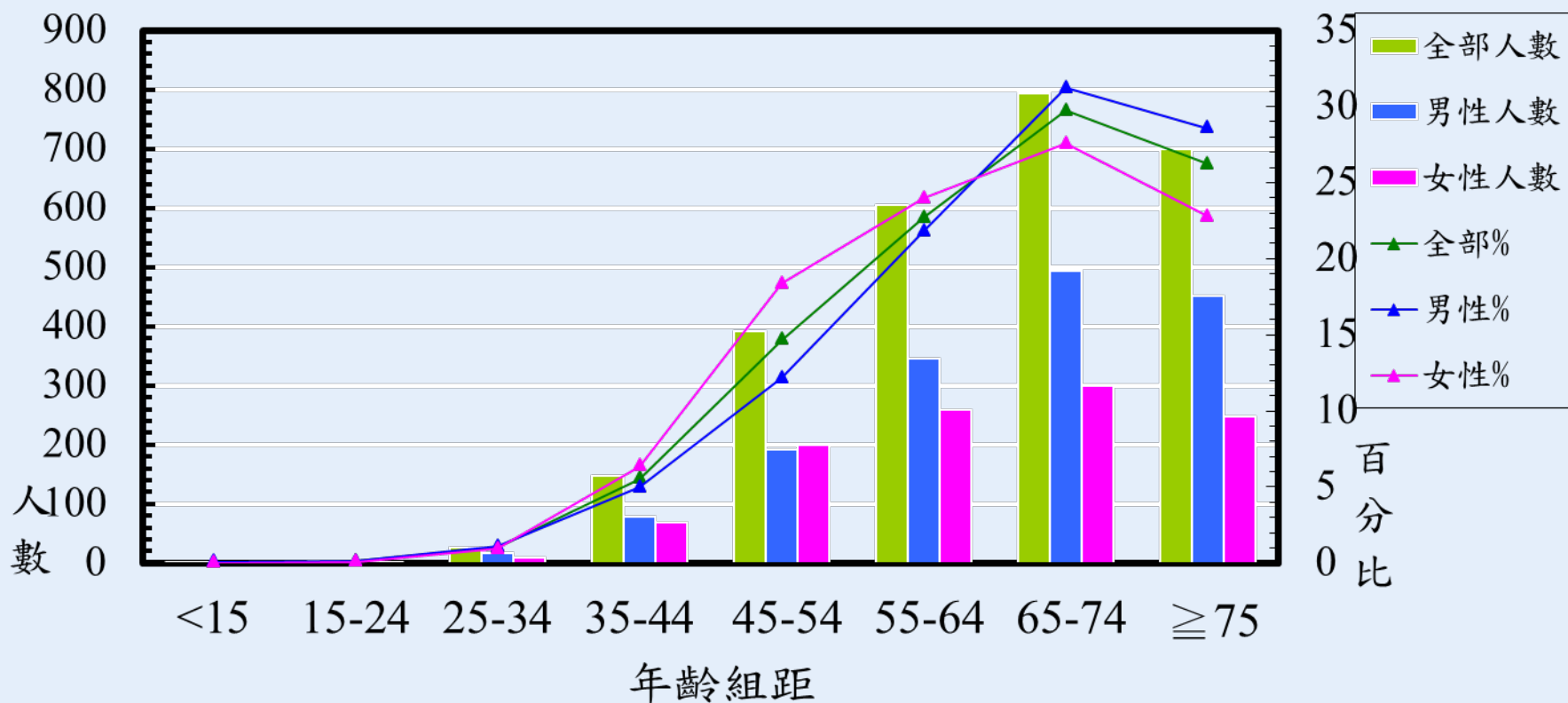


</=54歲女性肺癌佔

全體女性肺癌的四分之一(25.7%)，
所有肺癌的十分之一(10.5%)

2005-2011年肺惡性腫瘤-年齡、性別關係圖

全部/男/女不同年齡層分布之人數與百分比(男：女=1：1.8)



家族史(1/2)

成大醫院以胸腺腫瘤為中心
有第二個惡性腫瘤且為肺癌的比率為5.87%

Table 2. Incidence of Second Malignant Neoplasm in Patients With Thymic Epithelial Tumors and Other Commonly Encountered Cancers Between 2003 and 2008 in Authors' Institution

Group	Overall Incidence of Patients With Additional Malignancies	p Value ^a	
		Thymoma	Thymic Carcinoma
Thymoma	6/51 (11.76%)	—	0.730
Thymic carcinoma	3/40 (7.50%)	0.730	—
Lung cancer	103 /1,756 (5.87%)	0.122	0.509
Hepatocellular carcinoma	73/1,858 (3.93%)	0.017	0.214
Colorectal cancer	72/1,719 (4.19%)	0.022	0.241
Breast cancer	64/1,890 (3.39%)	0.009	0.159
Cervical cancer	43/1,109 (3.88%)	0.018	0.213

^a The p values were computed with χ^2 comparison between the incidence of additional malignancy in other solid organ cancers and that in thymoma and thymic carcinoma, respectively.



家族史(2/2)

- 成大醫院肺癌病人有
 - 肺癌家族史的比率為：
 - $44/738 = 5.9\%$
- Duration: 2005~2008
 - N=738
 - 家族史：44
 - 父母：15
 - 手足：17
 - 其他：13



台灣肺癌篩檢對象應為何？

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 - 職業暴露史
 - asbestos, beryllium, uranium, or radon

台灣

- 家族史：5.9%
- 抽煙史：< 50%.
- 不限制？



口腔癌篩檢

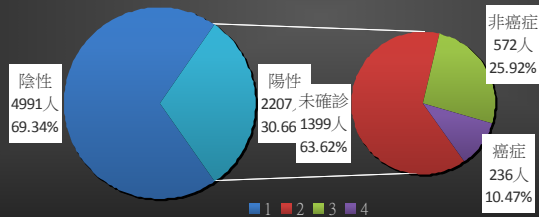
30歲以上，有抽煙與檳榔史。
兩年一次。



口腔癌篩檢，N=7706 (2010/02/03~2013/06/30)

陽性確診236人(3.28%)；Class I, n=231, 早期癌(I+II)：52.7%

口腔癌篩檢陽性確診百分率
2010.2.3~2013.6.30
N=7706
癌症確診 236 / 7198 = 3.28%



口腔癌篩檢陽性確診CLASS 1分期人數
2010.2.3~2013.6.30
N=231



癌症分期人數	
無法分期	14
第四期	10
第三期	11
第二期	21
第一期	18
第0期(原位癌)	0

■ 第0期(原位癌) ■ 第一期 ■ 第二期 ■ 第三期 ■ 第四期 ■ 無法分期

口腔癌篩檢

初篩耗用金額：NTD:106/人；陽性確診耗用金額：NTD:3082/人

口腔癌篩檢個人耗用健保金額 2010.2.3~2013.6.30



乳癌篩檢條件：

40~44歲，二等親內有乳癌病史；或
45~69歲女性。
每兩年一次。



乳癌篩檢 N=13901(2010/02/03~2013/06/30)

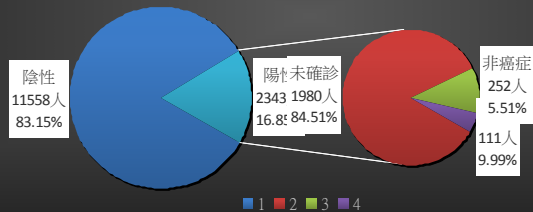
陽性確診111人(0.79%) ; Class I, n=64, 早期癌(Cis+I+II) : 95.32%

乳癌篩檢陽性確診百分率

2010.2.3~2013.6.30

N=13901

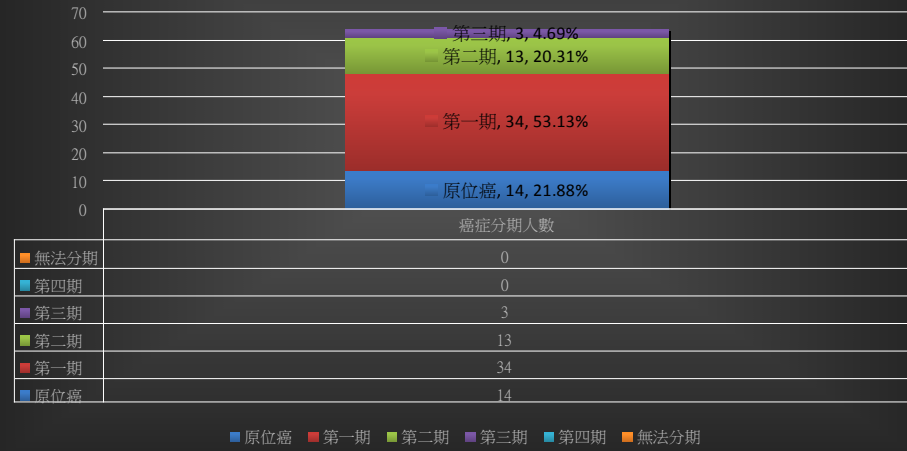
癌症確診 111 / 13901 = 0.79%



乳癌篩檢陽性確診CLASS 1分期人數

2010.2.3~2013.6.30

N=64

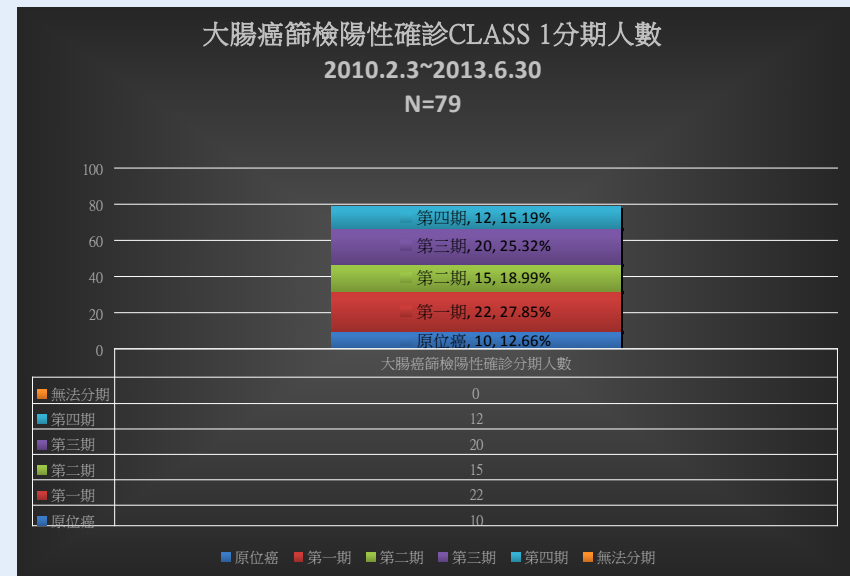
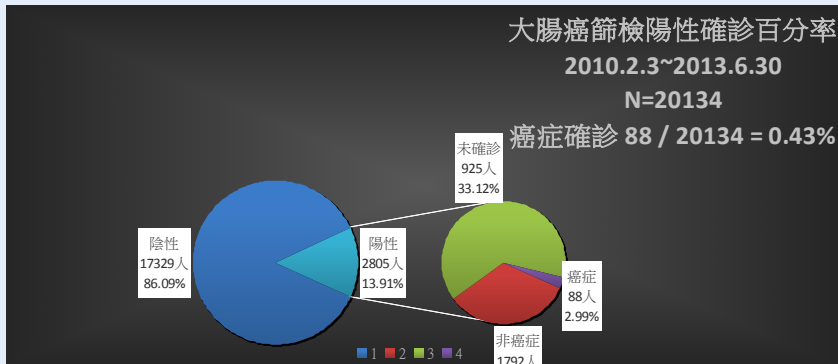


大腸癌篩檢條件：
50~75歲。
每兩年一次。



大腸癌篩檢 N=20134 (2010/02/03~2013/06/30)

陽性確診88人(0.43%) ; Class I, n=79, 早期癌(Cis+I+II) : 59.50%



大腸癌篩檢

初篩耗用金額NTD: 123/人；陽性確診耗用金額NTD: 2500/人

大腸癌篩檢個人耗用健保金額 2010.2.3~2013.6.30



成大醫院 三癌篩檢

2010/02/03~2013/06/30

篩檢	受篩者條件	成大受檢人數 (N)	陽性確診人數 (n)	陽性確診率 (n/N)	早期癌(I+II) 比率	陽性確診每人耗用金額 (NTD)
口腔癌	30歲以上，有抽煙與檳榔史	7706	236	3.28%	52.7%	3082
乳癌	40~44歲，二等親內有乳癌病史；或45~69歲女性。	13901	111	0.79%	95.3%	NA
大腸癌	50~75歲	20134	88	0.43%	59.5%	2500
肺癌 (國衛院，長庚主導)	家族史 三等親	1125	23	2.04%	78.2%	NA



結論 (1/2)

- Pure GGO \leq 1.0公分，觀察。期間至少兩年。
- $>$ 1.0公分，以適當方法定位後，手術切除。
- 多顆，最大顆要切除，同側小顆方便的順道拿。
 - 同側沒有切除或對側採觀察。
- 因傷害不大，與其勞師動眾，耗費人力金錢，不如手術切除。



結論 (2/2)

- 甚麼是台灣肺癌的高危險群？
– 努力中。



馬來西亞麻六甲海峽

海中天度假村 (Avillion Port Dickson. 波德申)

