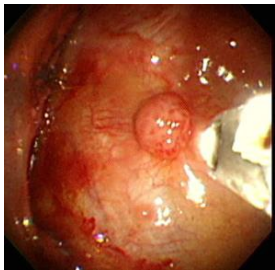




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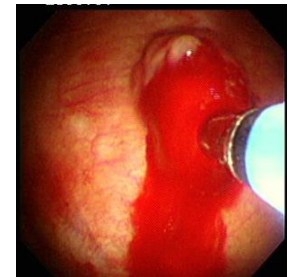
# Combined Pleural Cryobiopsy Compared with Forceps Biopsy alone During Semirigid Pleuroscope in Subjects with Exudative Pleural Effusion



嘉義長庚胸腔內科

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# Background

- Semirigid pleuroscopy has high diagnostic yield for undiagnosed exudative pleural effusion.
- Pleural cryobiopsy
  1. Safe
  2. Larger specimen
  3. Increase diagnostic yield ?
- We collected pleuroscopy data in our hospital, compared the difference between with or without cryobiopsy.

# Materials and Methods



- 嘉義長庚醫院; 2016-May ~ 2019-Sep
- Cryobiopsy was routinely used since 2018-May
- 113 pleuroscopy
  - Exclude:
    - ✓ 3 were transudative pleural effusion.
    - ✓ 8 were done in ICU.
    - ✓ 4 received pleuroscopy for therapeutic purpose.
- 57 pleuroscopy with flexible forceps biopsy (FFB)
- 41 pleuroscopy combined cryobiopsy and flexible forceps biopsy (CB+FFB)

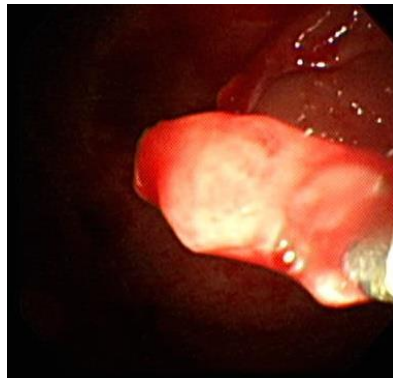
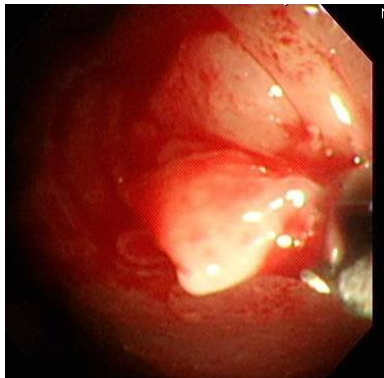
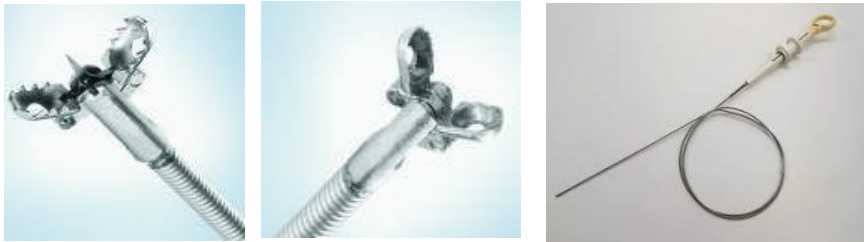
# Materials and Methods

- Patients underwent pleuroscopy in bronchoscopy room.
- All patients received procedural sedation
  - Propofol and alfentanil
  - Midazolam and Opioid (morphine or codeine)
- Semirigid pleuroscope :Olympus LTF-240 (Olympus, Japan)



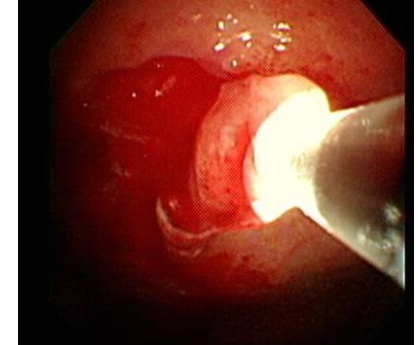
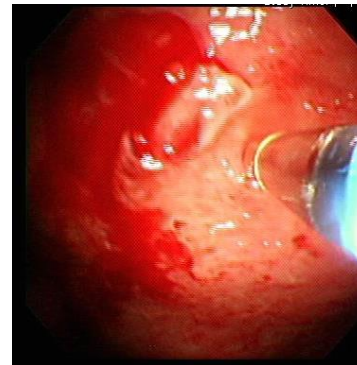
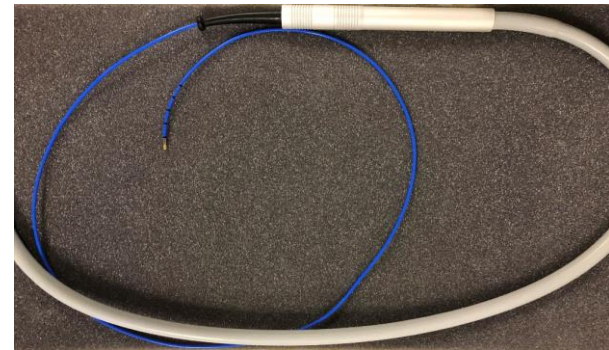
## Flexible Forceps Biopsy

- **FB-55K-1 ; FB-35C-1**  
(Olympus, Japan)
- **Cup opening size 7.4mm**



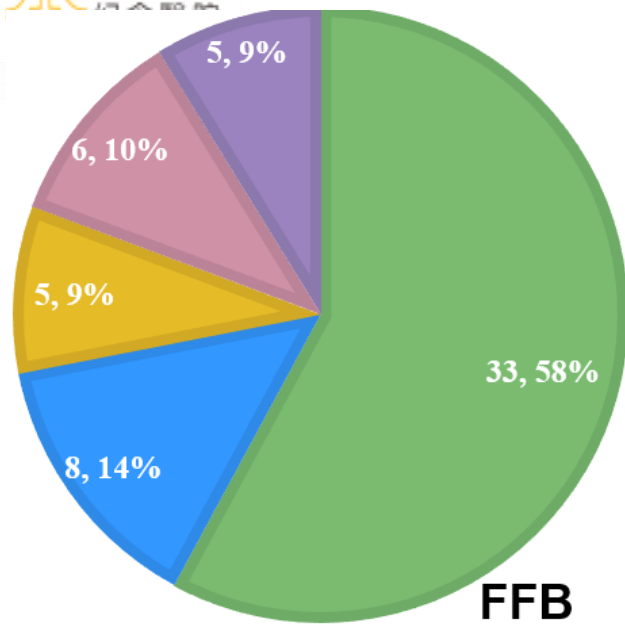
## Cryobiopsy

- **Flexible cryoprobe: 2.4 mm diameter (Erbe, Germany)**
- **Cryogen: CO<sub>2</sub>**
- **Freezing time: 3-5 secs**





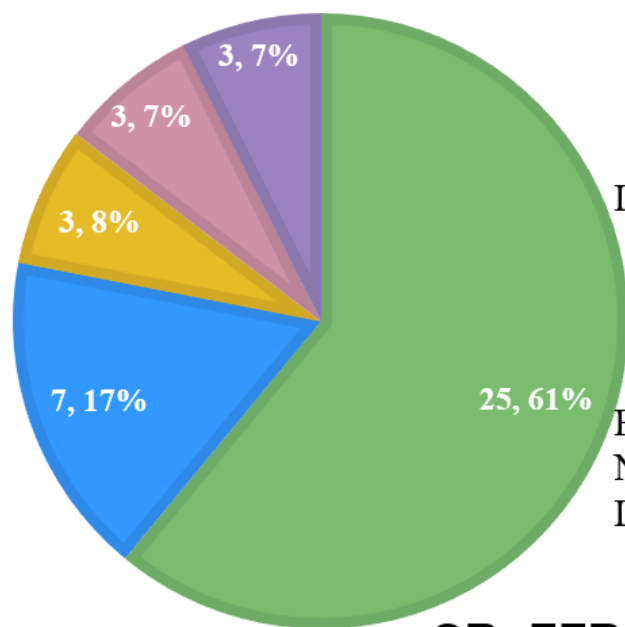
	ALL (n=98)	FFB (n=57)	CB+FFB (n=41)
Age	69.7 ± 12.6	71.5 ± 12.9	67.2 ± 11.7
Female Gender (n,%)	40 (40.8)	22 (38.6)	18 (43.9)
Underlying disease (n,%)			
DM	30 (30.6)	17 (29.8)	13 (31.7)
Liver cirrhosis	7 (7.1)	4 (7.0)	3 (7.3)
Chronic kidney disease	10 (10.2)	5 (8.7)	5 (12.1)
Heart failure	8 (8.1)	4 (7.0)	4 (9.7)
Autoimmune disease	2 (2.0)	1 (1.7)	1 (2.4)
Malignancy	22 (22.4)	12 (21.0)	10 (24.3)
Side of pleural effusion (n,%)			
Right	63 (64.2)	37 (64.9)	26 (63.4)
Left	38 (38.8)	16 (28.1)	12 (29.2)
Bilateral	7 (7)	4 (7)	3 (7.3)
Pleural effusion amount (n,%)			
Small	30 (30.6)	18 (31.6)	12 (29.3)
Moderate	38 (38.8)	22 (38.6)	16 (39.0)
Large	30 (30.6)	17 (29.8)	13 (31.7)



**Lung**  
 Adenocarcinoma 19  
 Small cell lung cancer 5  
 Squamous cell carcinoma 1  
 Poorly differential carcinoma 1

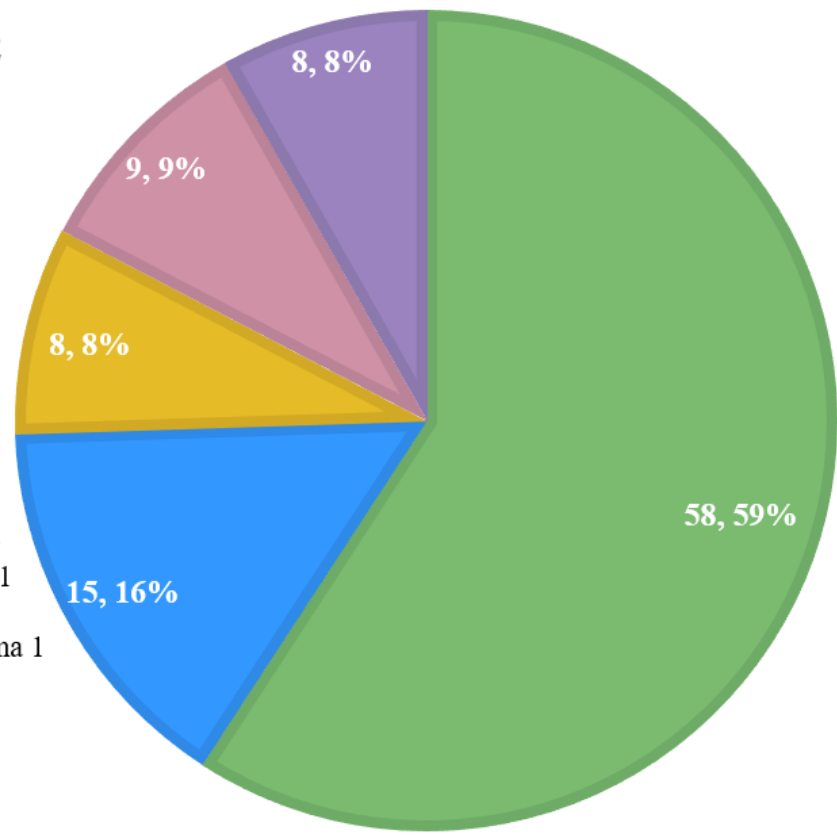
Adenoid cystic carcinoma 1  
 NPC 1  
 Malignant mesothelioma 2  
 Lymphoma 3

■ Malignancy  
 ■ TB pleurisy  
 ■ Empyema  
 ■ Chronic pleuritis  
 ■ Others



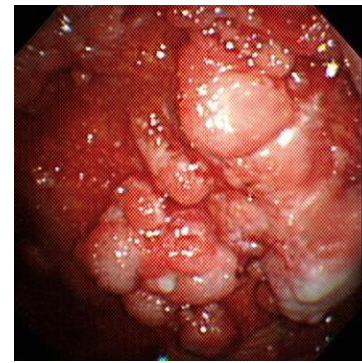
**Lung**  
 Adenocarcinoma 16  
 Squamous cell carcinoma 3  
 Adenosquamous carcinoma 1  
 Giant cell carcinoma 1  
 Poorly differential carcinoma 1

Breast cancer 1  
 NPC 1  
 Lymphoma 1



**ALL**

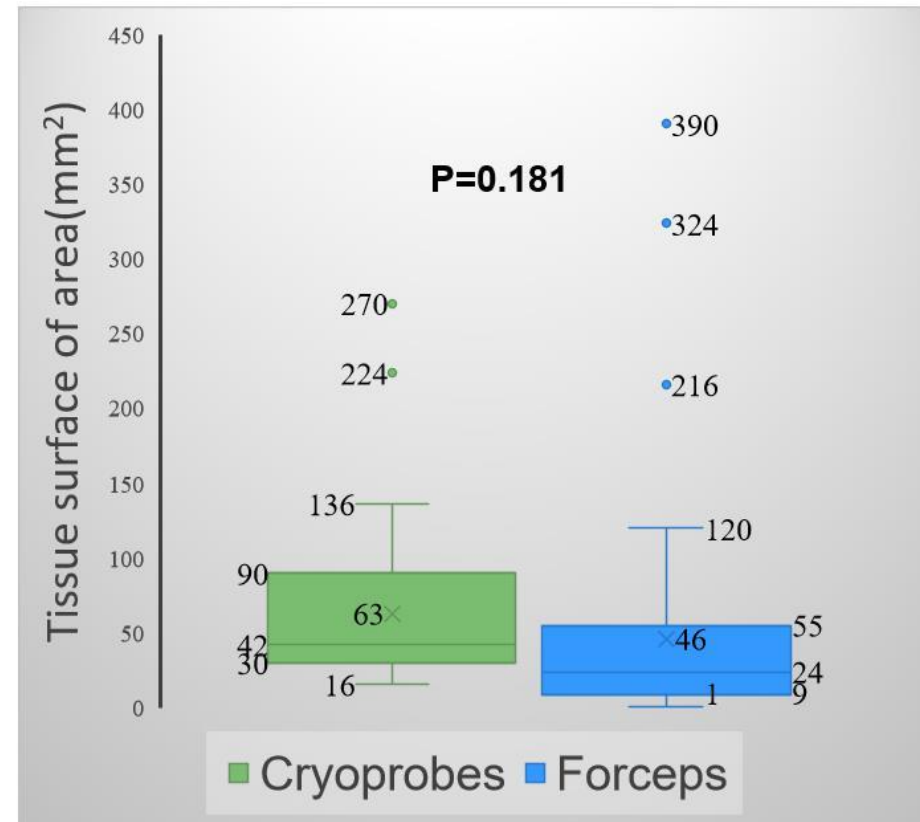
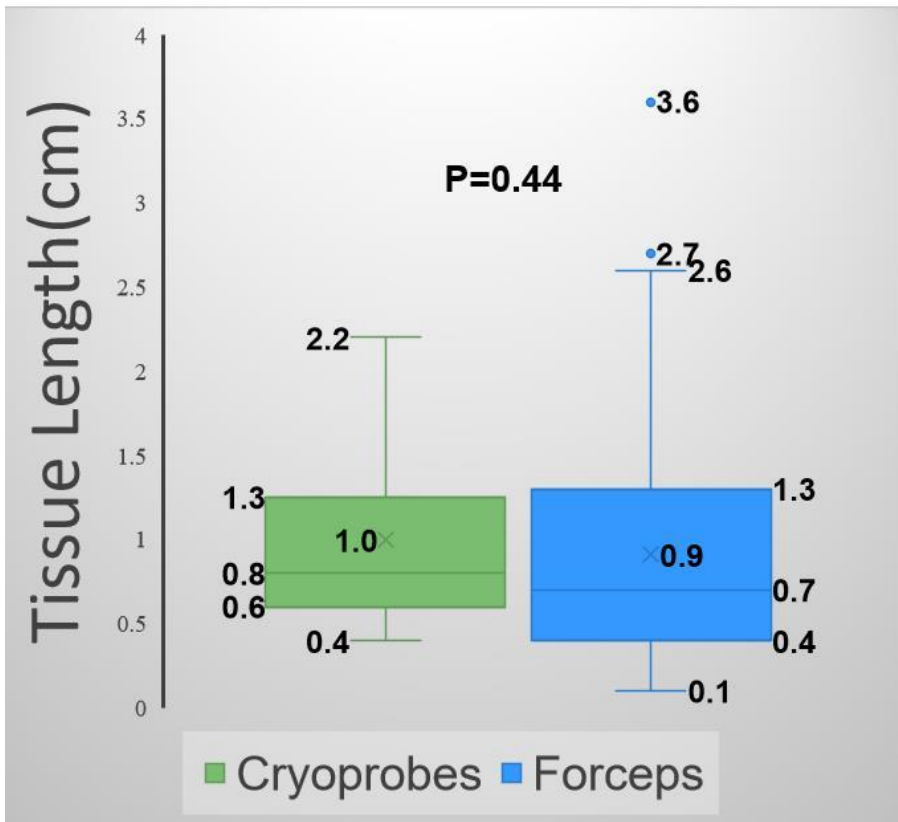
# Results

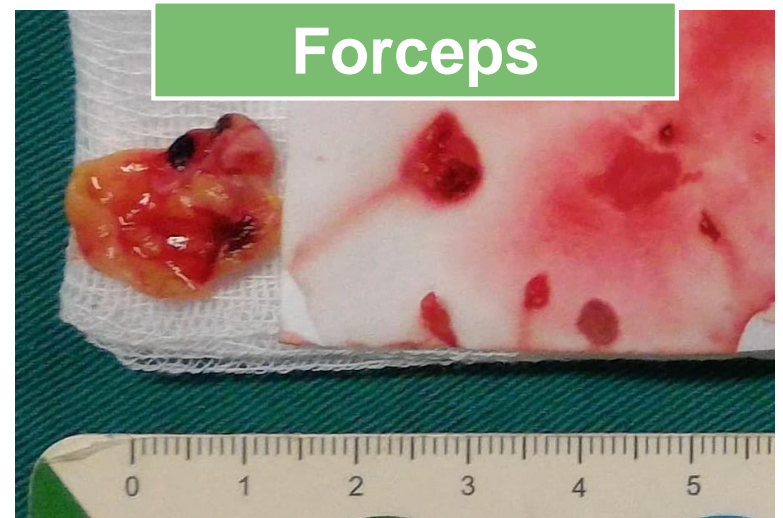
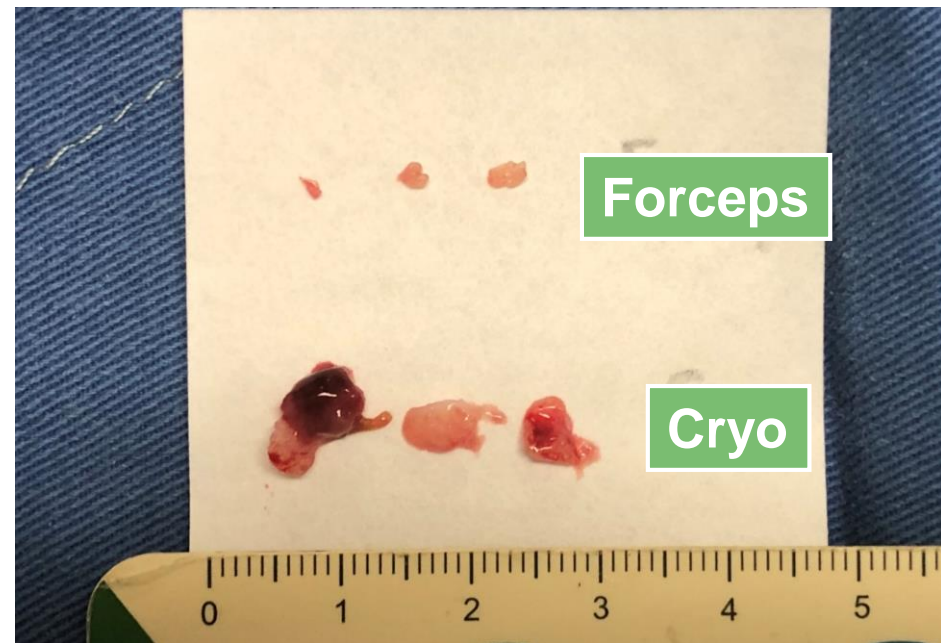


	ALL (n=98)	FFB(n=57)	CB+FFB (n=41)	
<b>Diagnostic yield (n, %)</b>				
Overall Diagnostic yield	92 (93.9)	52 (91.2)	40 (97.5)	
Malignancy	55/58 (94.8)	30/33 (90.9)	25/25 (100)	
TB pleurisy	14/15 (93.3)	7/8 (87.5)	7/7 (100)	
<b>Effusion Amount (ml)</b>	800	750	800	
<b>Pleuroscopy Finding (n, %)</b>				
Nodule(s) or mass(es)	51 (52.0)	30 (52.6)	21 (51.2)	
Moderate-Severe Adhesion	24 (24.5)	14 (24.5)	10 (24.3)	
<b>Specimen numbers</b>	10 (10-10)	10 (10-10)	10 (8-10)	
<b>Propofol sedation</b>	91 (92.8)	53 (93.0)	38 (92.7)	
<b>Procedure Time</b>	28.8 ± 6.77	30.1 ± 6.97	26.9 ± 6.02	P=0.021



# Size of the Largest Specimen





# Complication

	ALL (n=98)	FFB (n=57)	CB+FFB (n=41)
<b>Death</b>	0	0	0
<b>Bleeding</b>			
Moderate & Severe	0	0	0
Mild	5 (5.1)	3 (5.2)	2 (4.9)
<b>Subcutaneous emphysema</b>	7 (7.1)	4 (7.0)	3 (7.3)
<b>Pain</b>	5 (5.1)	3 (5.2)	2 (4.9)
<b>Fever</b>	2 (2.0)	1 (1.7)	1 (2.4)

Mild bleeding: need prolong suction or local vasoactive agent spray

Moderate bleeding: need electrocoagulation or blood transfusion

Severe bleeding: hemodynamic unstable, need surgical intervention or TAE for hemostasis

# Conclusion

- Combined cryobiopsy with forceps biopsy during semirigid pleuroscope examination provided high diagnostic yield in patients with exudative pleural effusion.
- Using cryobiopsy could shorten the procedure time.
- Pleural cryobiopsy didn't increase complication rate.

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1969 - 2019

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