

CT

1

: CT

: 1995 8
1.5cm

1998 8
(n=34)

CT
(n=3) 37

CT

5mm
CT
17G

17G

hub가

22G

hub

18G

19.5G
fanning-out technique

: 37 32 6
37 35 (95%)

4 4 , 1 3
15 ,

1 , 3 ,
3 가

1 , 7 , 4 , 1 ,
2 , 2 (5%)

2 1 8.3F

6

:
CT

가

가

가

가

가

가

1.5cm

가
technique)(3)

가

(modified coaxial

가

(1)

(2)

CT

(hub)가
mm

가

가
(, CT)

: CT

mm
Skin Marker Set (Scalan, St. Paul, MN, U.S.A.)
1mm (Fig. 2A).
Skin Marker Set

2% Lidocaine
38mm, hub 17mm 17G

1995 8 1998 8 CT

가 1.5cm 37
가 25 , 가 12
26 76 (56.3)
5mm 10mm 가 15 , 11mm 15mm
가 19 3 11mm 15mm
CT Sytec 3000 (GE, Milwaukee,
WI, U.S.A.) CT
6-10mg valium 30
Demerol 50mg
(interlobar fissure)
가
CT
5mm CT
(,)
mm

Fig. 1

CT
(slit beam) CT
(,)

mm
Skin Marker Set
17G
(Fig. 2B). 15cm
20cm 22G hub-removable vanSonnenberg needle (Cook,
Blumington, IN, U.S.A.) (,) 17G
17G hub
CT mm
Skin Marker
17G
(Fig. 2C).
10cm, hub 2cm 18G (Cook, Blumington,
IN, U.S.A.)
hub 17G coaxial
mm
18G hub가
coaxial (Fig. 2D).
18G
coaxial
19.5G Autovac Biopsy gun (Angiomed,
Karis-ruhe, Germany)
(
fanning-out
technique ,)
10%
2
6
37 32 (one session) 6
4 4 , 1
3

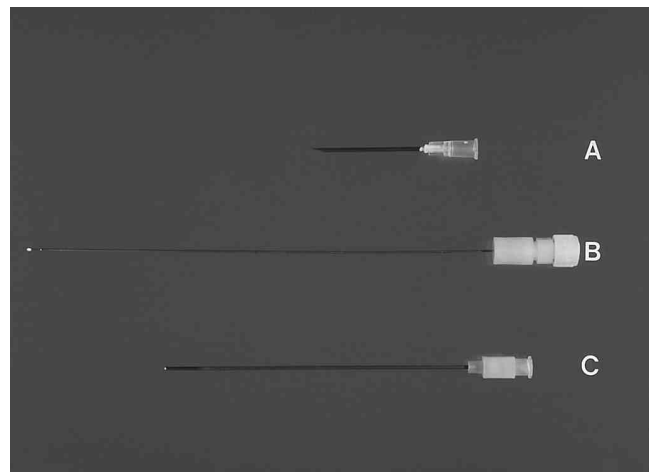


Fig. 1. A cannula and two needles for modified coaxial technique.
17G short needle(A) is used for chest wall puncture and 22G hub-removable vanSonnenberg needle(B) is used for target puncture. 18G guiding cannula(C) plays the role of a path for obtaining multiple core tissues of the lesion.

37 35 (95%) 6 2 . 1
 , 2 , 1 , 1 . 1
 15 (Fig. 3), 1 , 3 , 1 , 1 , 3
 1 , 7 , 4 , 1 , 1 , 3
 3 (Fig. 4) . 3
 2 1 ' 가
 , 1 ' old , 4
 hemorrhage associated lesion ' 9 3 5
 35 7 28
 (definitive diagnosis) 7 3 1 , 2
 4 가
 , 3
 , Langan's type giant cell 37 가
 ' consistent with tuberculosis ' .
 15 9
 6 9 6 가 가 .
 1 가 , 2 가 , 1



A



B



C



D

Fig. 2. Actual steps of modified coaxial technique.

A. In first step, skin puncture site is decided using slit beam of gantry and localization grid of CT monitor. Puncture site is marked with 1mm lead ball (arrow) on the skin. There is a 15mm nodule (arrowheads) in right lung.

B. In second step, puncture direction is decided on CT monitor. 17G short needle (arrow) is correctly inserted in chest wall toward the target lesion.

C. In third step, 22G hub-removable special needle (arrow) is advanced coaxially as measured on CT monitor through the lumen of 17G short needle.

D. In fourth step, 18G guiding cannula is introduced coaxially over 22G hub-removable needle which hub was already removed and the tip of the guiding cannula (arrow) is located just before the border of the lesion. In final step, multiple core tissues are obtained through the lumen of 18G guiding cannula using 19.5G automated biopsy gun.

: CT

16

가

3
 hemosiderin

10

가

1

Old hemorrhage as-

sociated lesion

CT
 (ground-glass opacity)

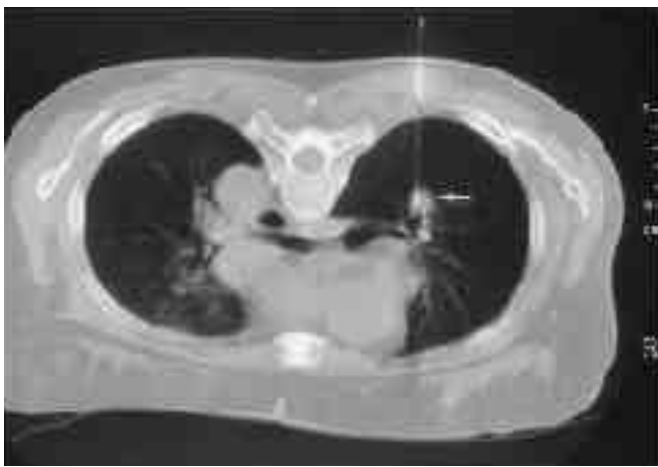
1cm

37 35 (95%)

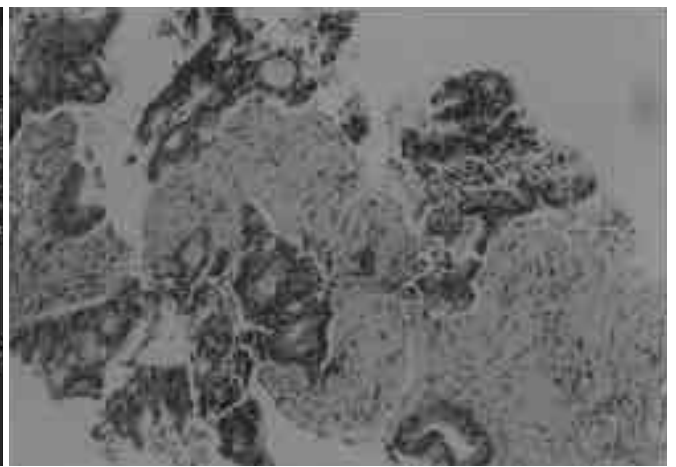
가

2 (5%)

가



A

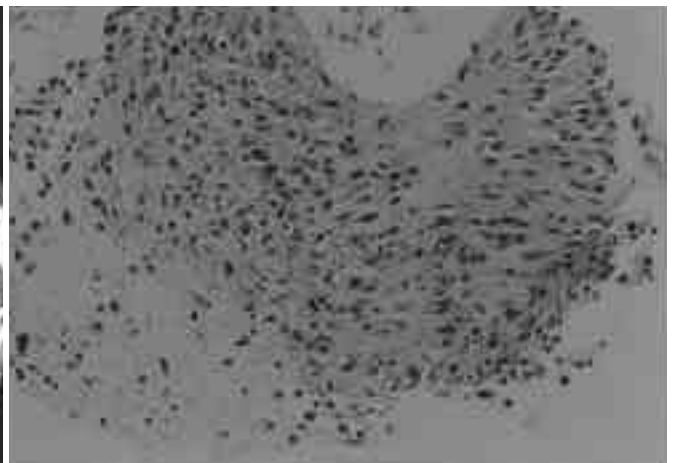


B

Fig. 3. A 62-year-old woman with a 15 mm nodule in right lung confirmed as adenocarcinoma.
A. 22G hub-removable needle hit the peripheral portion of the lesion (arrow). Note vessels and bronchus around the lesion. Using modified coaxial technique, 6 core tissues were obtained without any complications.
B. Photomicrograph shows individually infiltrating glandular epithelial cells in fibrous tissues. (H&E, ×200).



A



B

Fig. 4. A 60-year-old man with a 14 mm nodule in left side of posterior pleura confirmed as metastatic adenocarcinoma of pleura.
A. CT shows massive left pleural effusion and collapse of left lung. Bronchoscopy was risky for his condition and cytologic report for left pleural effusion was 'suspected atypical cell'. Using modified coaxial technique, 6 core tissues were obtained from the pleural nodule (arrow).
B. Photomicrograph shows poorly differentiated acinar-glandular structures. (H&E, ×200).

(5%) 2 , 2 , 가 가 , 2 1 , 가 1 8.3F tandem trocar technique 가 .

가 , CT (single stick technique), (coaxial technique), tandem technique 가 , hub (4-6). 17G 37 17G CT 35 2 (stroma) 가 , (architecture) , (7). 17G 가 , 22G 38mm 18G 가 (reactive 가 (dilator) change) (inter- 17G observer bias) 가 가 가 vanSonnenberg (3) 가 (intraobserver bias) 16G 17G (8).

: CT

가 가 ,

(9,10).

(11).

가 1cm

17G bevel 가 5mm 가

가

(bevel) 가 1.5 cm

bevel

6 CT

가

CT

가 (premedication)

5%

가

CT 가

15mm 가 20mm 12cm

가 11.5cm

5%

가 가

가

CT

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Usefulness of Percutaneous Multiple Core Tissue Biopsy of Small Lung and Pleural Lesion Using Modified Coaxial Technique Under CT Guidance¹

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Purpose : To assess the usefulness of modified coaxial technique for percutaneous multiple core tissue biopsy of small lung and pleural lesion.

Materials and Methods : The author retrospectively reviewed 37 cases of small (< 1.5 cm) lung (n= 34) and pleural lesion (n= 3) in patients who had undergone percutaneous biopsy using modified coaxial technique. All procedures were performed in a CT room, and distance, length and direction were checked on a CT monitor at every five steps of the procedure. During the first step, the site for skin puncture was decided using the slit beam of the gantry and localization grid of the monitor. During the second, puncture direction was decided by referring to the monitor, and a 17G short needle was used as a direction guide and inserted in the chest wall. During the third step, a 22G hub-removable special needle was inserted coaxially through the 17G needle lumen as measured. During the fourth, an 18G guiding cannula was introduced coaxially almost as far as the border of the lesion over the 22G special needle, hub of which had already been removed. During the fifth step, multiple core tissues were obtained in six directions (fanning-out technique) using a 19.5G automated biopsy gun through the guiding cannula. Histopathologic diagnosis and complications were reviewed.

Results : Six core tissues of the lesion were obtained in 32 of the 37 cases, four cores in four and three cores in one. Histopathologic diagnosis was made in 35 (95 %) of the 37 cases, and the findings were as follows: adenocarcinoma(n= 15), squamous cell carcinoma(n= 1), small cell carcinoma(n= 3), metastatic renal cell carcinoma(n= 1), tuberculosis(n= 7), hamartoma(n= 4), cryptococcosis(n= 1) and metastatic adenocarcinoma of the pleura(n= 3). Hemoptysis was noted in two cases but subsided spontaneously. Pneumothorax occurred in two cases (5 %), and in one of these an 8.3 F catheter was inserted.

Conclusion : Modified coaxial technique under CT guidance for obtaining multiple core tissues of small lung and pleural lesion, with a single puncture of the pleura in one session of percutaneous biopsy, is useful for histopathologic diagnosis and the treatment of complications.

Index words : Biopsies, technology

Lung, biopsy

Pleura, biopsy

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