

CT 가 1

. 2

: CT 가 가

CT 가 24 11 ,

5 , 8 . 가 CT

independent workstation Navigator software

3 , ,

가 가

: 24 16 (67%) , 8 (33%) ,

(64%) , 4 (36%) 5 4 (80%) , 1 (20%)

8 5 (63%) , 3 (37%)

24 23 (96%) 가 , 1 가 가

: CT 가 ,

가 CT 가

(computed tomography, CT)

(1-4). , CT
가

6

CT 가

24 (M:F=21:3, :54-78 , :65
(supraglottic cancer)

3 가 (virtual endoscopy) 가 11 , (glottic cancer) 5 , (hypopharyngeal
cancer) 8 . CT

(7-10). 1 2 . 24 9

CT 가

(virtual endoscopy) 가

CT Hi-Speed Advantage System (GE Medical
Systems, Milwaukee, Wis. U.S.A.)

가 (source image)
CT (quiet breath-

¹ ,
² 1997 9 9 2000 3 20

ing) , “ (good) ” , “ (fair) ”

130ml (Ultravist 370 , 75.9% of
Lopromide, Schering, Berlin, Germany) (antecubital
vein) 3 ml 70 “ (bad) ” 가 .

120kVp, 200-220 mAs, 3 mm , 3 mm
1 mm 가 가

(retrospective reconstruction) .

Advantage Windows Works-tation (GE Medical Sys-
tems, Milwaukee, Wis. U.S.A.) 3

Navigator software (GE Medical Systems, Milwaukee, Wis.
U.S.A.) 40-60 mm FOV 가 가 24 16 (67%)

(threshold value) -500 -700 , 8 (33%) 가 ,

black in white mode . (Table

2 가 1 1.) (Fig. 1 & 2). 11 7 (64%) , 4

가 가 가 (36%) 5 4 (80%) , 1

가 가 (20%) 8 5 (63%) , 3

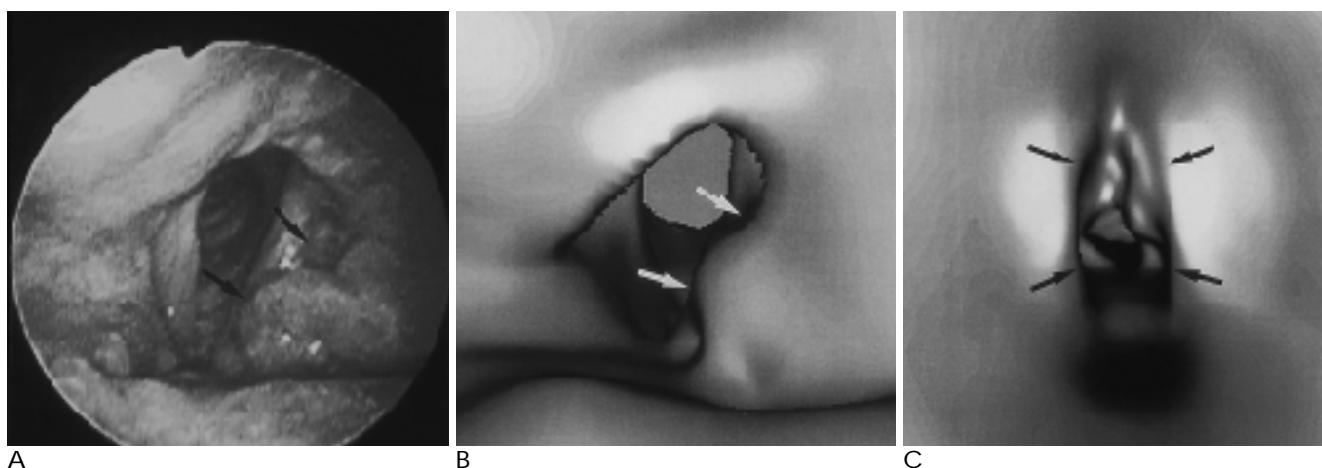


Fig. 1. A 54-year-old man with supraglottic carcinoma.

A. Laryngoscope shows lobulated mass (arrows) at the wall of left supraglottis.

B. Top view of virtual endoscopy shows lobulated mass (arrows), but can not demonstrate the surface of tumor as precisely as in laryngoscopy. Image quality of virtual endoscopy was graded as “ fair ”.

C. Bottom view of virtual endoscopic image shows intact vocal cord (arrows), which is could not be demonstrated in laryngoscopy.

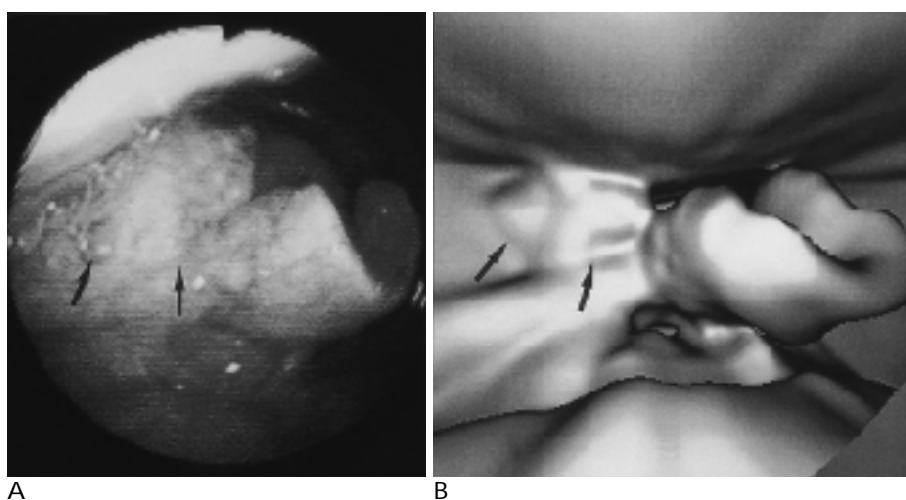


Fig. 2. A 66-year-old man with hypopharyngeal carcinoma.

A. Laryngoscope shows tumor at the right pyriform sinus (arrows).

B. Top view of virtual endoscopic image demonstrates tumor (arrows) and is well correlated with laryngoscopy. Image quality of virtual endoscopy was graded as “ good ”.

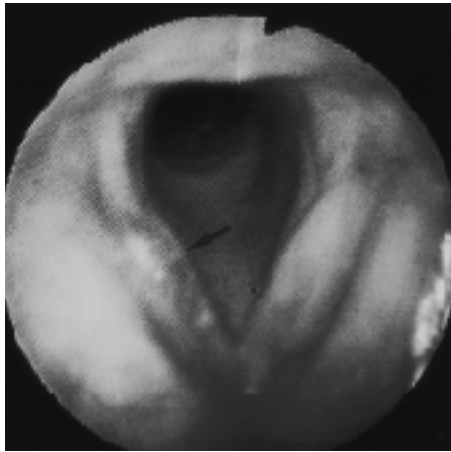
(37%) 가
가
24 23 (96%) 가
, 1 가
(Fig. 3).
2
CT

(Fig. 4).

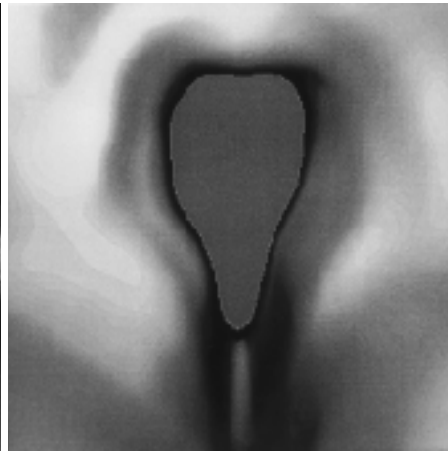
(hollow organ)

Table 1. Image Quality of Virtual Endoscopy According to the Location of Tumor Compared with Laryngoscopy

Lesions	Image Quality (No. of patients)			Total
	Excellent	Good	Poor	
Supraglottic ca.	7	4	0	11
Glottic ca.	4	1	0	5
Hypopharyngeal ca.	5	3	0	8
Total	16	8	0	24



A

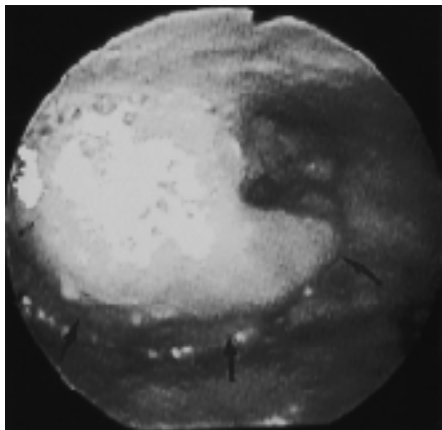


B

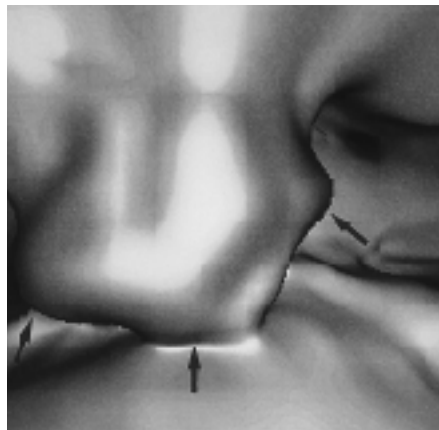
Fig. 3. A 68-year-old man with glottic carcinoma. Virtual endoscopic image can not demonstrate the tumor.

A. Laryngoscope shows slight thickening of the right vocal cord (arrow).

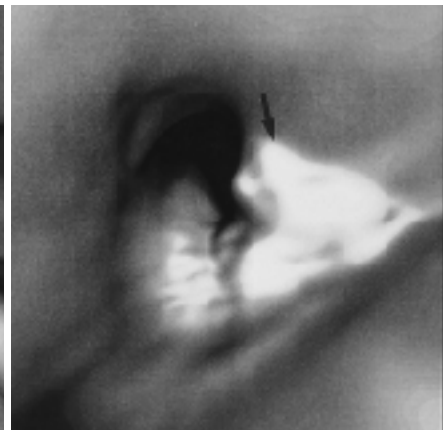
B. Top view of virtual endoscopy image can not demonstrate the tumor due to its small size. Image quality of virtual endoscopy was graded as "fair".



A



B



C

Fig. 4. A 55-year-old man with hypopharyngeal carcinoma

A. Laryngoscope shows tumor (arrows) which nearly obstructs the airway.

B. Top view of virtual endoscopy shows tumor (arrows) as good as in laryngoscopy. Image quality of virtual endoscopy was graded as "good".

C. Bottom view of virtual endoscopy demonstrates subglottic extension (arrow) of tumor, which could not be demonstrated in laryngoscopy.

CT 가

CT , 가

CT Workstation 3 Unix Navigator CT

(1-4).

CT 가 Navigator

CT 3 가 가 4-5 가

가 3-5 가 , 가

가

3 (scan-

ning artifact) CT

(10-13). (14-15).

CT 가 , 가

가 CT

(shaded surface display) 가 , (motion

3 가 artifact) (scanning artifact) ,

(threshold value)

(13-14).

Luboldt (7) MR CT 가 , 가

가 , Hara (8) 가

가 . Ferretti (9) 가 , Gilani

(10) Nicola (11) 가

24 가 (aryepiglottic fold)

가 23 가 (pyriform sinus) CT (16) (pho-

가 가 nation) CT scan 가 (17).

가 가

가 CT

가 CT

MR CT 가 CT MR

가

CT (routine) CT 가

, 가 가 가 , 가

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Virtual Endoscopy Using Spiral CT in Patients with Carcinomas of the Hypopharynx and Larynx¹

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Purpose: To compare the usefulness of virtual endoscopy using spiral CT with that of laryngoscopy in the detection and evaluation of laryngeal and pharyngeal carcinomas.

Materials and Methods: Twenty-four patients with pathologically proven laryngeal and pharyngeal carcinomas underwent laryngoscopy and virtual endoscopy using spiral CT. Eleven of the carcinomas were supraglottic, five were glottic, and eight were hypopharyngeal. Source images obtained by spiral CT were transmitted to an independent workstation and virtual endoscopic images were obtained using Navigator software. These were graded according to their quality (good, fair, bad), and were interpreted by two radiologists who were blinded to the conventional endoscopic findings. These latter were subsequently compared with the virtual endoscopic findings in terms of similarity to laryngoscopic examination and detectability of lesions.

Results: The overall image quality of virtual endoscopy was good in 16 cases (67%), fair in eight (33%), and bad in no case. Among the 11 supraglottic carcinomas, image quality was good in seven cases (64%), and fair in four (36%). In four of the five glottic carcinomas (80%) quality was good, and in one case (20%) it was fair, while among the eight hypopharyngeal carcinomas, quality was good in five cases (63%), and fair in three (37%). Overall, detection of the lesion was possible in 23 cases (96%). Due to the small size of the lesion, the one case of glottic carcinoma was not detected.

Conclusion: Virtual endoscopy using spiral CT is a safe and noninvasive method, and also successfully detects laryngeal and pharyngeal lesions, with good image quality. For the evaluation of laryngeal and hypopharyngeal carcinoma, its use may complement that of axial CT.

Index words : Larynx, neoplasms

Pharynx, neoplasms

Computed tomography (CT), helical

Computed tomography (CT), three-dimensional

Computed tomography (CT), volume rendering

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