

Table 1. Patients Characteristics

No. of Case	Sex/Age	Extent of Tumor	Pathology	Surgery	Chemotherapy
1.	M/34	Ethmoid sinus Nasal cavity Frontal sinus Orbit	Squamous cell carcinoma	Craniofacial resection	No
2.	F/58	Maxillary sinus Ethmoid sinus Nasal cavity	Squamous cell carcinoma	No	Cisplatin + 5-FU (3 cycle)
3.*	M/61	Cribriform plate Orbit Ethmoid sinus Maxillary sinus Nasal cavity	Squamous cell carcinoma	No	No
4.	M/74	Ethmoid sinus Nasal Cavity	Adenocarcinoma	Partial ethmoidectomy	No

* : Recurrent case after surgery and radiotherapy

5mm
Report 50
ADAC
ICRU
가
2- 3 (ROCS)
6:1:1 8:1:1

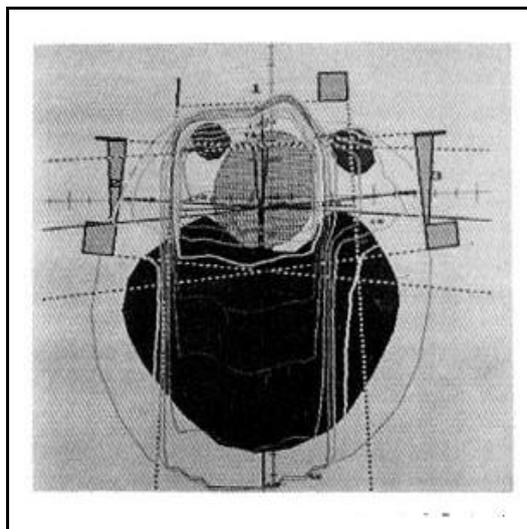


Fig. 1. Dose distribution for conventional 2-D treatment approach in carcinoma of the ethmoid sinus(Case 1).

2- 3- 3-
2Gy (Fig. 3- 가
1). 2- 가
3- 2-
3- 4

(Fig. 2).
 가 2Gy (dose volume histogram), (dose statistics)
 3. , V_{95} , D_{95} , D_{05}
 3-
 2- 3 3-

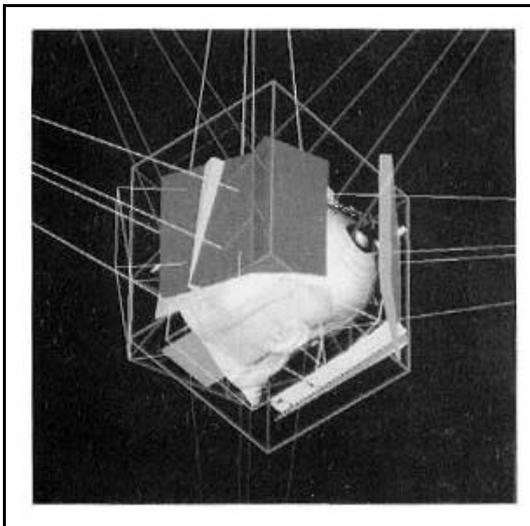


Fig. 2. Beam's eye view display of a non-coplanar beams for 3-D conformal radiotherapy in ethmoid sinus cancer.

1.
 1) 가
 2- 220.2cGy 221.3cGy 3- 10%
 , 1.1cGy
 2-
 189.6cGy 3- 197.8cGy 8.2
 cGy 가 , 3-
 200cGy
 (Table 2).
 8.3cGy
 4% 가

Table 2. Dose and Volume Statistics for PTV Comparing 2-D Plans and 3-D Plans

No. of Case	$D_{max}(cGy)$		$D_{mean}(cGy)$		$D_{95}(cGy)$		$D_{05}(cGy)$		$V_{95}(cc)$	
	2-D plan	3-D plan	2-D plan	3-D plan	2-D plan	3-D plan	2-D plan	3-D plan	2-D plan	3-D plan
1.	214.4	216.2	193.2	197.2	177	182	209	205	46.2	57.4
2.	222.2	217.6	191.2	201.3	170	190	209	215	131.4	207.0
3.	226.2	233.0	183.2	197.4	160	175	219	209	119.6	214.1
4.	223.2	214.1	190.8	195.2	175	185	214	223	130.2	201.8
mean	221.6 ± 5.16	220.2 ± 8.64	189.6 ± 4.40	197.8 ± 2.55	171 ± 7.6	183 ± 6.3	214 ± 5.8	213 ± 7.8		

D_{max} : Maximum dose in planning target volume.
 D_{mean} : Mean dose in planning target volume.
 D_{95} : The dose that 95% of the volume receives.
 D_{05} : The minimum dose that volume receives.
 V_{95} : The volume receiving 95% of the prescription.

가 95%가 74.5%, 94.5%, 77%, 93%가 95%
 V_{95} 2- 60%, 60%, 43%, 95%가 3- 95%
 D_{95} 4 3-

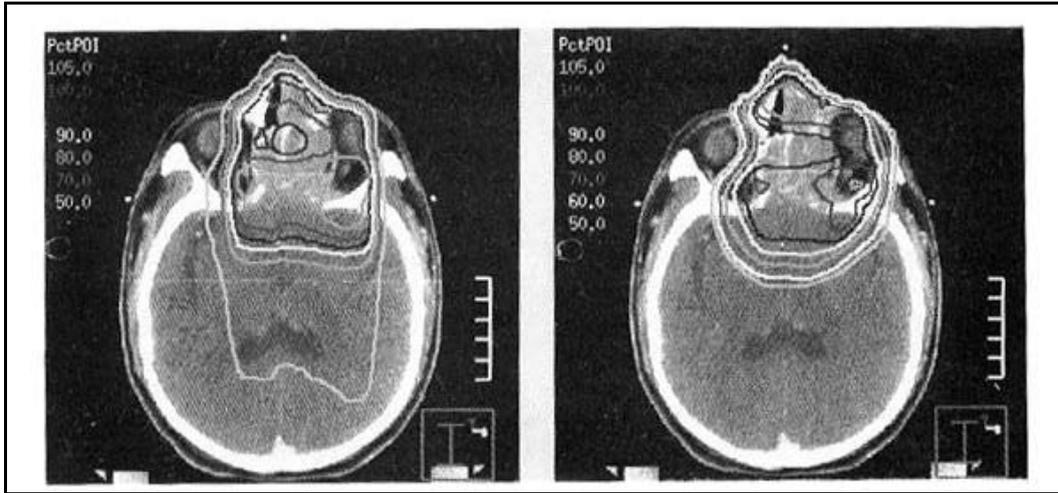


Fig. 3. Isodose displays for conventional 2-D and 3-D conformal treatment plans used for patient No. 4.

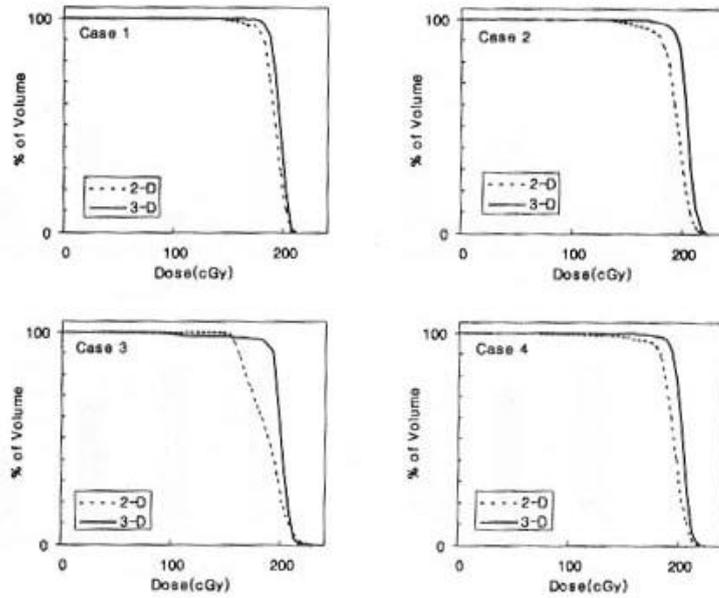


Fig. 4. Comparison of dose volume histograms derived from conventional 2-D and 3-D conformal treatment plan in each patient with carcinoma of the ethmoid sinus.

가 12.5cGy , 3- , 200cGy 4
 , 3-
 Coia¹³⁾
 2.
 D₀₅ 3- 1) 가
 4
 가 가
 3-
 (Fig. 3). 가
 2) 1 4
 2- 3- (Fig. 5). 3-
 3- 3-
 200cGy 3-
 (Fig. 4). 2) 3-
 , 2- 3-
 (cold spot) 3- 1 3-

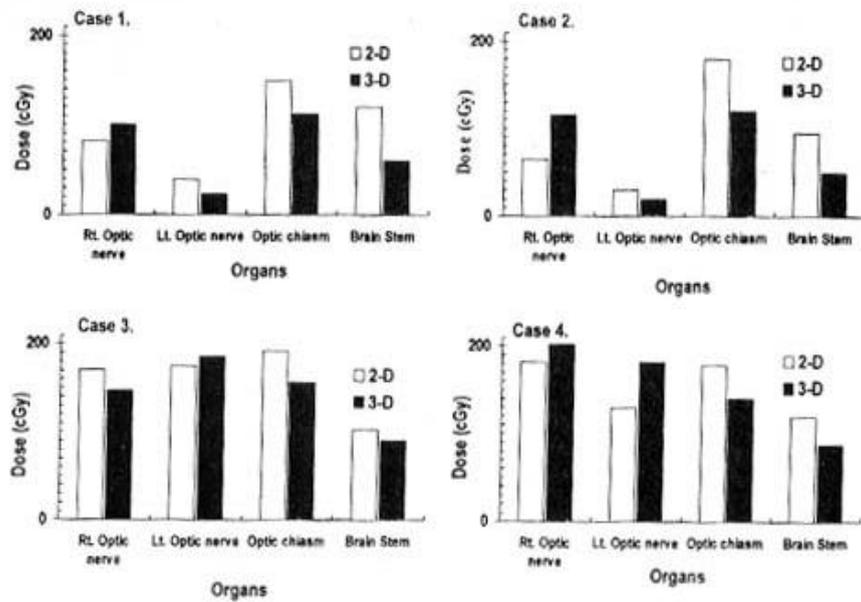


Fig. 5. Comparison of estimated point dose of various adjacent normal tissue organs for 2-D and 3-D conformal treatment plans.

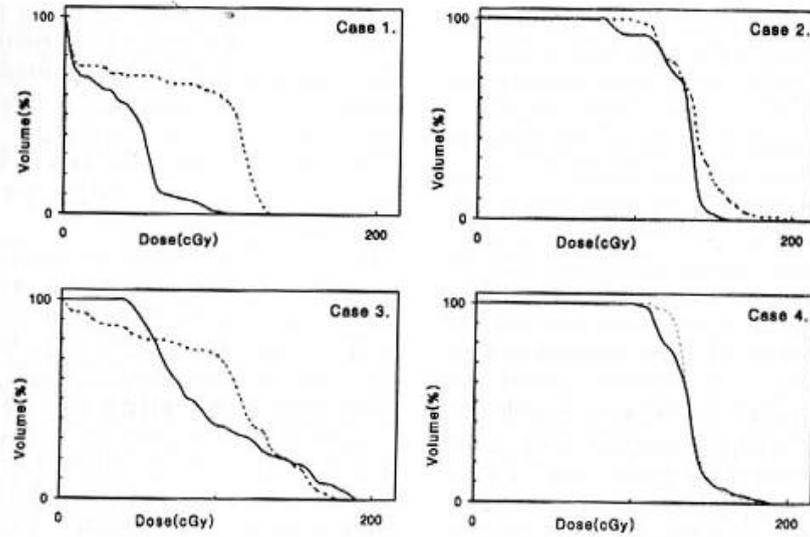


Fig. 6. Dose volume histogram for the brain stem in 2-D conventional(---) and 3-D conformal(--) plans.

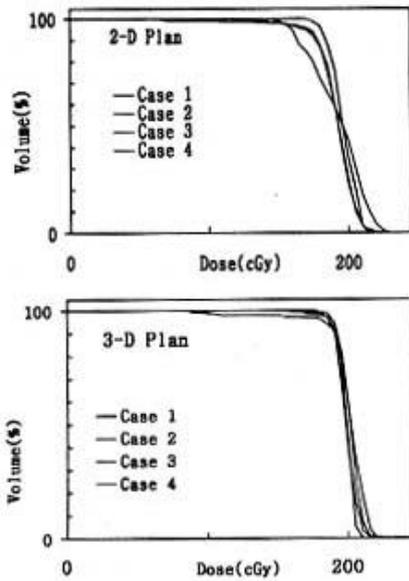


Fig. 7. Superimposed dose volume histograms comparing 2-D conventional treatment plans for (Upper panel) as well as 3-D conformal treatment plans(Lower panel).

가 가
(Fig. 6).

3

1, 2, 3, 8, 14)

2 3 , 3

15, 16)

14-16) 가 2- 3- 가
4% dose escalation 가
가 가 14) ,
가 isodose line
8
MV가 가 17) Roa ,
Tsuji 가
가 7, 16) .
Lane 17) "multiple 2- 가
overlapping field technique" 가 3- , normal tissue
complication probability(NTCP)
18) 가
3- ,
3
2- ,
가 5mm
2- ,
Fig. 7 1-2mm ,
가 가 3- ,
가 가 2- ,
가 가 3- ,
가 가 3- ,
7, 9, 10) 2- ,
3-

가
Intensity Modulation

2-

3-

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