

1. 1987 11 1998 3
 759 18 (Table 1).
 Ia 1, Ib 5, IIa 5, IIb 3, IIIb 2, IVa 2
 57 (37 79)
 6 122 58
 1 1
 16 10 1 7
 13 3
 7 5

2. 1)
 가 6 MV, 10 MV, 20 MV
 4 Ia, Ib
 2,700 cGy 4 × 10 cm
 4,500 cGy 가
 IIa 3,600 cGy 4,500 cGy

Table 1. Patient Characteristics

Characteristics	No. of patients
Age (years)	37 79 (mean 57)
Initial stage	Ia 1 Ib 5 IIa 5 IIb 3 IIIb 2 IVa 2
Recurrent site	Uterine cervix 7 Vagina 10 Pelvic node 1
Recurrent time (Mo [*] , From initial Tx [†])	6 12 3 12 36 2 36 60 6 >60 7
Total	18

*Months, †Treatment

2 :
 IIb 4,500 cGy 5,400 cGy
 IIIb 4,500 cGy
 5,400 cGy 6,300 cGy 가
 T₁₂L₁ 4,500 cGy
 900 1,800 cGy 가
 Buchler system ⁶⁰Co
 2 A point 500 cGy 3,000 3,500 cGy
 A 5,700 8,500 cGy 가 5
 2)
 12
 4
 2
 가 가

2,700 5,400 cGy 4
 A , 5 mm
 500 cGy 2 2,000 4,000 cGy
 1,500 3,150 cGy 3 5
 가
 4500 cGy
 가
 2,100 5,400
 cGy 3,780 8,550 cGy . 4
 . 2

Reimadation Type	No. of patients
External radiation therapy (ERT) only	2
ERT and intracavitary radiation	12
ERT and implant	4
Total	18

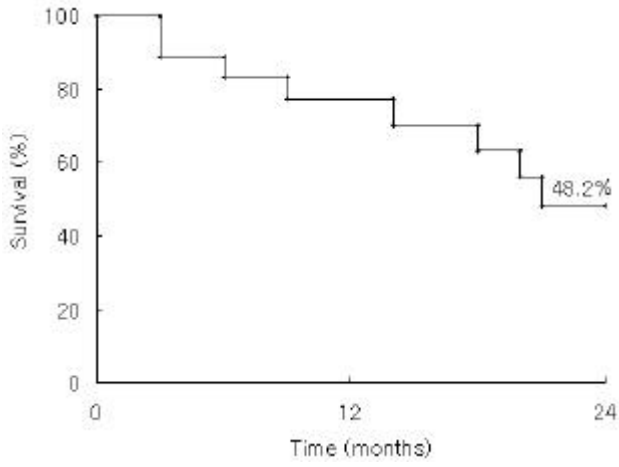


Fig. 1. Two year disease free survival curve.

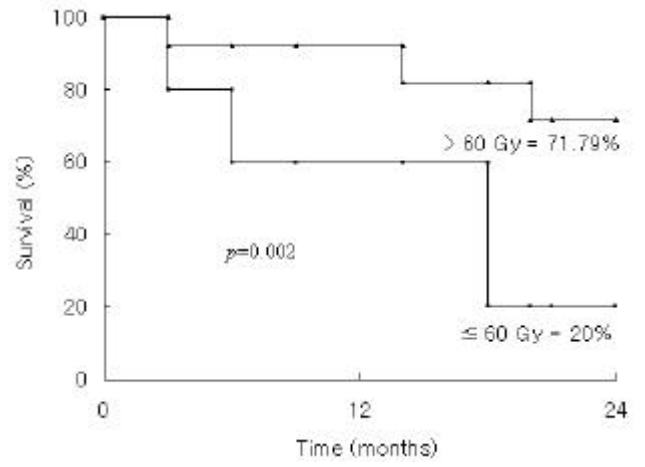


Fig. 3. Two year disease free survival curve by total dose.

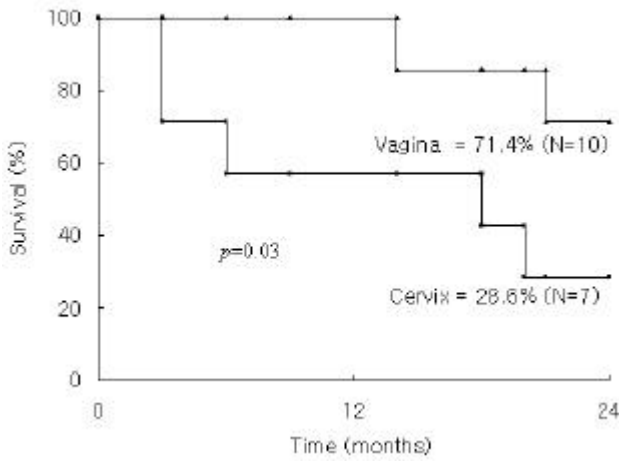


Fig. 2. Two year disease free survival curve by recurrent site.

54	104	(Table 3).	2
	68.7%,		2
	25%,		
	가		($p=0.01$).
2.		3	12, 19, 19
		2	
1			가 2
			5, 16
			가
1			. 2
			2
	6, 8		.
	12, 36	2	1
			가 14
		1	12
(Table 4).		,	,
			.
3.			
			가
		4	7 (39%)
			14
			20
		10	19

1. 18 14 (78%)
 가 . 2
 48.24% (Fig. 1) 2
 10 71.4%,
 7 28.5% ($p=0.03$)
 (Fig. 2). 2
 (>6,000 cGy 4 7 (39%)
 71.8%, 6,000 cGy 25% $p=0.007$, Fig. 3).
 20 10 7
 (7/18, 39%).

Table 3. Patients Characteristics of 7 Survivors with NED in 20 Months or More Follow-Up Duration

Patient No.	Age (years)	Initial stage & Tx [*]	Recurrent		Reirradiation Dose (Gy) total (ERT [†] & ICR [§])	Complication (time of onset)	F/ U duration (Mo)
			site	time (Mo [†])			
1	70	IVa (A point 76.9 Gy pelvic wall 54 Gy)	Vaginal orifice	54	80 (50/ 30)	Soft tissue swelling (36 Mo)	80
2	50	IIa (A point 75 Gy pelvic wall 54 Gy)	Cervix	62	66 (36/ 30)	No	36
3	63	Ib (A point 62 Gy pelvic wall 45 Gy)	Distal vagina	104	66 (36/ 30)	Radiation necrosis (14 Mo)	37
4	65	Ib (A point 79 Gy pelvic wall 54 Gy)	Vagina & inguinal LN	58	66 (36/ 30) 70 (70/ 0)	Rectal bleeding (17 Mo)	34
5	67	IIIb (A point 80 Gy pelvic wall 63 Gy)	Vaginal orifice	67	85.5 (54/ 31.5 [†])	Vaginal stricture (12 Mo)	34
6	56	Ib (A point 57 Gy pelvic wall 45 Gy)	Mid-vagina	98	62 (27/ 35)	Rectal bleeding (19 Mo)	33
7	55	IIb (A point 75 Gy pelvic wall 54 Gy)	Cervix	115	75 (45/ 30)	Bowel obstruction (17 Mo) Rectal bleeding (19 Mo)	20

^{*}Treatment, [†]Months, [‡]External radiation therapy, [§]Intracavitary radiation, [¶]Follow-up, [¶]Implant dose

Table 4. Complications

	No. of patients
Rectal bleeding	3
Bowel obstruction	2
Hematuria	1
Radiation cystitis	2
Soft tissue swelling	2
Radiation necrosis	1
Vaginal stricture	1

(repair)

10

200 cGy

18

2 (11%)

가

1

Evans

Murphy

5

6%, 19%

11, 12) Puthawala

33% 2

15%

(fistula)

3) Wang

73

20 35 Gy

30

(Pelvic exenteration)

40 Gy

2, 3, 5

54.7%, 46.6%, 40.3%

1.4%, 11%, 13.6%, 12.3%, 5) Prempree, 27 30)

10, 6, 50%, 5, 10

23)

13, 14, 24 26)

5, 7, 10

6, 1, 7, 가

Ib 12, 1, 가

2, 10, 가

6, 2, 1, 1, 가

5, Jones, 1, 가

4)

5, 1, 83

16 (89%), 2, 1, 가

54.55%, 가

cGy, 가

가

12, 7, 가

가

16%, 22%

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Abstract

Reirradiation in Recurrent Cervical Cancer Following
Definite Radiation Therapy

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Purpose : To evaluate treatment results in terms of local control, complications and survival after reirradiation in recurrent cervical cancer following definite radiation therapy.

Material and methods : From November 1987 through March 1998, eighteen patients with recurrent cervical cancer following definite radiation therapy were subsequently treated with reirradiation at Keimyung University Dongsan Medical Center. In regard to the initial FIGO stage, one patient was stage Ia, five were stage Ib, three were IIb, two were IIIb and two were IVa. The age range was 37 to 79 years old with median age of 57. The time interval from initial definite radiation therapy to recurrence ranged from 6 to 122 months with a median of 58 months. The recurrent sites were the uterine cervix in seven patients, vagina in ten and pelvic lymph node in one. Reirradiation was performed with external radiation and intracavitary radiation in twelve patients, external radiation and implantation in four and external radiation alone in two. The range of external radiation dose was 2,100-5,400 cGy and the range of the total radiation dose was 3,780-8,550 cGy. The follow-up periods ranged from 8 to 20 months with median of 25 following reirradiation.

Results : Fourteen of eighteen patients (78%) had local control just after reirradiation. The two year disease free survival (2YDFS) rate was 53.6%. There were statistically significant differences in the 2YDFS according to both recurrent site (2YDFS 28.5% in uterine cervix, 71.4% in vagina, ($p=0.03$)) and the total dose (2YDFS 71.8% in $>6,000$ cGy, 25% in $\leq 6,000$ cGy, $p=0.007$). Seven of ten patients who were followed for more than 20 months remain alive and disease free (7/18, 39%). Patients treated with external radiation and intracavitary radiation had a higher rate of 2YDFS. Seven patients including 4 patients with no local control experienced local failure in the uterus or vagina and two patients died with distant metastasis. Complications included rectal bleeding in 3 patients, bowel obstruction treated with surgery in two, hematuria in one, radiation cystitis in two, soft tissue swelling in two and vaginal necrosis spontaneously healed in one. There was no statistical difference in complications according to the total dose or the time to recurrence from initial radiation.

Conclusion : In patients with recurrence following definite radiation therapy in the uterine cervical cancer, reirradiation may be effective but requires an effort to reduce radiation induced severe complications.

Key Words : Recurrent Cervical Cancer, Reirradiation, Survival, Complication