

node metastasis) 91 6 50 150mCi
 . 10 74 , 80 (Table 2).
 44 , 19 , 72 . 4 MV X-ray 가
 T1-3가 18 , T4가 73 , N0가 30 , (whole neck) (upper mediastinum) 1.8 2.0
 N1 61 , 가 2 (,) Gy 5 ,
 . 1997 AJCC Classification , 가 40 Gy
 (Table 1). 50 70 Gy
 2 . 612 Gy .
 가 23 , TSH
 12 . 68
 3 .
 60 (Total thyroid- 6 1 , 6
 ectomy) , 10 (lobectomy) , 21 2 3 , 4 6 , 5
 (subtotal thyroidectomy) . 1 , 6
 (T3, T4, TSH, TG Ab), X-
 가
¹³¹I-scan, bone scan,
 55.7

Table 1. Patient Characteristics (Total=91 patients)

Characteristics	No. of Patients (%)
Gender	
Male	19 (20.9)
Female	72 (79.1)
Age at diagnosis (years)	
median	44
< 45	48 (52.7)
45	43 (47.3)
Stage	
	50 (54.9)
	41 (45.1)
T stage	
T1-3	18 (19.8)
T4	73 (90.2)
N stage	
N0	30 (33.0)
N1	61 (67.0)
M stage	
M0	89 (97.8)
M1	2 (0.02)

Table 2. Initial Treatment Modalities

	No. of patients (%)
Type of Surgery	
Lobectomy	10 (11.0)
Subtotal thyroidectomy	21 (23.1)
Total thyroidectomy	60 (65.9)
Treatment modalities	
Surgery + RAI [†]	68 (74.7)
Surgery + RT [*]	11 (12.1)
Surgery + RT [*] + RAI [†]	12 (13.2)

* External radiotherapy † Ablative radioiodine therapy

가
 (Table 2).
 가
 (upper mediastinum) 1.8 2.0
 ,
 40 Gy
 50 70 Gy
 612 Gy .
 TSH
 가 23 ,
 68
 3 .
 6 1 , 6
 2 3 , 4 6 , 5
 1 , 6
 (T3, T4, TSH, TG Ab), X-
 가
¹³¹I-scan, bone scan,
 55.7
 (1.1 176.1) .
 4 .
 (23) (68) , ,
 , , , , ,
 (selection bias)
 가 Pearson's chi-square test
 (Table 3), Kaplan-Meir Me-
 thod ,
 Log-rank test
 , Cox's Proportional hazard model
 , SAS program .

1 .
 7 98.1% ,
 7 90%
 (p=0.506, Fig. 1). 1 가
 , , , , .
 가 , , , , .

Table 3. Comparison of Patient Characteristics for Patients Between The Two Groups

Characteristic	RT (N=23)	No RT (N=68)	P-value
Gender			
Male	2	17	0.096
Female	21	51	
Age of diagnosis (years)			
< 45	12	36	0.949
≥ 45	11	32	
Stage			
T stage	14	36	0.509
T1-3	9	32	
T4	5	4	
N stage			
N0	7	23	0.765
N1	16	45	
M stage			
M0	21	68	0.014
M1	2	0	
Type of Surgery			
Lobectomy	8	2	0.271
Subtotal thyroidectomy	2	19	
Total thyroidectomy	13	47	
Radioiodine			
Yes	12	68	0.001
No	11	0	

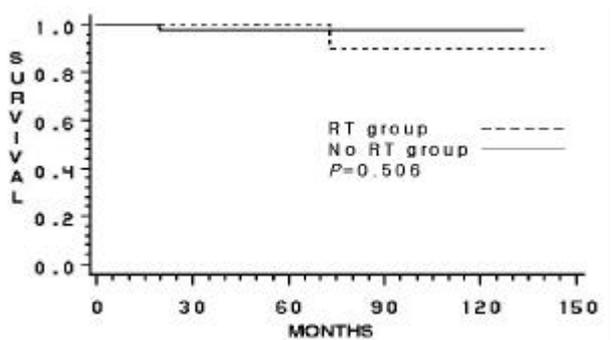


Fig. 1. Overall survival curves (RT group vs. No RT group).

2. 5 67.5% (p=0.0408, log rank test). 95.2% 15 가 4 2 가 1 가 1 가

3 :

3.

log rank test (Fig. 2 A G). (p=0.0408) 가 (p=0.0561, Risk ratio=0.216) (Table 4).

4.

16 12 4 4 2 1 1 (1) (1) 91 3 (thyrotoxicosis) 10 (mild mucositis) 23 (sialoadenitis) 가 1

5.

가

^{4 8)} Schelfhout (1988)

³³⁾ Loh (1997) DeGroot (1990) (T stage) T4 (extrathyroidal

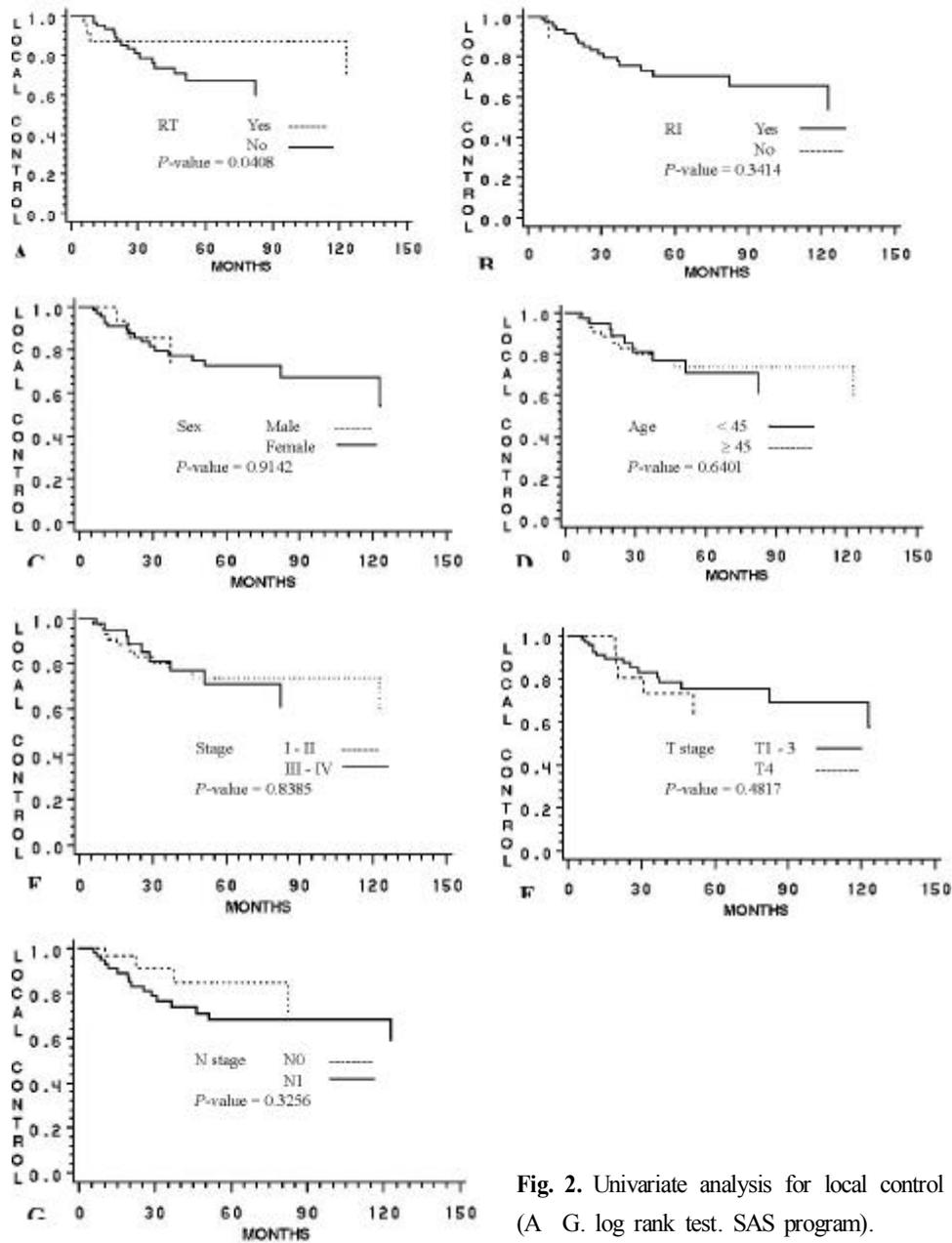


Fig. 2. Univariate analysis for local control (A G. log rank test. SAS program).

Table 4. Multivariate Analysis for Local Control

Attribute		p-value	Risk ratio
Sex	Female/ Male	0.6964	0.778
Age	<45/ 45	0.9925	1.714
Stage	I /	0.9926	0.000
T stage	T1-3/ T4	0.7796	1.174
N stage	N0/ N1	0.2755	2.018
RT*	No/ Yes	0.0561	0.216
RAI†	No/ Yes	0.8021	0.700

*External radiotherapy †Ablative radioiodine therapy (Cox's Proportional Hazard Model, SAS Program)

extension)가 T1 26.9 , T3 3 가
 , 가
 4 , (cancer-specific mortality) 2.5
 가 ,^{9, 10)} Mazzaferri
 가
^{34 37, 39)}
 가 가¹¹⁾
¹⁵⁾ Hay (1987) ⁴¹⁾ AGES 4

Table 5. Comparison of Local Control with Literatures

Author	No of Pts.	local control (%)					
		RT group			No RT group		
		5 years	10 years	15 years	5 years	10 years	15 years
Tsang (1998) ³¹⁾	155	-	93	-	-	78	-
Farahati (1996) ³²⁾	125	-	90	-	-	24	-
Philips (1993) ²⁸⁾	94	97	-	-	79	-	-
Tubiana (1985) ²⁴⁾	163	-	-	89	-	-	67
Our study (1998)	91	95.2	-	-	67.5	-	-

4

16 18) Mazzaferri⁴⁶⁾ DeGroot⁴⁰⁾ (

20

1%_a

2%

(p=0.15).

25

65%_a

36%⁴²⁾

(p=0.007). McConahey (1986)

860

가

가

2

4

(25.6% 6.3%). Sanders (1998)⁴³⁾ AMES

5%

가 34%

59%_a

가 29%

(p=0.51). Shah (1992)⁴⁴⁾ Shaha (1994)⁴⁵⁾

(tumor factor)

가 6

(T1, T2, M0)

가 45

(T3, T4, M1)

가 45

20

99%_a

85%_a

57%

가

19 32) Tsang (1998) 155

(microscopic residual papillary cancer)

10

93%

78%

(p=0.01).³¹⁾ Farahati (1996)

40

125

1.5 cm

10

90%

24%

(p=0.01).³²⁾ Philips

가

(1993)

(residual disease)

가

94

5

97%_a

79%

가

가

가?

28) Tubiana (1985)

163

89%, 15, 67%, 24)
 Esik (1994), Xue (1987), Simpson (1988)
 5, 71 90%, 26, 29, 30)
 Clark²⁾ 26 38%, Mazzaferri³⁹⁾ 10 20%
 , 80 90%
 가 , 10 20%
 , 25%
 10 30%
 24, 26, 29 32)
 22 74%
 (capsular invasion,
 extrathyroidal extension or lymph nodes involvement)
 가
 , 5 95.2%
 67.5% (Table 5).

1981 8 1997 9 가 T4
 가 91
 가

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Abstract

The Role of External Irradiation for the
Locally Advanced Papillary Thyroid Cancers

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Purpose: The aim of this study is to look for the possible efficacy of external irradiation for locally advanced papillary thyroid cancers (stage pT4 or N1).

Methods and Materials: From August 1981 through September 1997, 91 Patients with locally advanced papillary thyroid cancers (stage pT4 or N1) have been treated with external irradiation and followed up at our clinic. All of the patients have been treated with surgical resection. After surgery, 23 patients received postoperative external irradiation with or without ablative radioiodine therapy, whereas the other 68 patients were treated with ablative radioiodine therapy alone. Distributions of sex, age, and stage were comparable in both irradiated and nonirradiated groups. Multivariate analysis of the influence by age, sex, stage, ablative radioiodine therapy and external irradiation on local control were performed by using Cox's proportional hazard model.

Results: Overall survival rates at 7 years were of no significant difference in both groups. There were 98.1% for no RT group and 90% for RT group ($p=0.506$).

5-year local control rates were significantly different, these were 95.2% for RT group and 67.5% for no RT group ($p=0.0408$). An analysis of the prognostic factors, age, sex, stage, and RAI were not significant variables, except for the external irradiation.

Conclusion: Adjuvant postoperative external irradiation did not affect overall survival, but significantly improved local control in the patients with locally advanced papillary thyroid cancers (stage pT4 or lymph node involvement).

Key Words : Local control, Papillary thyroid cancer, External irradiation,