

## ORAL AND OROPHARYNGEAL CANCER: TWENTY-YEAR EXPERIENCE IN KOREA

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### 구강 및 구인두암

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#### □ 국 문 초 록 □

구강과 구인두에서 발생하는 유포피암은 전체 예수병원 암환자의 3.9%를 차지한다. 만 20년간의 유포피암 환자 596명에 대한 고찰결과, 혀 전방 2/3에서 29%로써 가장 높은 발생 빈도를 보였으며 faucial arch, base of tongue 및 tonsil을 포함한 구인두는 28%의 발생 빈도를 나타냈다.

그외는 잇몸, 구강저, 구순, 구개 (palate) 및 구강내 점막의 빈도순이었다. 환자 중 153명만이 근치적 치료를 받았다. 1974년 이전에는 치료 정책에 수술만이 활용되었던 까닭으로 역행성 분석결과 74명에서는 수술만 시행케 되었으나, 그 이후의 70명에서는 종합적치료를 시행하였으며 그중 9명은 확실한 방사선요법을 받았다.

COMMANDO 수술과 복합절제술 (Composite resection) 을 시행했던 환자들의 비교검토는 매우 의의가 있었다. 수술만 받은 환자와 비교해 볼때, 수술후 방사선요법을 병행했던 수술환자의 경우에 있어서 재발율은, Stage III에서는 50%에서 41%로, Stage IV는 79%에서 68%로 각각 감소를 보였다. 또한, COMMANDO 수술 경우만 국한시켜 비교할 때는 수술만 받은 환자와 비교할 때 수술후 방사선치료를 받은 환자와 비교하여 2년간 무병율 (disease free interval) 이 수술후 방사선요법을 병행함으로써 17.3%에서 29.3%로 증가됨을 알 수 있었다.

Epidermoid carcinoma of the oral and oropharyngeal cavities comprises 3.9% of all malignant tumors at the Cancer Registry at Presbyterian Medical Center, and 5.3% of all cancers among males. Tumors in this area not only require aggressive surgical managem-

ent but close cooperation with the radiotherapist in order to maximize the opportunity for cure. Jesse, in 1973, stated, "In most situations the surgeon needs the help of the radiotherapist to eradicate diffuse microscopic disease in the heavily infested neck". Howe-

ver, the need for supplemental radiation therapy extends to the primary lesion in the mouth or pharynx as well, particularly in T<sub>3</sub> and T<sub>4</sub> lesion. Recurrence in the neck after standard radical surgery relates to the possibility of seeding and micrometastases invisible to the surgeon's eye. Recurrence at the primary site relates to deep tumor infiltration via interstitial planes which may occur even when the resection margin appears to be adequate. Inasmuch as radiation therapy to a dose of 5,000 rads. controls subclinical or microscopic disease in 90% of cases, its use should obviously reduce the possibility of recurrence either at the primary site or in the lymph node bearing areas of the neck which are at risk.

Until 1975, except for patients who refused surgery, the management policy for cancer of the oral cavity and oropharynx at Presbyterian Medical Center was surgery alone, or limited preoperative radiotherapy followed by surgery. In T<sub>1</sub> N<sub>0</sub> lesions (Stage I) intraoral resection, or definitive radiation therapy in some cases, was employed. Other lesions generally required a composite resection, that is, either a Commando procedure or a pull-through resection of the primary tumor saving the mandibular arch, or a resection of the intraoral primary with discontinuous neck dissection. Beginning in 1975 combination of

radical surgery and radiation therapy has been a standard policy in the following situations:

- a. When margins around the primary tumor were found to be inadequate ;
- b. When metastases were found pathologically in nodes at 2 or more levels in the neck ;
- c. When connective tissue invasion was present, including extension beyond the lymph-node capsule ;
- d. In multifocal carcinoma in situ.

Further, in recent years we have been routinely employing postoperative radiation therapy in all T<sub>3</sub> and T<sub>4</sub> lesions regardless of a favorable report regarding pathological margins.

In 1981 a preliminary analysis was carried out to determine the results of this new policy, comparing salvage and recurrence rates with historical controls matched by stage. This analysis provided suggestive data indicating that combined therapy improved salvage rates for Stage III and Stage IV lesions. However, the number of patients in the group receiving radical surgery and radiotherapy was too small for statistical evaluation. Three years later the analysis is therefore repeated. Of particular interest are results when the Commando procedure was employed inasmuch as a sufficient experience has now accumulated to allow for statistical analysis.

Table 1. 20 year summary of oral & oropharyngeal cancer

Site	Year					Total
	1963-1966	1967-1970	1971-1974	1975-1978	1979-1982	
Lip	1	8	6	15	8	38
Anterior 2/3 tongue	17	23	35	34	62	171
Gum	8	13	7	23	17	68
Floor of mouth	7	5	10	19	22	63
Oropharynx	12	30	27	48	52	169
Others *	10	10	15	19	33	87
Total	55	89	100	158	194	596**

\* Includes palate, buccal mucosa & odontogenic

\*\* Male 488, Female 108 ( 4.5 : 1 ).

## MATERIALS AND METHODS

Review of 596 new primary lesions of the oral cavity and oropharynx seen during the 20-year period from 1963 until 1982 revealed that the commonest sites were the anterior 2/3 of the tongue and the oropharynx, which comprised 29% and 28% respectively (see Table 1). The age distribution demonstrated the highest incidence among males in the 50-70 age group, nearly two thirds of the cancers occurring in these two decades (Table 2). However, only 153 patients during this analysis actually came to therapy with a curative intent. The majority refused treatment, and many had advanced lesions for whom only palliation could be provided. Of the 153 patients, surgery was employed in 74, combined surgical and radiation therapy was used in 70, and definitive radiotherapy in 9

**Table 2.** 20 years summary of epidermoid intra oral

Sex & age incidence (1963-1982)

	Male	Female	Total
10 - 19	1	3	4
20 - 29	6	3	9
30 - 39	17	3	20
40 - 49	73	9	82
50 - 59	136	16	152 (33.9 %)
60 - 69	124	8	132 (29.4 %)
70 - 79	39	5	44
80 -	4	1	5
Total	400	48	448*

\* 75.2% (448/596) \*\* M:F = 8.3 : 1

**Table 3.** Epidermoid Intra-oral and Oropharyngeal carcinoma  
Patients undergoing definitive treatment

Tx.	Cases
Definitive radiation	9
Definitive surgery	74
Combined therapy	70

cases (Table 3).

The various combinations of surgical technique and radiotherapeutic methodology are shown in Table 4. Cases receiving pre-operative radiation and en bloc resection of the primary site were included in the combined therapy category, but almost all of these patients received radiation therapy before coming to PMC, and presented with residual tumor. "Pull-through" and discontinuous resection was more often possible for smaller tumors, and in fact the "Surgery Alone" category was made up of Stage I and Stage II lesions in 39%, as compared to 21% in the combined management group. (See Table 7). The two Commando groups provided sufficient data for comparison, 46 patients having undergone this procedure in the surgery only group (Table 5) and 41 having undergone this operation in the combined therapy group (Table 6). The recurrence rate at 2 years was analyzed by stage. Survival data at two years were compared for all cases and for the Commando groups alone. The

**Table 4.** Analysis of patients undergoing definitive therapy

A. <i>Definitive radiation</i>	9
B. <i>Definitive surgery</i>	
Local primary resection	16
Pull-through	8
Composite resection	4
discontinuous	46
Commando	74
C. <i>Combined therapy</i>	
Pre-operative radiation	
and en bloc	16
and Commando	2
Composite resection and post-operative radiotherapy	
Discontinuous	2
Commando	41
Radiation to primary & neck surgery	5
Local resection and post-operative radiotherapy	4
Total	153

**Table 5.** Composite resection only ( excluding en-bloc resection )

	Commando	Pull- Through	Discontinuous	Total
Tongue	18	5	1	24
Floor of mouth	10	3	1	14
Gum	7	0	0	7
Fauces & orophx	11	0	1	12
Total	46	8	3	57

**Table 6.** Combined therapy ( excluding en-bloc resection )

	Commando	Pull- Through	Discontinuous	Total
Tongue	12	1	1	14
Floor of mouth	9	1	0	10
Gum	7	0	1	8
Fauces & orophx	13	0	1	14
Total	41	2	3	46

**Table 7.** Clinical stage at operation in determinate cases

	Stage I - II	III - IV
Surgery alone	21 ( 39 % )	33 ( 61 % )
Surgery and radiotherapy	10 ( 21 % )	38 ( 79 % )

causes of failure in the 47 cancer recurrences in this series of 153 patients were studied.

## DISCUSSION

Since the policy to employ post - operative radiotherapy in cases of questionable surgical margins, of multinodal metastasis and of connective tissue invasion was adopted 10 years ago, a suitable number of patients could be compared with historical "controls". This gross comparison is not of statistical value because multiple sites and stages are included and are not matched. Generally, patients receiving combined therapy had more advanced tumor ( 79 % Stage III and IV as compared to 61 % in the group receiving surgery alone ). Any improvement in the postoperative radiot-

herapy group would have additional significance since the distribution of advanced cases placed more favorable patients in the "surgery alone" category.

In Table 4, the combined therapy group includes 16 patients who underwent preoperative radiation therapy followed by en bloc resection. Virtually all of these patients received their radiotherapy before coming to PMC, and presented with residual tumor. Thus, all of these patients had poor prognosis and the surgery was an effort at salvage. It will be noted that in such a situation, we do not employ classical neck dissections or classical Commando procedures, which carry excessive risk of wound breakdown, carotid exposure, and possible carotid rupture. Inclusion of this group of patients with preoperative radiotherapy created an unfavorable bias in the analysis of combined therapy results shown in Table 8. The recurrence rate of 81 % is the result of inclusion of these preoperative radiotherapy cases ; by eliminating these from the data the recurrence rate dropped to 68%. Thus, postoperative radiotherapy caused a decrease in recurrence rate

**Table 8.** Comparison of recurrence in surgery alone vs. combined therapy

	Stage	No. of Pts.	Determinate	Recurrence within 2 years	Recur. rate
Surgery alone	I	8	6	1	16 %
	II	15	13	4	31 %
	III	20	14	7	50 %
	IV	20	14	11	79 %
	Overall			23/47	48.9 %
Combined therapy	I	1	1	0	0 %
	II	13	9	4	44 %
	III	18	17	7	41 %
	IV	22	16	13	81 %
	(Excluding pre-op XRT Stage IV)			11	68 %
Overall			22/43	51.1 %	

**Table 9.** Preliminary survival table: comparison of surgery alone and combined therapy

	Stage	No. Pts.	Determinate	REM	2 yrs.
Surgery alone	I	8	6	5	73.7 %
	II	15	13	9	
	III	20	14	6	
	IV	20	14	1	
Combined therapy	I	1	1	1	54.5 %
	II	13	10	5	
	III	18	17	9	
	IV	22	21	6	

**Table 10.** Comparison of survival in surgery alone vs. combined therapy for Commando procedures

	Surgery cases	Only rem 2	Combined cases	Therapy rem 2
Tongue	18	2	12	5
Floor of mouth	10	1	9	3
Gum	7	2	7	2
Oropharynx and faucial arch	11	3	13	2
Totals and percentage	46	8(17.3 %)	41	12(29.3 %)

from 50 % to 41 % in Stage III lesions and from 79 % to 68 % in Stage IV lesions.

The preliminary survival table is shown in Table 9. There was one surgical death. The overall 2-year disease free survival for cases receiving surgery alone was 45 %; that for patients receiving combined therapy was 43

%. It will be noted that combined therapy offered no improvement for patients with Stages I or II. This probably reflects the unfavorable bias previously mentioned above in the composition of the group of patients receiving combined therapy. On the other hand, a comparison of survival of patients underg-

**Table 11. Causes of failure in 47 recurrent cancers**

Surgery alone	
a) Failure to prescribe post-op XRT	17
b) Lack of patient cooperation	5
c) Distant metastasis	1
Combined therapy	
a) Area at risk not covered by XRT	4
b) Inadequate dose	1
c) Delay in XRT due to post-operative complication	4
d) Tumor behavior	11
e) Inadequate surgical margins	6
f) Lack of patient cooperation	2

oing surgery alone with those receiving combined surgery when, in either case, the procedure employed was a Commando, shown in Table 10, is of significance because most of these patients were moderately or far-advanced cancer cases. Eight of 46 patients receiving surgery alone were free of disease at two years (17.3%). Twelve of 41 patients who received combined therapy were free of disease at two years (29.3%). Although the 2-

**Table 12. Summary of failure**

Preventable (57%)	
Failure to prescribe post-op XRT	17
Radiotherapy planning failure	5
Lack of patient cooperation	7
Technically complex (20%)	
Delayed XRT due to complications	4
Inadequate surgical margins	6
Tumor behavior (23%)	
Aggressive tumor	11
Distant metastasis	1

year period is unfortunately short, inasmuch as most recurrences at the primary site or in the neck occur within this period, the information is of significance for the purposes of this study, in which our principal emphasis is limited to an analysis of control achieved for the cancer in the head and neck (i.e., locoregional control) rather than to long-range survival.

Forty-seven of the 153 patients developed recurrence. Twenty-three of these were in the "surgery alone" group, and twenty-eight in the "combined therapy group" (Table 11).

**Table 8.**

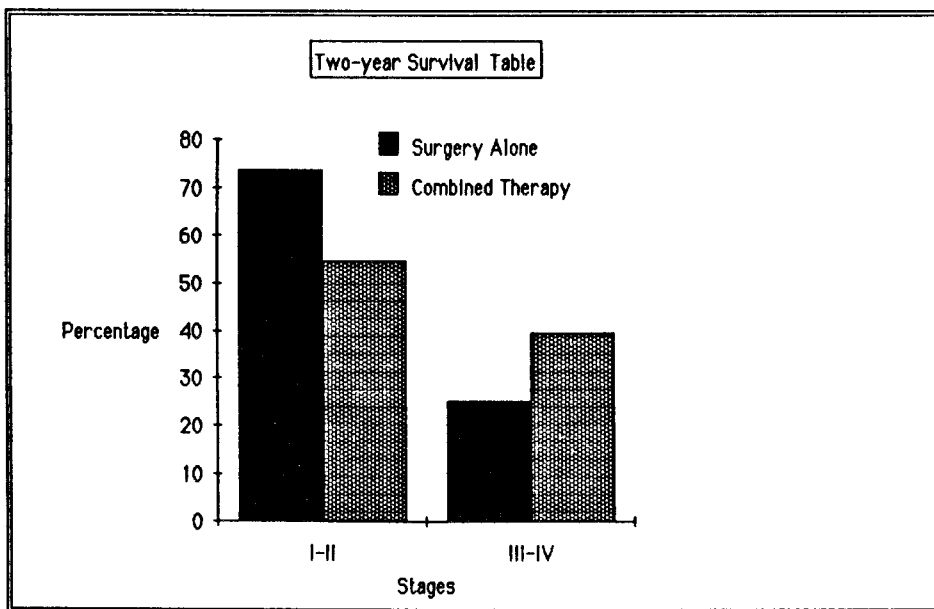
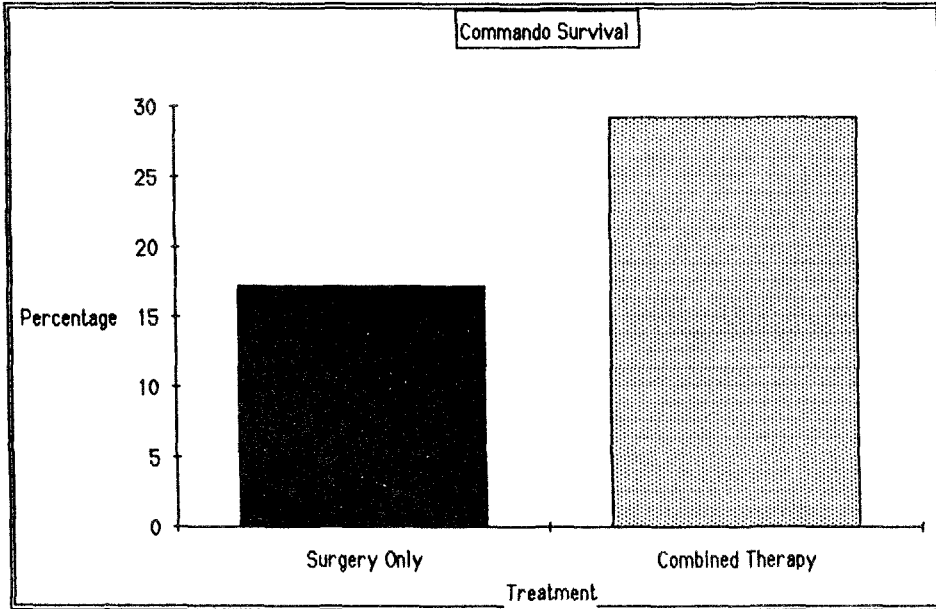


Table 9.



When these are analyzed as to cause it is seen that 57 % were preventable. Postoperative radiotherapy should have been prescribed if criteria set forth earlier in this paper had been followed, in 17 patients, but was not employed. In 5 cases radiotherapy planning was unsatisfactory leading to anatomical failure to cover the area at risk. In 20 % technical complexities were responsible for the failure. In 4 cases radiotherapy was delayed due to surgical complications; in 6 the surgical margins were grossly inadequate. In the remaining 12 cases the cause of failure was felt to be aggressive tumor behavior.

### CONCLUSIONS

1) In the management of epidermoid carc-

inoma of the oral cavity and oropharynx, combined surgery and postoperative radiation reduced the recurrence rate

from 50 % to 41 % in Stage III lesions ;  
from 79 % to 68 % in Stage IV lesions.

2) When the comparison is limited to patients undergoing Commando procedures, the 2 -year disease-free interval is increased from 17.3 % to 29.3 % by the addition of postoperative radiotherapy.

3) Postoperative radiotherapy does not compensate for inadequate surgical margins.

### REFERENCES

- 1) Jesse RH, Lindberg RD and Westbrook KC : *Neck Nodes, in Gilbert H. Fletcher, Textbook of Radiotherapy, 2nd Ed. p. 175, Lea & Febiger, Philadelphia 1973*