

Survival Value of Myocutaneous Flaps in the Management of Epidermoid Carcioma of the Oral Cavity

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구강내 상피암의 치료에서 근피부판이 생존율에 미치는 영향

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=국 문 초 록=

본 논문은 구강암의 근치적 절제술후 결손부위 재건을 위한 근피부판(myocutaneous flaps)이 환자의 생존율에 미치는 의의를 알아보고자, 저자들의 경험을 살펴본 것이다.

1974년부터 1988년까지, 만 15년간 98명의 환자들이 구강 및 구인두 부위에 발생한 암으로 절제술을 받았다. 이 중 14명은 하악골 절제술없이 근치적 복합적 절제술(composite resection)을 받았으며, 4명은 방사선 조사후 재발한 경우로서 경부곽청술없이 광범위 단순절제술(en-bloc resection)만을 시행받았다. 이들을 제외한 근피부판을 사용또는, 사용하지 않은 COMMANDO를 시행받은 84명의 나머지 환자들을 대상으로 여러가지 술식에 따른 재발율 및 생존율을 비교 분석하여보았다.

1) 술기에 있어서 국소 또는, 근피부판을 사용하지않은 표준 COMMANDO술식이 24예, 전두피부판(forehead flap)을 사용하여 재건한 경우가 12예, 후경부피부판(Nape flap)을 사용한 경우가 19예, 근피부판 또는 골근피부판(osteomyocutaneous flap)을 사용한 경우가 27예였으며 두 종류의 피부판 복원을 시행한 경우가 2예였다.

2) 비교정(uncorrected) 2년 무병생존율은 표준 COMMANDO가 14%, 전두피부판을 이용한 COMMANDO가 17%, 후경부피부판 사용 COMMANDO가 35% 이었으며 근피부판을 이용한 COMMANDO에서도 역시 35% 이었다.

3) 병기(stage)에 따른 2년 무병생존율은 제 1병기가 100%, 제 2병기가 45%, 제 3병기가 41% 이었으며, 제 4병기에서는 18% 이었다.

4) 근피부판을 사용한 경우와 조직학적으로 이에 상응하는 제 1대조군, 즉 표준 COMMANDO를 시행했거나 국소피부판(전두피부판 및 후경부피부판)을 사용한 COMMANDO 경우들과 비교하였을 때, 2년 무병생존율은 큰 차이가 없이 대조군 양쪽 모두에서 공히 40% 이었다.

5) 근피부판을 사용한 경우를 제 2대조군, 즉 국소피부판(전두피부판 및 후경부피부판) 복원만을 시행한 경우들과 비교했을 때에도 역시 차이가 없이 대조군 양쪽 모두에서 27%의

2년 무병생존율을 보였다.

6) 근피부판을 사용한 경우를 제 3대조군, 즉 어떠한 종류의 피부판도 사용하지않고 단순한 표준 COMMANDO만을 시행한 경우들과 비교했을 때는 큰 차이를 보였다. 즉, 근피부판을 사용하여 복원했던 경우는 50%의 2년 무병생존율을 보인데 비해, 표준 COMMANDO만을 시행했던 경우는 25%의 생존율을 보였다.

7) 국소재발율은 표준 COMMANDO에서 25%, 후경부피부판 사용 경우에서 26%, 전두피부판 사용경우에서 33%이었으나 근피부판을 사용한 경우는 재발율이 가장 낮아 22%이었다. 이러한 결과들을 병기가 진행된 예(stage III & IV)에서 본다면, 표준 COMMANDO에서 67%가 제3, 제4 병기이었고, 후경부피부판을 사용한 경우는 79%에서 제3, 제4 병기이었다. 전두피부판을 사용한 예에서는 100% 모두가 제3, 제4 병기이었고, 근피부판을 사용했던 경우는 96%에서 제3, 제4 병기이었던 점을 고려한다면 매우 중요한 의미가 있다고 하겠다.

Abstract

This paper is a review of our experience with radical resection for cancer of the oral cavity with particular emphasis upon the value of myocutaneous(i.e., musculocutanous) flaps employed in the surgical reconstruction in patient survival. During the past 15 years, 98 patients underwent resection of cancer arising in the oral cavity and oropharynx. Of these, 14 had composite resections in which the mandible was not sectioned, and 4 underwent en bloc resections without neck dissections in the face of post-radiation recurrence. When these excluded, 84 patients who underwent COMMANDO procedures with or without myocutaneous flaps were suitable for analysis of recurrence and survival according to the various surgical technics employed.

1) According to the surgical technic, there were 24 standard COMMANDO procedures in whom no regional or myocutanous flap was used ; 12 patients who underwent reconstruction employing a forehead flap ; 19 patients in whom a posterior cervical "nape" flap was employed ; 27 patients who underwent myocutaneous or osteo-myocutaneous flap repair ; and two patients who had double flap repair.

2) The uncorrected two-year disease free survival was 41% for standard COMMANDOs, 17% for forehead flap COMMANDOs ; 35% for nape flap

COMMANDOs ; and 35% for myocutaneous flap COMMANDO procedures.

3) The two-year disease-free survival by Stage was 100% in Stage I, 45% in Stage II, 41% in Stage III, and 18% in Stage IV.

4) When myocutanous flaps cases were compared with Group I, comprised of matched historical controls including both Standard COMMANDOs and those who had undergone regional flap repairs (that is, forehead and nape flap COMMANDOs) there was no difference, both groups showing a 40% 2-year disease-free survival.

5) When musculocutanous flap cases were compared with Goup II, which was composed of matched historical controis limited to patients who had undergone regional flap repairs(that is, forehead and nape flap cases only) there was no difference, both groups showing a 27% 2-year desease-free survival.

6) When musculocutanous flap cases were compared with Group III, composed of patients who had undergone classic COMMANDO procedures without any sort of flap repair, there was a striking difference ; the patients undergoing MC flap repair showed 50% 2-year disease-free survival, whereas the classic COMMANDO cases showed a 25% survival free of disease.

7) Locoregional recurrence was also evaluated in the four categories ; for standard COMMANDO

cases it was 25%, for nape flap cases 26% ; for forehead flap cases, 33%, and for the musculocutaneous flap cases, the lowest recurrence rate, 22%. These results are of particular significance in view of the fact that the proportion of advanced cases (Stage III and IV) in each category was 67% of standard cases, 79% of nape flap patients, 100% of forehead flap cases, and 96% of musculocutaneous flap cases.

Reconstruction after resection of lesions in the oral cavity and oropharynx has been a technical challenge ever since the first combined resection of such a lesion with radical neck dissection was performed by Martin in 1942¹⁾. Bakamjian's²⁾ posterior cervical flap in 1965 and McGregor's³⁾ forehead flap in 1973 were major advances, but had technical limitations. In 1977 McCraw⁴⁾ first defined the vascular territories of musculocutaneous flaps. In 1979 Ariyan⁵⁾ applied this principle in devising the pectoralis major flap. In the same year Demergasso⁶⁾ published his technic employing a trapezius myocutaneous flap. The superiority of the myocutaneous(musculocutaneous) flap is well known in that it allows immediate transfer of a skin island supplied by vessels from a muscle which can be transposed in an arc based upon the major vessel supply to that muscle. In the head and neck the myocutaneous flaps most commonly employed are the pectoralis major flap of Ariyan, the trapezius flap of Demergasso, the posterior extension of the trapezius flap described by Mathes and Nahai⁷⁾, and the latissimus dorsi flap, which first developed for breast reconstruction by McCraw.

Obviously the musculocutaneous flap is functionally advantageous in that it allows sparing of the mandibular arch, better dental occlusion, better swallowing and better speech. The hospitalization is generally longer, however, and delay in implementation of post-operative radiation therapy may be a genuine problem in the management of Stage II, III, and IV epidermoid carcinoma of the oral

or oropharyngeal cavities, the questions we would address are :

- 1) Does the use of regional or myocutaneous flaps add to disease-free survival ?
- 2) Does the use of regional or musculocutaneous flaps improve locoregional control ?
- 3) Is there any advantage of musculocutaneous flaps over regional(that is, cervical or forehead) flaps ?

We recently reviewed our experience with 98 procedures for resection of cancer in the oral cavity and oropharynx during a 15 year period(Table 1). The main thrust of this study is to compare the results of a four types of COMMANDO procedures. There were 24 standard COMMANDO procedures, 19 Cervical Flap COMMANDOs, 12 Forehead Flap procedures, and 27 patients who had undergone COMMANDO with musculocutaneous flap repair

Table 1. Summary of experience with radical resection of cancer of oral cavity and oropharynx

Site	Stage					Total
	X	I	II	III	IV	
Gum			3	1	11	15
Tongue	1	4	9	18	7	39
FM*	2	0	3	5	9	19
RMT**				2	5	7
Tonsil				6	9	15
Oropharynx			2	1		3
	3	4	17	33	41	98

*FM= Floor of Mouth

**RMT= Retromolar trigone

Table 2. Summary of surgical procedures employed

Composite	12
Standard COMMANDO	24
Forehead flap COMMANDO	12
Nape flap COMMANDO	19
Myocutaneous/osteomyocutaneous flap COMMANDO	27
Double flap COMMANDO	2
En bloc resection with flap repair	2
Total	98

between 1974 and 1988. This information is summarized in Table 2.

The overall two year disease-free survival was 32%, but varied according to stage from 100% in Stage I lesions to 18% in Stage IV tumors (Table 2 and 3). The comparison of survival according to surgical technic is of no significance, however, inasmuch as the material is not classified by stage of disease in any the groups. All Stage I cases were

Table 3. Two-year disease-free survival by procedure

Procedure	DFS/ #Evaluable	DFS>2
1. Composite resection(with or without nape flap)	2/4	33%
2. Standard COMMANDOS	9/22	41%
3. FF* COMMANDOS	2/12	17%
4. NF**COMMANDOS	6/17	35%
5. Myocutaneous or osteomyocutaneous flap COMMANDOS	8/23	35%
6. En Bloc resections	0/1	0%
Overall	26/79	33%

*FF=Forehead flap **NF=Nape flap

Table 4. Two-year disease-free survival by stage

	Evaluable	DFS>2yr
Stage I	2/2	100%
Stage II	5/11	45%
Stage III	11/27	41%
Stage IV	7/39	18%

Table 5. Two-year disease-free survival by management category in samples matched by 1⁰ site and stage

A. Comparison of myocutaneous flap COMMANDOS with standard COMMANDOS with or without nape or forehead flaps ;	
Myocutanous flap COMMANDOS	40% 2-yr DFS
COMMANDOS with or without NF or FF	40% 2-yr DFS
B. Comparison of myocutaneous flap COMMANDOS with nape and forehead flap COMMANDOS	
Myocutanous flap COMMANDOS	27% 2yr- DFS
Nape and forehead flap COMMANDOS	27% 2-yr DFS
C. Comparison of myocutaneous flap COMMANDOS with standard COMMANDOS (excluding flap cases)	
Myocutaneous flap COMMANDOS	50% 2-yr DFS
Standard COMMANDOS	25% 2yr- DFS

excluded. Further, the 11 cases managed by pull-through, discontinuous or limited resection were excluded. With these exclusions, 84 patients remained who underwent COMMANDO procedures with or without myocutaneous fiaps and were suitable for analysis of recurrence and survival according to the surgical technic employed. Four groups thus emerged : Group I : stanard COMMANDO cases with or without regional flap repair ; Group 2 : forehead and cervical flap COMMANDO cases ; Group 3 : standard COMMANDO cases excluding all falps ; and finally, the Myocutaneous(MC) Flap Group. In each analysis, the patients composing each group to be compared were matched with one another by primary site and TNM stage to insure commonality of factors other than the technic.

Results

Although the number of cases in this series dose

Table 6. Locoregional recurrence according to procedure

	Advanced cases	Known locoregional recurrence
Standard COMMANDO	67%	25%
Nape flap COMMANDO	79%	26%
Forehead flap COMMANDO	100%	33%
Myocutaneous flap	96%	22%
COMMANDO	96%	22%

not permit interpretation as to statistical significance, the comparison of survival in accordance with the technics employed (results summarized in Table 5, sections A, B, and C) is of interest.

1) When the musculocutaneous flap cases (MC Flap Group) were compared with standard COMMANDOs including regional flap cases (Group I) neither advantage nor disadvantage could be demonstrated in each group, the two-year disease-free survival was 40%

2) When the musculocutaneous flap cases were compared with Group 2, COMMANDOs who had undergone regional flap repair using forehead and cervical flaps excluding standard COMMANDOs, no advantage nor disadvantage could be found either. The results demonstrated a 27% disease-free survival in both groups.

3) When the musculocutaneous flap reconstruction cases were compared to the group made up exclusively of standard COMMANDO cases (Group 3), the disease-free 2-year survival was twice as great among patients who had undergone musculocutaneous flap reconstruction. The DFS among musculocutaneous flap cases was 50%, whereas the survival without recurrence among standard COMMANDOs was 25%

The locoregional recurrence rates for standard, nape, forehead flap, and musculocutaneous flap groups were also compared. The locoregional recurrence rate for standard COMMANDOs (in which group only 67% were clinically advanced cancers (i. e., Stage III or IV lesions) was 25%. The rate for nape-flap COMMANDOs (76% of which were advanced cases) was 26%. The rate for forehead-flap COMMANDOs (100% of which were advanced cases) was 33%. The locoregional recurrence rate for cases who underwent COMMANDO with musculocutaneous flap repair (96% of which were advanced) was the lowest of all four groups, that is, 22%.

Discussion

Why should the reconstructive technic influence the results of cancer resection? Obviously these patients have obtained a better functional and cosmetic result, particularly because in most cases the musculocutaneous flap made it unnecessary to sacrifice the arch of the mandible. This data suggests that both regional flaps and musculocutaneous flaps may contribute also to the overall survival of patients with cancer of the oral and oropharyngeal cavities by allowing a better margin of resection, that is, by allowing the surgeon to carry out a more radical extirpation in the knowledge that the defect can be repaired. In our experience, the patients who underwent COMMANDO and musculocutaneous flap reconstruction demonstrated the lowest rate of locoregional recurrence even though 96% of the patients in this category had Stage III IV lesions.

In the surgical resection of cancers arising in the aerodigestive tract of the head and neck, the complexity of anatomical structures (nerves, vessels, organs) precludes wide extirpation to the extent possible in cancers arising in other anatomical sites in the body. The head and neck surgeon will try to obtain a disease-free margin of at least 1.5cm around the invasive tumor, but this is not often possible. One important factor in the mind of the surgeon is his ability to close the defect he is creating. In the standard or classical COMMANDO, he does this by resection of part of the mandibular arch. This allows collapse of soft tissues into the oral cavity or oropharynx, so that the structures of the oral cavity or pharynx can be sutured together without undue tension. The musculocutaneous flap not only provides new tissue to fill the defect and restore epithelial lining of the gullet; it also allows preservation of the mandibular arch in many cases.

Conclusion

In addition to technical benefits to the surgeon and functional benefits to the patient, the use of myocutaneous flaps may contribute to the overall survival of patients with cancer of the oral and oropharyngeal cavities with primary lesions of T2 or greater by allowing a better margin of resection.

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