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Short communication

Audit of the rates of re-excision for close or involved margins in the management of oral cancer

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Abstract

The need for re-excision of close or involved margins after the resection of oral cancer is debatable. This audit comprised 640 consecutive patients over an 11-year period with at least five years' follow up. A total of 213 patients (33%) had resection margins that were clear (5 mm or more), 314 (49%) were close (1 - 4.9 mm), and 113 (18%) were involved (0 - 0.9 mm). Re-excision rates were 7 (2.2%) in the close and 12 (10.6%) in the involved groups. No re-excised close margins contained residual cancer, but four patients had had re-excised involved margins. Local recurrence was 5.2% in clear margins, 10.7% in non-re-excised close margins, and 8.9% in involved margins. Our data suggested that there may be survival benefit in re-excision for patients who have had close and involved margins.

Keywords: Oral cancer; surgical excision; re-operation; recurrence; audit

Introduction

After the resection of oral squamous cell carcinoma (SCC), units have reported different rates for clear margins between 25% - 85%,[1–5] close 35% - 56%,[1,6,7] and involved 1% - 22%.[3] Margins correlated with histological indicators of aggressive disease.[2] Perineural invasion and lymphocytic response are significant independent predictors of local recurrence and overall survival, even when adjusted for marginal status, T stage, or postoperative radiotherapy.[4,5,8] This audit was done to assess close or involved margins, and re-excision rates in our practice.

Patients and methods

Patients who had been operated on with curative intent for oral SCC between 1999 and 2009 at the Aintree Regional Maxillofacial Unit were identified from the oncology database (including patients who had re-excision procedures within three months postoperatively). TNM staging, histological characteristics, treatment, and outcomes were recorded.

Results

Of 640 consecutive patients, 314 (49%, 95% CI 45% to 53%) had close (1 - 4.9 mm) margins, 7 (2.2%, 95% CI 0.9% to 4.5%) of which were re-excised with no residual cancer remaining. There were 113 (18%, 15% - 21%) with involved (0 - 0.9 mm) margins, 12 (10.6%, 5.6% - 17.8%) of which had re-excisions with four of these having residual tumour, one of which had further cancer remaining after

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Table 1
TNM staging, histological characteristics and reasons for re-excision of close and involved margins.

Case No.	Staging	Primary histology			Reason for re-excision
		Invasion	PNI	HMS	
No residual SCC:					
				Close margins:	
1	T1N0M0	No record	Yes	14	Close peripheral margin – aggressive histology
2	T1N0M0	Dyscohesive	No	15	Inability to establish precise topography of nearest margin – severe dysplasia at margin
3	T2N0M0	No record	No	14	SND indicated as 10.3 mm thick so close inferior margin re-excised in same procedure
4	T1N0M0	No record	No	13	Close margin of clinically unsuspected SCC – re-excision to increase security of resection
5	T1N0 - N2b	Dyscohesive	Yes	19	Ipsilateral regional recurrence
6	T1N0 - N1	Dyscohesive	Yes	16	Close margin but pN0 at primary excision – re-excision to increase security of resection
7	T2N0 -N2c	Dyscohesive	Yes	16	Three close mucosal margins and aggressive histology with 2.7 mm thickness
				Involved margins:	
8	T1N0M0	Cohesive	No	18	Involved deep margin and 12.2 mm depth of invasion
9	T4N1M0	No record	No	14	Involved peripheral margin around flap
10	T2N0M0	Dyscohesive	No	16	Involved deep bony margin – additional rim resection
11	T2N0M0	Dyscohesive	No	19	Involved peripheral margin around free flap and N0 status – intention to avoid PORT
12	T1N0M0	Cohesive	No	16	Involved peripheral margin with superficially invasive pattern – Histopathological advice
13	T2N0M0	No record	No	14	Involved peripheral margin – proceed with SND based on clinical appearance / EUA
14	T4N0M0	Dyscohesive	No	13	Involved deep bony margin - close peripheral margin with 12 mm depth of invasion
15	T1NxM0	Dyscohesive	No	16	Involved margins and area of erethyma on inferior aspect of scar noted on follow up
Residual SCC:					
16	T2N0M0	Dyscohesive	No	17	Involved peripheral margin – cut through of a contiguous non distinct 2nd primary
17	T2N0M0	microinvasive	No	15	Involved peripheral mucosal margin
18	T1NxM0	microinvasive	No	15	Involved deep and peripheral mucosal margins
19	T4N2bM0	Dyscohesive	Yes	18	Involved bony margins, peripheral & deep margins - tumour under-staged preoperatively

PNI: Perineural invasion; HMS: Histological malignancy score; SCC: Squamous cell carcinoma; SND: Selective neck dissection; PORT: Post operative radiotherapy; EUA: Examination under anesthetic.

re-excision. All seven cases with close margins and 9/12 cases with involved margins were early pT1/T2 stage disease. TNM staging, histological characteristics, and the basis for re-excision procedures are summarised in Table 1. Adjuvant radiotherapy was given as primary treatment for 19% (41/213) with clear margins, 39% (120/307) for close margins without re-excision, and 66% (67/101) for involved margins without re-excision. Two of the 12 with involved margins, and none of the seven with close margins that had required re-excision, had had primary radiotherapy.

Outcomes of re-excised cases are given in Table 2. All three failures in the re-excised close margin groups were regional recurrences; these patients had had neck dissection and adjuvant radiotherapy with curative intent, and of these two remained alive at five years while the third died within nine months of recurrence at 372 days after primary surgery. In the re-excised involved margin group, one patient developed local recurrence at six months and had a further

Table 2
Outcome of cases with re-excised close or involved margins.

Outcome after re-excision	Patients with primary excision margin who had re-excision	
	Involved (n = 12)	Close (n = 7)
No recurrence and disease-free at 5 years	10	4
Local recurrence	1 (case 8)	0
Regional recurrence	1 (case 8)	3
Distant metastasis	1 (case 19)	0
Treatment intent after recurrence:		
Curative	1 (case 8)	3 (cases 5,6,7)
Palliative	2 (cases 8 & 19)	0
Disease-specific mortality:		
Oral cancer related	2 (cases 8& 19)	1 (case 7)

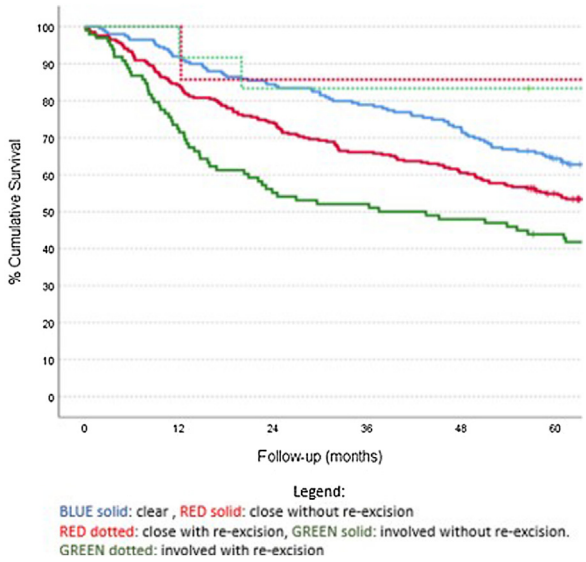

Fig. 1. Overall survival curves by margins and re-excision.

resection but died 607 days after primary surgery. A second patient in this group was treated palliatively for distant metastasis and died 366 days after primary surgery.

Local recurrence rates were 11/213 (5.2%) in those with clear margins, close non-re-excision 33/307 (10.7%), and involved non-re-excision 9/101 (8.9%); overall rates were 10.5% (33/314) for close and 8.8% (10/113) involved ($p = 0.72$, Fisher's exact test). Kaplan-Meier estimates of survival (Fig. 1) after two years from primary surgery were 84% (SE 3%) for those with clear margins, 74% (SE 3%) with close margins without re-excision and 86% (SE 13%) with re-excision, 55% (SE 5%) with involved margins without re-excision and 83% (SE 11%) with re-excision. Corresponding results for five years were 64% (SE 3%), 55% (SE 3%), 86% (SE 13%), 44% (SE 5%), and 83% (SE 11%), respectively. Overall the comparison of survival curves for close and involved margins was significant ($p = 0.003$, logrank test). The comparison of re-excised and non-re-excised for close margins was borderline significant ($p = 0.06$) and for the involved margins, significant ($p = 0.005$).

Discussion

Brandwein-Gensler et al[8] proposed that re-resection was preferable to radiotherapy for inadequate margins. In our practice, radiotherapy is used for aggressive patterns of disease or nodal metastases. We have found relatively higher rates of involved (17.7%) and close margins (49.0%) in comparison with other published series.[1,3,5–7] A difference in survival outcomes between the close and involved groups has also been noted in another recent study,[9] which reflects more advanced staging in the involved margin group as does the difference between re-excised and non-re-excised groups with more advanced staging in the latter. The biology of the tumour is another variable. The stated 95% CI allow better comparisons with other publications, and the results of our audit support similar findings previously published from our unit regarding survival outcomes after oral SCC.[10] Our data suggest that there might be survival benefit in re-excising patients with close and involved margins but this remains controversial,[9] and because there were few re-excision procedures, any conclusions on their potential benefit to reduce local recurrence rates and improve survival must be drawn with caution, and a larger sample is required.

Conflict of interest

We have no conflicts of interest.

Ethics statement/confirmation of patients' permission

The audit was approved by the Clinical Audit Department at Aintree University Hospital. No patient identifying information was submitted.

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