

Intra-oral squamous cell carcinoma in patients under 40 years of age. A report of 13 cases and review of the literature

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Summary—The results of the treatment of 13 patients under the age of 40 presenting with primary intra-oral squamous cell carcinoma have been presented. 31% (four patients) survived 3 years from first presentation and all patients who died had recurrent disease within 12 months of surgery. These figures suggest that younger patients with intra-oral cancer have a prognosis similar to an older, more typical cohort.

Oral cancer accounts for some 2 to 3% of all cancers in most Western countries (Binnie, 1976) and is primarily a disease of the elderly with around 95% of tumours occurring after the age of 45 (Binnie *et al.*, 1972). The vast majority of oral cancers are squamous cell carcinomas and in the past decade or so it has become apparent that there have been certain important changes in the pattern of this disease. It appears that the incidence generally is decreasing (Easson and Palmer, 1976; Robertson *et al.*, 1985) and that the intra-oral distribution of squamous cell carcinoma may too be changing, with floor of mouth cancer becoming relatively more frequent in female patients (Harrold, 1971).

Despite this changing pattern of disease intra-oral squamous cell carcinoma in patients under 40 years of age is still uncommon, but there have been a number of short case reports and reviews of the tumour in younger patients (Vennables and Craft, 1967; Die Goyands and Frazell, 1971; Patel and Dave, 1976; Merrick and Jenson, 1979). Recently two series, of 12 (Carniol and Fried, 1982) and of 36 patients (McGregor *et al.*, 1983), have been published but the larger series comprises patients collected over a 38-year period and both reports record the results of a variety of treatment methods. This paper reviews 13 cases of primary intra-oral squamous cell carcinomas in patients under 40 years of age, all treated by surgery followed by postoperative radiotherapy.

Materials and methods

All patients included in this series were treated at the Plastic Surgery Unit, Canniesburn Hospital during the last 10 years. All patients were treated primarily by surgery followed by postoperative radiotherapy and have been followed up for a minimum of 2 years.

Results

The results are summarised in Tables 1 and 2.

Patient characteristics

The patients' ages ranged from 33 to 39 years with a mean of 35.6 years; 10 were male and 3 female. Six were edentulous.

Nine patients were moderate drinkers, 2 were confirmed alcoholics and 2 were non-drinkers. Eleven of the 13 regularly smoked cigarettes.

Surgical procedures

All of the patients had surgical removal of their primary tumour. Of the 13, 9 had some form of mandibulectomy as part of the resection, varying from a hemimandibulectomy to excision of a small portion of the alveolar crest and lingual plate. In addition all patients had some form of neck dissection, although in one case this was clearance of only the submandibular triangle.

Postoperative radiotherapy

All patients had radiotherapy at a variable time following surgery. Usually this was between 4 and 8 weeks postoperatively, the majority of patients receiving up to 6000 CGY over a 6 to 8 week period.

Tumour characteristics

The anatomical location of the tumours is indicated in Table 1. Nine of them were primarily of the floor of mouth, 3 were in the retromolar trigone and one small tumour involved only the lateral margin of tongue.

Six of the 13 neoplasms were 4 cm or greater in their maximum diameter, six tumours were less than 4 cm but more than 2 cm and one tumour was 2 cm in its maximum diameter.

Subsequent progress

Nine patients had recurrences at the primary site within a year, the shortest interval being 3 months after the initial surgical resection (Table 2). All died of their disease within 2 years of first presentation. The 4 patients without local recurrence have survived.

Pathological findings

All tumours were confirmed as primary squamous cell carcinomas arising from the overlying oral epithelium. One striking feature common to all of them was their apparent ability to invade on a wide front with small tumour islands, composed perhaps of only two or three cells, often only seen in small parts of the tumour front. In several cases this pattern of invasion varied quite markedly from the bulk of the tumour which would mainly appear to be a well differentiated squamous cell carcinoma.

Gross destructive bone involvement was not a major feature. In some cases prominent periosteal new bone formation was noted in advance of the tumour front. In four cases there was early superficial involvement of the mandible and in these cases tumour recurred within 16 months and the patients died within 2 years.

Perineural involvement, although it was noted, was not a striking feature of these tumours and did not appear to be a prognostic indicator. Similarly spread to regional nodes did not necessarily adversely affect the prognosis (Table 2). Four of the nine patients who died had no histological evidence of neck lymph node disease and two of the four survivors had one lymph node with secondary tumour although in both cases the deposit was small. Extra-capsular tumour spread in lymph nodes was not observed in any case.

Incomplete resection was noted on pathological examination of the resection specimen in one case. Twelve of the 13 patients had the surgical resection margins reported as free from tumour, though 5 of the 9 who died had tumour close to the soft tissue resection margin. Typically this margin was loose connective tissue (Fig. 1), almost certainly marking a surgical plane. The remaining four patients who died had extensive soft tissue involvement of salivary gland and muscle. In each survivor the tumour was excised with a wide margin and muscle constituted the bulk of this clearance edge.

Discussion

The results of this study are disappointing from a therapeutic point of view in that of the 13 patients

Table 1

<i>Number</i>	<i>Age</i>	<i>Sex</i>	<i>Size of Lesion</i>	<i>Site</i>	<i>Smoker</i>	<i>Dental Status</i>	<i>Alcohol</i>
1	34	F	<2 cm	Lateral tongue & floor of mouth	Yes	dentate	No
2	33	F	4 × 2 cm	Retromolar trigone	No	dentate	No
3	34	M	3 × 2 cm	Floor of mouth	Yes	dentate	Yes
4	39	M	3 × 2 cm	Retromolar trigone	Yes	edentulous	Yes
5	34	M	4 × 3 cm	Anterior floor of mouth and ventral tongue	Yes	dentate	Yes
6	39	M	4 cm	Retromolar trigone	No	edentulous	Yes
7	35	M	2 × 1 cm	Floor of mouth	Yes	dentate	Yes
8	36	F	3 × 0.5 cm	Anterior floor of mouth	Yes	edentulous	Yes
9	35	M	7 cm	Anterior floor of mouth	Yes	edentulous	Alcoholic
10	36	M	>4 cm	Lateral tongue & floor of mouth and tonsil	Yes	edentulous	Alcoholic
11	38	M	2.5 × 1.5 cm	Floor of mouth	Yes	partially dentate	Yes
12	33	M	>4 cm	Floor of mouth	Yes	partially dentate	Yes
13	37	M	2 × 1 cm	Lateral tongue	Yes	edentulous	Yes

Table 2

No.	Neck Dissection	Node Status	Bone Resected	Tumour in Bone	Interval before recurrence (in months)	Survival
1	Unilateral functional	0 Neg.	None			A & W 2 years
2	Unilateral functional	0 Neg.	None			A & W 4 years
3	Unilateral radical	1 Pos.	None			A & W 2 years
4	Unilateral functional	1 Pos.	Yes	None		A & W 3 years
5	Left radical right functional	0 Neg.	Yes	Early lingual plate	12	Died of Disease 16 months
6	Unilateral radical	2 Pos.	Yes	Early alveolar	9	Died of Disease 11 months
7	Unilateral radical	0 Neg.	Yes	None	6	Died of Disease 21 months
8	Submandibular triangle	0 Neg.	Yes	None	3	Died of Disease 10 months
9	Bilateral functional	2 Pos.	Yes	Early lingual palate	9	Died of Disease 1 year
10	Unilateral functional	1 Pos.	Yes	None	8	Died of Disease 10 months
11	Unilateral radical	1 Pos.	Yes	Early alveolar	9	Died of Disease 15 months
12	Unilateral functional	3 Pos.	None		5	Died of Disease 2 years
13	Unilateral	0 Neg.	Yes	None	9	Died of Disease 15 months

only four (31%) survived 2 years from first presentation of the tumour. These figures are, however, comparable with those described by Slotman *et al.*, (1983) who recorded a 27% 2 year survival for their patients under 45 years of age. Vennables and Craft (1967) recorded a 36% survival at 5 years.

The results are also very similar to those reported for patients of all ages with the same stage of disease (Pindborg, 1980). This similarity would suggest that the concept of Slotman *et al.*, (1983) that oral cancer in a young population is a more aggressive disease is not true.

Our figures are at great variance with those of McGregor *et al.*, (1983) who describe 26 of 36 young patients as being disease-free at 2 years. The major difference between the two studies concerns tumour size at presentation. McGregor *et al.*, (1983) reported 18 patients with T1 lesions and 12 with T2 lesions. Only one patient in our study had a neoplasm 2 cm or less, with six T3 lesions and six T2 tumours. The poor survival rate for large tumours has previously been reported in young patients by Patel and Dave (1976) with no patients in their series surviving 5 years. There are nevertheless certain similarities between this study and that of McGregor *et al.*, (1983). Both studies have demonstrated that if patients survive 2 years disease-free the chance of recurrence becomes small. Our experience has also been that if there is recurrence

it usually occurs locally and shortly after initial treatment. It is also important to note that in our study recurrence shows little response to additional therapy.

A second important difference is the site of primary neoplasm. In our study the bulk of tumour was recorded as floor of mouth in most cases while other studies indicate lateral margin of tongue as the principal site of origin. It may be that this difference indicates a difference in the clinical recording of data or highlights a group of tumours occurring at a separate anatomical location and having a distinct pathological behaviour. However, these differences certainly reinforce the need for accurate recording of the main site and involved sites in studies of oral cancer particularly when the results of treatment modalities are being compared between centres.

The histological findings which are of interest and which may have surgical relevance are that despite a general appearance of differentiation there was a consistent pattern of almost single cell or small islands of tumour infiltration. These islands were poorly differentiated and in most cases extended quite close to the deep margin of resection. Additionally in this group of patients and probably in oral cancer generally, it would appear to be the adequacy of excision of the primary site which is the single most important factor in prognosis, and



Fig. 1

Figure 1—Advancing edge of squamous cell carcinoma less than 2 mm from resection margin. H & E $\times 60$.

excision margins should be particularly generous (perhaps 2 cm) in loose connective tissue sites.

Conclusions

It would appear from this study that young patients with oral cancer do not generally behave differently from similar stage matched lesion in older patients. No specific prognostic indicators are apparent in

this group but as local recurrence is the major problem extra care should be taken to ensure adequate margins, especially in anatomical areas of loose connective tissue.

Acknowledgements

We would like to thank Mr I. A. McGregor and Mr D. Soutar for permission to publish these cases.

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