THE ROLE OF POSTOPERATIVE RADIATION THERAPY IN EARLY STAGE TONGUE SQUAMOUS CELL CARCINOMA WITH MINOR ADVERSE FEATURES
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Objective: The standard treatment of early stage squamous cell carcinoma (SCC) of the tongue - T1-T2, N0 is usually surgery without adjuvant postoperative radiation (PORT). There is unclarity regarding the role of PORT in patients with minor adverse features. We reviewed our experience in order to clarify this issue.

Methods: Retrospective analysis of 48 patients diagnosed with SCC of the tongue, between 2005-2012. All patients had a T1-2, N0 disease, and were treated with complete resection of the tumor and elective neck dissection. The following were defined as minor adverse features (MAF): perineural invasion, perivascular invasion, close margins <5mm, depth of invasion (DOI) >5mm, and poor differentiation. Disease outcome in terms of disease-free survival (DFS), disease-specific survival (DSS) and overall survival (OS) and the effect of PORT were analyzed using the Kaplan-Meier method and log-rank test.

Results: The median age was 59.4 (±17.5). Male female ratio was 1:1. Mean follow-up time was 55 months. 31 patients were diagnosed with T1 and 16 with T2 disease. 24 patients had at least one minor adverse feature (perineural invasion - 8, perivascular - 1, close margins - 13, DOI - 18, poor differentiation - 5). PORT was given to 8 patients, 7 with MAF. 40 patients were treated solely with surgery, of them 17 patients with MAF.

Survival analysis demonstrated an improved DFS in patients with MAF treated with PORT (p=0.01). Among patients with MAF, no significant difference was found in DSS and OS between patients treated with PORT and patients treated by surgery alone.

Patients with and without MAF who were treated by surgery alone had similar outcomes. Since, almost none of the patients without MAF underwent PORT, the efficacy of PORT in this group is still questionable.

Conclusion: Based on our experience, it seems that PORT can improve disease outcome in patients with early SCC of the tongue presenting with minor adverse features. The role of PORT in early tongue SCC without MAF is still to be clarified.
Background:
AJCC T1 stage oral tumour is generally regarded as tumour with good prognosis, hence, it is commonly treated with surgical modality alone. There are many adverse prognostic features (APF) that can result in worsening of the outcome of the tumour; these include tumour thickness, perineural invasion, lymphovascular invasion, poor differentiation, close or involved margins and infiltrative margins. There are no clear guidelines to clinicians currently as to when to escalate treatment for patients with T1 oral tumour.

Aim:
To investigate the influence of the histological adverse features of T1N0 oral SCC (OSCC) on patients outcome and provide a guideline on escalation of treatment with adjuvant radiotherapy.

Methods:
Retrospective analysis of clinicopathological data extracted from the Sydney Head and Neck Cancer Centre Database between 1987-2013. Search is limited to oral tongue and floor of mouth, as these subsites has better prognosis compared to other subsites. Univariable survival analysis was performed by using the Kaplan Meier method.

Results:
133 patients with T1N0 OSCC are identified, with mean age of 60.7 years (range: 29.8 - 90.1 years) and median follow up of 3.1 years. Of these, 12 patients received adjuvant radiotherapy, hence excluded from the study. Of this, 12 patients have no APF, 24 have one APF, 28 have two APF, 39 have three APF and 18 have four or more APF. Kaplan Meier analysis on disease specific survival (DSS) suggests worsening survival with increasing number of APF, but did not reach statistical significant differences (p=0.23). Patients with 4 or more APF have 5 year DSS less than 70%, compared with patients with three or less APF. Base on this findings, patients are divided into two groups - low risk group (3 or less APF, n = 103) and high risk group (4 or more APF, n = 18). The DSS rate in low risk group was statistically significantly better compared to the high risk group (90% vs 69%, p = 0.039). This group also has better local control at 3 year, though did not reach statistically significant differences (91% vs 80%, p = 0.226).

Conclusion:
This retrospective analysis suggests that patients with T1N0 oral tongue and floor of mouth SCC with four or more histological adverse features has statistically significant worse outcome, with less than 70% DSS rate. Given the commonly accepted threshold of 20% risk prior to consideration for adjuvant radiotherapy, we proposed that patients with T1N0 oral tumour with four or more APF should be considered for adjuvant radiotherapy.
S145 PATTERN OF CERVICAL LYMPH NODE METASTASIS IN LOCALLY ADVANCED MANDIBULAR GINGIVO-BUCCAL SULCUS SQUAMOUS CELL CARCINOMA

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**Background:** Lymph Node metastasis in primary oral cancer is an important factor that determines the prognosis and survival. It has been shown to occur in predictable manner involving lymph nodes at levels I, II, III and IV. Locally advanced gingivo-buccal sulcus (GBS) carcinoma, a common disease in the Indian subcontinent, can involve bone and/or soft tissues at variable depths. It may present with clinically N0 status but has shown increased chances of loco-regional failure despite radical therapy. Whether the pattern of lymph node involvement remains predictable even in locally advanced GBS cancer or is altered due to variable depth of tissue involvement, needs to be addressed in order to establish guidelines for conservative or extensive clearance of cervical lymph nodes. This study is aimed to assess the pattern of cervical lymph node metastasis in locally advanced GBS cancer and its association with clinico-pathologic variables

**Materials and methods:** Prospective study of clinico-pathologically proven locally advanced GBS squamous carcinoma cases. All cases with lateralized, operable disease requiring enblock composite resection with clearance of level I to V cervical lymph nodes along with the parotid nodes and facial nodes were included in the study. The number and level of the positive nodes, extra-capsular spread, perineural invasion and lymphovascular tumor emboli were the clinico-pathological variables. The specimens were orientated for proper identification of lymph node levels and were grossed as per British College of Pathologist guidelines. Based on the thickness the tumors were divided into 3 categories:

Category I: tumor confined to mucosa and submucosal tissue

Category II: tumor infiltrating buccinator muscle but not the overlying skin

Category III: tumor with gross infiltration of skin/oro-cutaneous fistula

**Results:** So far 56 cases have been included in the study out of 238 cases of oral cancer that presented to our institution during January 2010 to December 2012. There were 15 cases in category I, 18 cases in category II and 23 cases in category III. The pattern of nodal involvement was predictable in Category I with involvement of level Ia and Ib in all cases. The involvement of supra-mandibular facial nodes and parotid nodes were 26% and 13% respectively. The cervical metastasis was confined to level I to Level III in this category. In category II the incidence of involvement of lymph nodes at level IV was higher compared to Category I although involvement of facial and parotid nodes was comparable. In category III multiple levels were involved including level V (18%). Although, in category III it was not possible to isolate supra-mandibular facial nodes in all cases due to direct tumor infiltration the incidence of metastasis to parotid nodes was 34%. It was seen that more the distance of tumor from skin surface, more is the predictability of lymph node metastasis

**Conclusion:** GBS cancer infiltrating buccinator and/or skin can involve multiple levels of cervical nodes. Parotid nodal involvement is high in locally advanced GBS carcinoma especially when skin is involved. Further studies are need with larger sample in justifying radical lymph node dissection in such cases
Importance: Oral cavity squamous cell cancer (OCSCC) is treated primarily with surgery, either as a single modality or with adjuvant radiation or chemoradiation. Hospital readmissions result in substantial and potentially avoidable cost and influence hospital payment under the terms of the Patient Protection and Affordable Care Act. There is a paucity of data on hospital readmission and mortality within 30 days of surgery for OCSCC. Identification of risk factors for readmission would allow interventions aimed at decreasing readmission to target high-risk patients.

Objective: Report 30-day unplanned hospital readmissions and mortality following OCSCC surgery and determine factors associated with readmission and mortality.

Methods: Retrospective analysis of patients with OCSCC in the National Cancer Data Base (NCDB). Unplanned hospital readmission and mortality within 30 days of surgery for OCSCC were calculated. Univariate and multivariate analysis of patient, disease, and treatment factors associated with readmission and mortality were performed.

Results: 22,718 patients treated with surgical excision between 2003 and 2011 were identified. Unplanned 30-day readmission rate was 3.2% and 30-day mortality rate was 0.9%. Patients who underwent excision classified as radical were more likely to be readmitted (4.5%) than those who underwent local or wide excision (2.4%, p < 0.0005), and patients with stage III or IV OCSCC (4.4%) disease were more likely to be readmitted than those with stage I or II disease (2.7%, p < 0.0005). In multivariate analysis, factors independently associated with unplanned readmission included radical excision (OR 1.57, 95% CI 1.17-2.10), stage IV disease (OR 1.40, 95% CI 1.10-1.78), male gender (OR 1.21, 95% CI 1.02-1.44), and longer post-operative length of stay (OR 1.008 per additional day, p = 0.003). Patient age, race, and comorbidity index, treatment with neck dissection, and type of treating facility were not independently associated with differences in readmission (p > 0.05). Thirty day mortality was associated with radical excision (OR 1.90, 95% CI 1.07-3.38) and stage IV disease (OR 3.39, 95% CI 2.03-5.66).

Conclusion: Risk factors for readmission and death within 30 days of surgery among patients undergoing surgical treatment for OCSCC have been identified. Efforts to decrease hospital readmission and mortality may be more effective if they target high risk patients using the risk factors reported here.
EFFECTIVENESS OF PRIMARY SITE RESECTION IN ORAL CAVITY AND OROPHARYNGEAL RESECTIONS: DOES METHOD OF MARGIN EVALUATION AFFECT LOCOREGIONAL CONTROL AND OVERALL SURVIVAL?

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Introduction: Nearly all cases of operable oral cavity cancer and many cases of oropharyngeal cancer are managed by primary surgery. Critical to avoiding local recurrence and death is the need to completely extirpate the lesion at the time of primary resection. In spite of continued advances in surgical management, the rate of positive margins on final pathological evaluation continues to be high. This project evaluates the effectiveness of primary surgical resection of oral cavity and oropharyngeal cancer when a standardized approach is used for margin evaluation.

Methods: Retrospective review, academic head and neck surgical service, and approval provided by the Institutional Review Board of Saint Louis University. One hundred twenty-three consecutive patients with oral cavity or oropharyngeal cancer treated at Saint Louis University were evaluated for the following: histology, tumor stage and size, presence of perineural or lymphovascular invasion, presence of nodal disease, extracapsular spread, the distance of the tumor from the surgical margin (ink on tumor, >5 mm, <5 mm), and whether the patients had additional resections based on the findings at frozen section. In most cases, frozen section was performed with the surgeon reviewing with the pathologist regarding where on the specimen the frozen sections should be taken. Positive margins on frozen section nearly always resulted in further resection. Long-term disease control including local, regional, or distant recurrence was evaluated with the aim of determining whether the distance of the margin from the tumor and method of analysis had an impact on outcomes.

Results: In 100 out of 123 cases, when frozen section margins were obtained from the main specimen, there was agreement between frozen section and final pathology in 96% of cases. In the 20 patients who had frozen sections taken from the tumor bed, there was 100% agreement. Of the 100 patients who had margins determined from the resection specimen, 20 were noted initially to have positive margins; of the 20 from the surgical bed, 4 had initial positive margins. The overall local recurrence rate was 16.2% (20 patients), and 14 of these patients were in the <5 mm margin group (70%); 10 have died. Four of these patients were in the positive resected to negative group, and all have died. Only one patient each in the >5 mm negative group and the persistently positive group had a local recurrence; both patients remain alive. Median overall and disease-free survival in months as stratified by margin >5 mm and negative, <5 mm and negative, <5 mm and additional tissue taken to negative, positive resected to negative, and persistently positive were: 39.94 and 39.14, 32.86 and 27.27, 33.24 and 26.89, 43.02 and 39.46, 32.13 and 25.75, respectively.

Conclusion: A tumor resection margin of >5 mm as determined from the resected specimen was the best predictor of local control. Margins <5 mm predicted for local failure. Re-resection of an initially positive margin may result in reasonable disease control. Sampling from the resected specimen is a reliable predictor of ultimate local control and should become the standard.
**Background.** Squamous cell carcinoma of oral cavity and oropharynx (SCCOCOP) has been reported with limited survival and disease-free periods in intermediate and even in early stages. Prognostic factors have not been elucidated clearly. The AJCC staging system, although of widespread use and value, does not predict accurately the oncologic outcomes. This study was done to analyze clinic and histopathology prognostic factors related to these malignancies.

**Methods.** Retrospective analyses of patients who presented to the Head and Neck department in the Instituto Nacional de Cancerología from 1997 to 2012, was performed. Inclusion criteria were: available clinical charts and histopathology slides; clinical and biopsy proven diagnosis of SCCOCOP, and complete treatment with curative intention. Surgical margins were considered "positive" when tumor was found at <5mm from the border of the surgical specimen, at the time of frozen section; "close" when lesion was found from 5 to 10mm from the tumor edge, and "negative" when tumor was found >1 cm from the lesion edge. The AJCC staging system (6th edition) was used; and pattern of invasion, lymphocytic infiltrate and perineural or perivascular invasion were evaluated additionally. Primary endpoints were disease-free (DFS) and overall (OS) survivals. Differences in survival were determined using the log-rank test, and survival curves were generated using the Kaplan-Meier method. The significance level was set at p value of 0.05. All factors with p values lower than 0.1 in the univariate analyses were included in the Cox model.

**Results.** Six hundred thirty four patients were included in our analyses. Mean age was 59.1 years (SD 12.9, range 17-105). Mean tumor size measured in histological sections was 34.6 mm (SD 15); 499 patients (78.7%) had the tumor epicenter located in the oral cavity and 135 (21.3%), in the oropharynx. One hundred thirty six (21.5%) patients had T3, 222 (35%) T4, and 48 (7.3%) T4b tumors. Three hundred twenty seven (51.5%) cases were N+. Median follow-up period was 7.8 years; median OS and DFS were 5.11 years and 4.5 years, respectively. Significant factors in the bivariate analyses were age, T, N classification, Body Mass Index (BMI), smoking and alcoholic habits, subsite in the retromolar trigone and floor of the mouth, surgical margins, perineural invasion, infiltrative pattern or invasion (islands borders), and non-initial surgical treatment. By multivariate analyses: T classification, floor of the mouth subsite, perineural invasion and infiltrative pattern of invasion (islands borders), were factors associated to DFS (model p<0.0001). T and N classifications, alcoholism, and surgical margins were factors associated to OS (model p<0.0001). Considering histopathology factors only: perineural invasion and infiltrative (islands borders) pattern of invasion were independent prognostic factors regarding OS (model p<0.0001).

**Conclusion.** Margins status and T classification, although significant, do not predict accurately oncologic outcomes in SCCOCOP. Perineural invasion and infiltrative pattern of tumor invasion are significant prognostic factors, and should be considered in confirmatory studies.
Objective: Health-related quality of life (HRQoL) prognosticators are vital considerations for treatment decision-making of head and neck cancer patients. This cross-sectional study aimed to identify potential socio-demographic and clinical prognosticators of HRQoL in head and neck cancer patients in a developing country.

Methodology: The Functional Assessment of Chronic Illness and Treatment -Head and Neck (FACIT-H&N)-V4 in Urdu language was administered through face-to-face interviews among a consecutive clinical convenience sample of 361 head and neck cancer patients in three identified tertiary care settings in Karachi, Pakistan. Socio-demographic details were obtained from patients whereas clinical details were extracted from their medical records. Data were statistically tested by using general linear modeling through multivariate analysis of variance (MANOVA) and regression modeling to identify the potentially influencing prognosticators.

Results: The current on-going treatment status, advance tumor stage (III&IV) and carcinoma of larynx / pharynx had the strongest negative impact on patients HRQoL, with a statistically significant decrement in FACIT summary scales (effect size >0.15). Moderate clinical prognosticators of HRQoL included palliative care whereas moderate socio-demographic prognostic variables included marital status, employment status and age (effect size >0.06 - 0.15). Weak clinical prognosticators of HRQoL included tumor stage, whereas socio-demographic factors with a small effect size (>0.01 - 0.06) included gender, education level and ethnicity.

Conclusion: This study reports 12 socio-demographic and clinical prognosticators, that have a significant negative impact on HRQoL of head, and neck cancer patients, and that should be considered during treatment decision-making by multidisciplinary teams for Pakistani head and neck cancer patients and also in future HRQoL studies conducted in other developing countries.
CANCER RECURRENCE REDUCTION WITH MOHS SURGERY FOR ORAL CANCER - A 6 YEARS MULTICENTRIC EXPERIENCE
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Objective: To compare recurrence rates for oral cancer treated by frozen section technique (Mohs margins) versus conventional surgery. Secondary endpoints were length of surgery, length of hospitalisation and complication rates.

Methods: In this multicenter retrospective charts study, we compared cancer recurrence rate for all patients treated for oral cancer with Mohs procedure (treated between 2007-2013) to patients treated with conventional technique (control group, 2002-2007). Patients without recurrence had to have at least one year of follow up to be included. We defined local recurrence as new proven pathological biopsy at the same site of the primary surgery within its first two years.

Results: After applying inclusion criteria, we had a total of 60 patients treated by Mohs surgery and 60 patients treated with conventional procedure for their oral cavity cancer. Mean age was 61 vs 60 years old in Mohs versus Control group (p = 0,329) with similar pathology diagnosis (squamous cell carcinoma in 97% and 95%, respectively, p = 0,32). Patients had similar cancer stages: 0-I (19 vs 15), II-III (23 vs 27) and IVa-IVc (18 vs 17) in Mohs vs Conventional group (all p > 0,05). Patient follow-up was 858 days (IC 95% 683 - 1083) for Mohs technique versus 1650 days (IC 95% 1282 - 2018 days) for conventional technique. Clear margins > 2 mm at the final pathology report were achieved statistically more often with 88% vs 80% (p = 0.030) between Mohs and Conventional surgery. Moreover, we had a statistically significant decrease in recurrence rate with 13,33 % in Mohs group compared to 28,33% in control group (p = 0,032). However, time before recurrence was shorter with Mohs surgery (173 days, IC 95% 90-256 days) compared to Control group (299 days, IC 95% 200-398 days). Patients treated with Mohs surgery were hospitalized for a shorter period of time (11 vs 16 days p = 0,041) with complication rates similar in both groups (44,23 vs 46,66% p= 0.399). Mohs surgery had a tendency toward a decrease in blood loss (249 cc vs 340 cc, p = 0.054) and a statistically significant shorter time of nasal tube feeding (10,8 vs 14,14 days, p = 0.049). Even if supplementary margins are required more often (because the first margins were positive) (0.763 vs 0.164, p < 0.0001), duration of the surgery was shorter with Mohs technique (373 minutes vs 466 minutes, p = 0.016).

Conclusions: A significant benefit in favour of Mohs surgery is demonstrated by a reduction in cancer recurrence rate compare to conventional surgery. Moreover, time of hospitalisation, time of surgery and the length of nasal tube feeding were all statistically significantly shorter than conventional surgery. Clear margins were achieved more often with Mohs technique versus traditional surgery. Complete frozen section of the specimen for oral cavity cancer seems to offer numerous benefits compared with conventional surgery.