

# Relationship Between Diagnostic Delay and Stage of Disease in Oral Cancer Patients

1. Afsheen Maqsood 2. Mirza Mohammad Shakir 3. Anwar Ali 4. Yasmin Hashim

1. Lecturer of Oral Pathology 2. Asstt. Prof. of Oral Surgery 3. Assoc. Prof. of Oral Surgery 4. Dr. Ishrat-ul-Ebad  
Institute of Oral Health Sciences, Karachi 4. Asstt. Prof. of Pathology, Sindh Medical College, Karachi.

## ABSTRACT

**Background:** In spite of the belief that cancer mortality can be reduced if lesions are detected, diagnosed and treated at an early stage. There is a concurrent increase in advanced head and neck cancer patients, because of delayed in medical consultations.

**Objectives:** The objective of this study is to determine an association of staging and diagnostic delay in oral cancer patients.

**Study Design:** Descriptive study.

**Place and Duration of Study:** This study was conducted at the Dow Diagnostic & Research Laboratory (DDRL) of the Ojha Campus, Dow University of Health Sciences from Jan 2009 to April 2011.

**Materials and Methods:** The information is collected from the record files of DDRL of OJHA campus DUHS. Two hundred and seventy nine patients with an oral cancer are included in the study.

**Results:** With descriptive statistics, OSCC is mostly found at 4<sup>th</sup>, 5<sup>th</sup> and 6<sup>th</sup> decades of life, with diagnostic delay of  $\geq 6$  months. OSCC is mostly seen in males than in females whereas; Well differentiated squamous cell carcinoma is a common finding in both males and females, with the largest lesion being size 12 cm in size. Buccal mucosa is a commonly affected site in both genders. OSCC is mostly seen in males than in females.

**Conclusion:** Our findings highlight the importance of early detection and systemized collection of patients verbal statements regarding their initial symptoms of oral cancer.

**Key Words:** Oral cancer; Diagnostic Delay; Early detection.

## INTRODUCTION

Squamous cell carcinoma (SCC) accounts for more than 90% of all malignancies affecting the oro-facial regions. High level of 5-year survival rate upto 80% is investigated when diagnosed in early stages, and comparatively 60% survival rate in metastatic lesions. The advantage of early diagnosis not only increases the survival rate but also enhances the sufferer quality of life by induction of less destructive, damaging and disfiguring interventions.<sup>1</sup> Advanced oral cancers are mostly due to delay in diagnosis. Inherent alterations in tumor and time interval are the two established causes. Cancers in oral cavity may be symptom less at the initial stages.<sup>2</sup> About 40% patients with oral cancer presented with stage 3 and stage 4.<sup>1</sup> The delay was due to patients rather than clinician delay. Patients either delayed looking for support and start self-remedies and discuss their symptoms to family or friends.<sup>3</sup> Investigators around the globe showed poor prognosis of cancer in young individual than old patients. Younger ones should be positively predisposed by community awareness.<sup>4</sup> Last twenty years has seen increased occurrence of advanced stage cancer in oral cavity has been observed.<sup>3</sup> Extensive management is required in advanced stage oral cancer which increases morbidity and mortality after intervention. A delay in pursuing care could partly be described by tumor associated reasons such as the location of the tumor and the nature of symptom experienced by the patients. In

addition, socio-demographic variables, such as socioeconomic class were found to effect patient delay.<sup>5</sup> Current cancer Strategies and a general review have highlighted the matter of fast recommendation and the cancer delay group. Llewellyn et al.<sup>4</sup> stated instructive stages and low socioeconomic position are responsible for late pursuing a medical consultation. Scott et al. similarly establish that low socioeconomic status groups notices oral cancer mostly in an advanced stage<sup>6</sup>. However, resourceful screening by general dentist the most rational group to screen for oral cancer is a substantial step forward in the efforts to decrease morbidity and mortality causing from oral cancers. Diagnostic delays in oral cancer have been categorized as “patient delay” or “delay by patients” (the period between the patient with initial appointment to a medical consultant concerning a symptom), and “provider/professional delay” or “delay by the clinicians” (the period from the patients with initial appointment to a medical consultant and the final pathological opinion).<sup>7</sup> Continuity of care depends upon the communication among providers furnished by the dental record, particularly in settings where several practitioners are providing care for the individual patient. It has also been recognized that the maintenance of complete and accurate records is a prerequisite for the assessment of the quality of care delivered, and such records provide a basis for the evaluation of the outcome of treatment. The problem of the validity of the medical history recorded in the dental

record has been documented, and indications of other dental record deficiencies have been noted<sup>12</sup>. \*The principal goal of the present study is to inspect the delay in diagnosis and severity of oral cancer to govern which justification is satisfactory.

## MATERIALS AND METHODS

The samples were collected from the archive of the Dow Diagnostic & Research Laboratory (DDRL) of the Ojha Campus, Dow University of Health Sciences. All patients were investigated in a retrospective manner by an extensive chart review. Sex, Age, Location, Tumor size, Delay in diagnosis were compared and then they were analyzed to those in the existing literature. The data was collected from the year Jan 2009 to April 2011 from the files of histopathology division. Total of 279 oral squamous cell carcinoma cases were included in

this study. Malignant tumors were classified through TNM staging

All OSCC patients from the medical record of DDRL of both sex and all age groups were included in the study. Cases were excluded when the patient file is not located and when information is lacking in the file.

The data was analyzed by SPSS version 16. Descriptive and cross tabs statistics were used to investigate the patients age, sex, tumor site, diagnosis and diagnostic delay and their factors were compared with previous studies.

## RESULTS

Two hundred and seventy nine patients were selected from the record of DDRL (Dow Diagnostic and Research Lab) Ojha campus. 54 (18.0%) cases experienced a diagnostic delay. Among 279, 246 (82%) have no data of diagnostic delay recorded.

**Table No.1 Diagnostic delay in Months**

| Diagnostic delay in months                        | 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 10 | 12 | 18 | 24 | 48 | Total    |
|---------------------------------------------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----------|
| Well differentiated Squamous cell carcinoma       | 01 | 04 | 06 | 02 | 00 | 08 | 01 | 03 | 03 | 04 | 01 | 01 | 01 | 35 Cases |
| Moderately differentiated squamous cell carcinoma | 01 | 02 | 00 | 04 | 01 | 01 | 00 | 00 | 00 | 03 | 01 | 01 | 00 | 14 Cases |
| Poorly differentiated squamous cell carcinoma     | 00 | 01 | 00 | 00 | 01 | 01 | 00 | 00 | 00 | 02 | 00 | 00 | 00 | 05 Cases |
| Total no of cases                                 | 02 | 07 | 06 | 06 | 02 | 10 | 01 | 03 | 03 | 09 | 02 | 02 | 01 | 54       |

**Table No.2: Diagnostic delay in months correlated with gender**

| Diagnostic delay in months | Male | Female | Total |
|----------------------------|------|--------|-------|
| 1 month                    | 1    | 1      | 2     |
| 2 months                   | 3    | 4      | 7     |
| 3 months                   | 4    | 2      | 6     |
| 4 months                   | 4    | 2      | 6     |
| 5 months                   | 1    | 1      | 2     |
| 6 months                   | 6    | 4      | 10    |
| 7 months                   | 0    | 1      | 1     |
| 8 months                   | 1    | 2      | 3     |
| 10 months                  | 3    | 0      | 3     |
| 1 year                     | 5    | 4      | 9     |
| 1.5 year                   | 2    | 0      | 2     |
| 2 years                    | 1    | 1      | 2     |
| 4 years                    | 0    | 1      | 1     |
| Total                      | 31   | 23     | 54    |

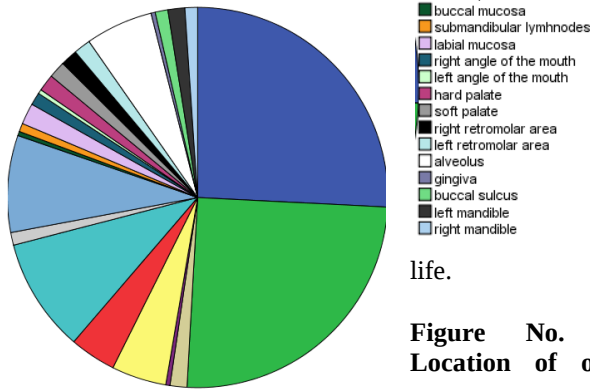
One seventy seven (177) patients were male and one hundred and two (102) patients were female. In males 31 cases have diagnostic delay with most common of 6 months to 1 year delay. In females 23 cases have diagnostic delay with common of 2 months, 6 months and 1 year delay. The most common site of tumors in both males and females was buccal mucosa with total of 103 and 39 cases respectively. Well differentiated

squamous cell carcinoma was a common diagnosis in both males and females have accounting for 118 and 70 cases respectively, whereas moderately differentiated SCC were 49 and 22 cases respectively, and poorly differentiated SCC was diagnosed in 5 and 7 cases respectively, verrucous carcinoma have seen in 4 cases only in males and schwannoma has seen 1 case in females only. Mild dysplasia was discernable have in 1 and 2 cases in males and females respectively.

**Table No.3: Descriptive analysis of diagnosed cases**

| Diagnosis                                         | Mean    | N   | Std. Deviation |
|---------------------------------------------------|---------|-----|----------------|
| well differentiated squamous cell carcinoma       | 6.2340  | 188 | 6.14169        |
| moderately differentiated squamous cell carcinoma | 5.8732  | 71  | 6.48940        |
| poorly differentiated squamous cell carcinoma     | 6.0833  | 12  | 7.41569        |
| Schwannoma                                        | 8.0000  | 1   | .              |
| verrucous carcinoma                               | 4.5000  | 4   | 4.12311        |
| mild dysplastic                                   | 14.6667 | 3   | 3.05505        |
| Total                                             | 6.2079  | 279 | 6.26568        |

Diagnostic delay was commonly found at 40 years of age. Among them 6 months delay is common. Well differentiated SCC is mostly commonly seen with diagnostic delay and maximum tumor size was 12 cm. Most commonly OSCC was found at 4<sup>th</sup>, 5<sup>th</sup> and 6<sup>th</sup> decades of



life.

**Figure No. 1:**  
**Location of oral cell carcinoma**

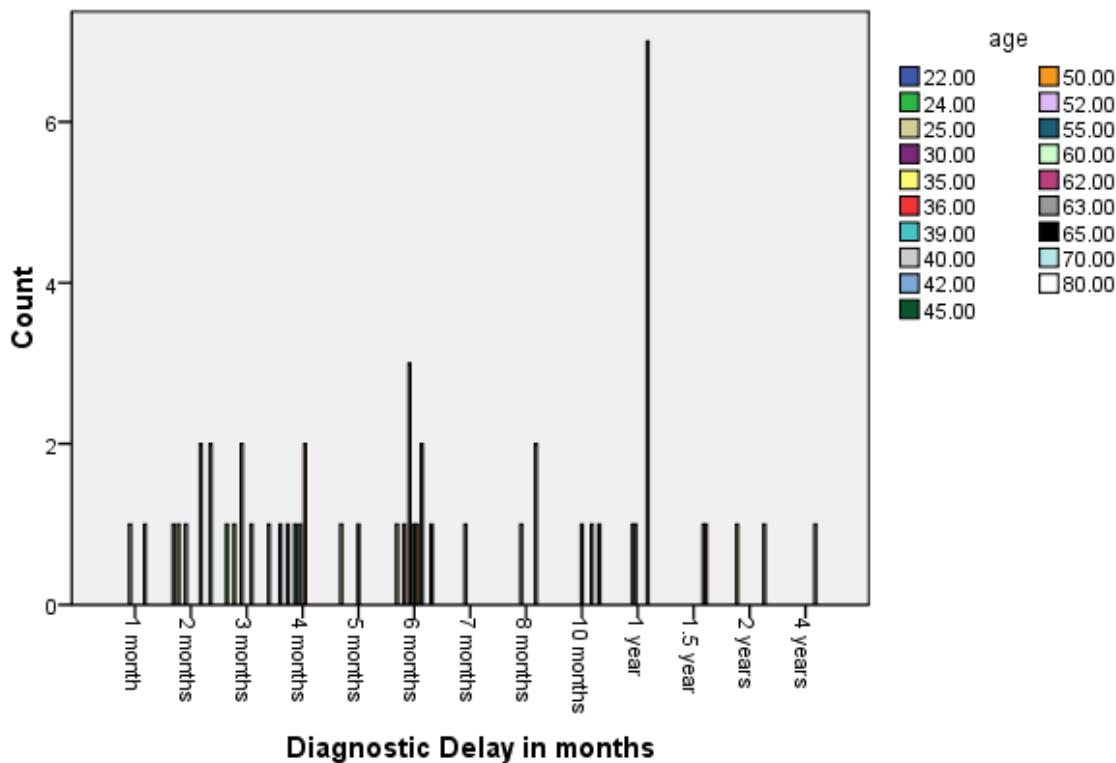
carcinoma

## DISCUSSION

Diagnostic delay of head and neck cancers comprises of delay by the patient itself and delay by the professional to provide an ultimate diagnosis.<sup>8</sup>

Two hundred and seventy nine patients are selected from the record, among them fifty-four patients(19.3%)

of OSCC with diagnostic delay are enlisted in the study. Patients with large tumors had less specialist delay than those with small tumors.<sup>9</sup> In current years, modern, sophisticated tools were used for finding of oral malignancies; but the role of general dental practitioner is of paramount importance in initial detection of oral cancer. Both patient reluctance and lack of general dental practitioner vigilance are classically responsible for delayed detection of oral malignancies. Scott and colleagues; found OSCC in upto 30% of patients with delayed pursuing professional advice. Poor understanding of treatment and fear of cancer was the two main factors involved. Hence, before looking professional advice, patients mostly start self-medication and limits their communication with nearby relatives.<sup>1,14</sup> Men were at higher risk of having aggressive tumor when compared to women. However, early stage tumor was higher in females as reported earlier. In our sample, males are more commonly affected than females. Age at diagnosis was not associated with stage of oral cancer, Diagnostic delay is commonly found at 40 years of age and most commonly OSCC is found at 5<sup>th</sup> and 6<sup>th</sup> decades of life. Age and gender are not establish to be prognostic, consistent with previous finding.<sup>2</sup> Women reported longer evolution time than men which is in agreement with other studies. Taking into account gender differences are detected in this sample.<sup>11</sup>



**Figure No. 2:** Showing diagnostic delay in months correlated with age

Tumors situated in the posterior area of the mouth have been remarked late.<sup>6,18,19</sup> This statement is approved by our study that buccal mucosa is a most common site affected in both genders. No substantial relationship among the age, gender, alcohol abuse, tumor site and patient delay is shown by researchers.<sup>8</sup> In our society, females do not generally practice the potential risk habits such as tobacco smoking whereas these habits are common in males. Common risk behavior in females particularly in the rural area is betel quid chewing. The habit is usually started at a young age<sup>13</sup>. Larger size oral malignancies were detected prior than reduced size lesions. Our study has shown that OSCC ranges from 0.09 to 12 cm, with the diagnosis of well differentiated OSCC. In patients with reduced size tumors, the delay in diagnosis is associated with professional delay, other studies shown that there was no remarkable relationship among tumor size and diagnostic delay.<sup>8</sup> The absence of significant association between age and specialist delay in our study is consistent with the findings from other studies. Neither education nor sex was associated with specialist delay.<sup>9</sup> Wildt *et al.* found a significant positive correlation between older age and increased professional delay.<sup>10</sup>

Conversely, studies from united states investigated that general dental practioner are not skilled about oral cancer detection and avoidance.<sup>4,15,16</sup> Consultation postponed by the patient due to their reluctance for more than 3 months is associated with delay by patients.<sup>5,17</sup> In this retrospective study there are problems of incomplete Data. Detailed clinico-pathologic information need to be recorded. The incomplete files could be upgraded by eventual assessment. Guggenheimer, 1989 stated that oral carcinoma were asymptomatic initially and their signs are mostly misunderstood as other dental problems. Other studies highlighted a factor of deprivation. Due to low socioeconomic status, people are less liable to observe oral cancer in its initial stages and delay pursuing health care consultation.<sup>6,20</sup> Another potential problem is the validity of the crucial delay data which is largely dependent upon subject recall.<sup>10</sup> Because of the retrospective design we cannot make associations between history, examination, sign and symptoms.

The percentage of patient delay of more than 6 months in the present study is nearly equal to that reported in UK by Cooke and Taper- Jones. It has been observed that access to treatment in a public hospital is often delayed and it cannot be attributed only to the patient.<sup>11</sup> As oral cancer patients liked to discuss their symptoms to nearby relatives therefore general public education is beneficial. They need to be helped and educated patient for early consultant advice. The majority would advise earlier for oral cancer if they had been prior educated.<sup>3</sup> Stress and tobacco smoking may be accountable for longer diagnostic delay.<sup>4</sup> Our results shows that

diagnostic delay is severely blamed for head and neck cancer patients, and proper history record of first recognition of symptoms is not optimal. It is our duty that the recording of clinical stages will should be undertaken at the first hospital appointment and make cancer registry.

**Limitations:** The limitation of the study is improper analysis of diagnostic delaying, due to consultant invigilance.

The regularity of patients dental attendance, was not an inclusion criteria in the present study.

In the study, duration of delay in diagnosis cannot be clearly defining weather it was due to patient or professional delay. The data is retrospective, therefore it was difficult to contact patients and gather information about the symptoms first noticed.

## CONCLUSION

The association between staging and duration of delaying in early diagnosis is hampered due to aggressive behavior of oral cancer. In this research there is no association existing between duration of diagnostic delay and advanced stage of oral cancer due to complex clinical behavior, some tumors remain silent until they get advanced. We recommend that professionals must improve approaches to entice and reassure patients to go through routine dental checkup. Finally highlighting on self-examination for early oral lesions can similarly attain certain achievement. However further analysis would be necessary, as present consideration of diagnostic delay in oral squamous cell carcinoma is unsatisfactory.

## REFERENCES

1. Lopez-Jornet P, Camacho-Alonso F. New barriers in oral cancer. Patient accessibility to dental examination – a pilot study. *Oral Oncol* 2006;42(10):10225.
2. Scott SE, Grunfeld EA, McGurk M. The idiosyncratic relationship between diagnostic delay and stage of oral squamous cell carcinoma. *Oral Oncol* 2005;41(4):396–403
3. Rogers Simon N, Vedpathak Sherya V, Lowe Derek. Reasons for delayed presentation in oral and oropharyngeal cancer: the patients perspective. *Br J Oral and Maxillofacial Surg* 2010.
4. Llewellyn CD, Johnson NW, Warnakul-asuriya S. Factors associated with delay in presentation among younger patients with oral cancer. *Oral Surg Oral Pathol Oral Radiol Endod* 97 2004: 707–713.
5. Tromp DM, Brouha XD, De Leeuw JR, Hordijk GJ, Winnubst JA. Psychological factors and patient delay in patients with head and neck cancer. *Eur J Cancer* 2004, 40:1509-1516.

6. Rogers SN, Pabla R, McSorley A, Lowe D, Brown JS, Vaughan ED. An assessment of deprivation as a factor in the delays in presentation, diagnosis and treatment in patients with oral and oropharyngeal squamous cell carcinoma. *Oral Oncol* 2006;43:648-655.
7. Diz Dios P, Padrón Gonzalez N, Seoane Leston J, Tomás Carmona I, Limeres Posse J, VarelaCentelles P. "Scheduling delay" in oral cancer diagnosis: a new protagonist. *Oral Oncol* 2005;41:142-146.
8. Onizawa K, Nishihara K, Yamagata K, Yusa H, Yanagawa T, Yoshida H. Factors associated with diagnostic delay of oral squamous cell carcinoma. *Oral Oncol* 2005;39:781-788.
9. Brouha XD, Tromp DM, Koole R, Hordijk GJ, Winnubst JA, de Leeuw JR. Professional delay in head and neck cancer patients: analysis of the diagnostic pathway. *Oral Oncol* 2007;43:551-556.
10. Allison P, Franco E, Black M, Feine J. The role of professional diagnostic delays in the prognosis of upper aerodigestive tract carcinoma. *Oral Oncol* 1998;34:147-153.
11. Evandro Neves Abdo<sup>1</sup>, Arnaldo de Almeida Garrocho<sup>1</sup>, Alvimar Afonso Barbosa<sup>2</sup>, Enaldo Lopes de Oliveira<sup>2</sup>, Lyzio França-Filho<sup>2</sup>, Sérgio Luiz Coelho Negri<sup>2</sup>, et al. Time elapsed between the first symptoms, diagnosis and treatment of oral cancer patients in Belo Horizonte, Brazil, *Medicina Oral, Patología Oral y Cirugía Bucal*, 2007.
12. Hand JS, Reynolds WE. Dental record documentation in selected ambulatory care facilities. *Public Health Rep* 1984;99(6):583-90.
13. Muhammad KR, Samia M, Atif M, Farida M, Kanwal MA, Maria M, et al. Chewing of Betel, Areca and Tobacco: Perceptions and Knowledge Regarding their Role in Head and Neck Cancers in an Urban Squatter Settlement in Pakistan, *Asian Pacific J Cancer Prevention* 2006;7:95-100.
14. Smith LK, Pope C, Botha JL. Patients' help-seeking experiences and delay in cancer presentation: a qualitative synthesis. *Lancet* 2005;366:825-31.
15. Yellowitz JA, Horowitz AM, Drury TF, Goodman HS. Survey of U.S. dentists' knowledge and opinions about oral pharyngeal cancer. *JADA* 2000;131:653-61.
16. Horowitz AM, Siriphant P, Sheikh A, Child WL. Perspectives of Maryland dentists on oral cancer. *JADA* 2001;132:65-72.
17. Facione NC, Miaskowski C, Dodd MJ, Paul SM. The self reported likelihood of patient delay in breast cancer: new thoughts for early detection. *Prev Med* 2002, 34, 397-407.
18. Hollows P, McAndrew PG, Perini MG. Delays in the referral and treatment of oral squamous cell carcinoma. *Brit Dent J* 2000;188(5):262-5.
19. Kowalski LP, Franco EL, Torloni H, Fava AS, de Andrade SJ, Ramos G, et al. Lateness of diagnosis of oral and oropharyngeal carcinoma: factors related to the tumour, the patient and health professionals. *Oral Oncol* 1994;30(3):167-73.
20. Brouha XD, Tromp DM, de Leeuw JR, Hordijk GJ, Winnubst JA. Laryngeal cancer patients: analysis of patient delay at different tumor stages. *Head Neck* 2005;27(4):289-95.

**Address for Corresponding Author****Dr. Mirza M. Shakir**E-Mail [m.shakir@duhs.edu.pk](mailto:m.shakir@duhs.edu.pk)Address 130/3, P Street Khayaban-e-Sehr  
Phase-VII Dha Karachi