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Original Article

Pathology Section

# A Cross-sectional Study on Spectrum of Oral Cavity Lesions with Emphasis on Soft-tissue Tumours: A Lesser Dealt Domain

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## ABSTRACT

**Introduction:** The oral cavity, the beginning of the digestive system, has diverse lesions affecting it other than Oral Squamous Cell Carcinoma (OSCC). Soft-tissue Tumours (STT) are uncommon lesions. Overlapping of the signs and symptoms in diverse conditions creates significant problems for reaching their definitive diagnosis. Histopathological Examination (HPE) plays a central role in giving their final diagnosis. Assessment of the clinical features, histopathology, along with Immunohistochemistry (IHC), helps in reaching an accurate diagnosis in these cases, which further aids in the proper management of the patient.

**Aim:** To study the spectrum of oral cavity lesions and tumours with emphasis on STT.

**Materials and Methods:** A retrospective cross-sectional study was conducted at the Department of Pathology and Otolaryngology, Dr. Ulhas Patil Medical College, Jalgaon, Maharashtra, India included the oral cavity lesion samples received over two years (from January 2021 to December 2022) in the histopathology section of a Medical College in Maharashtra, India. A total of 170 cases were included in the study. Complete clinical information including age, sex, anatomical location, clinical diagnosis, and histological subtypes were compiled. The HPE diagnosis were classified into four categories-Non neoplastic, Benign, Epithelial Proliferative lesions {including viral/Human Papillomavirus (HPV) related}/Intraepithelial neoplastic lesions/Precursor or Pre-malignant, and malignant with special emphasis on STTs found. The data was statistically analysed and the results were presented as percentages. Full details of the soft-tissue lesions were recorded, entered into an Excel sheet, and studied for the percentage-wise distribution of various recorded parameters.

**Results:** A total of 170 cases were found. Male:female distribution was 2.78:1, and most patients were in the seventh decade, n=38 (22.35%). The most common lesions other than SCC, n=110 (64.71%) found were mucocele, chronic inflammatory lesion and wart. The Buccal Mucosa/Gingivo-buccal Sulcus (GBS) were the most commonly involved site, n=82 (48.24%). Malignant lesions were more common in the sixth and seventh decades, with a male preponderance of 2.71:1. The uncommon STTs found were-Benign: Haemangioma/pyogenic granuloma (n=2), a Schwanomma, and a Proliferative Fasciitis (PF); Malignant: two fibrosarcomas and a high-grade sarcoma. All three malignant STTs were found in males of the sixth decade involving the buccal mucosa.

**Conclusion:** Among the variety of lesions found in the oral cavity, HPE facilitates the recognition of the STT, especially the malignant ones, aiding in proper management. Being an extremely uncommon entity at this site, the documentation of these findings is of utmost importance.


**Keywords:** Fasciitis, Haemangioma, Mouth neoplasm, Sarcoma, Soft-tissue neoplasms, Squamous cell carcinoma

## INTRODUCTION

The oral cavity is the first portion of the alimentary canal or the beginning of the digestive system. It consists of the vestibule and the oral cavity proper. Oral cancer {Oral Squamous Cell Carcinoma (OSCC)} has been one of the most common cancers in India [1,2]. It is the commonly studied lesion at this site.

Due to the variety of tissues present at this site, such as oral mucosa epithelium, mandible and maxilla bones, minor salivary glands, and odontogenic tissue, there is a diverse and broad spectrum of lesions affecting it [3,4]. Salivary Gland Tumours (SGT) are generally uncommon at this site. The conditions included are fibroma, squamous papilloma, granular cell tumour, haemangioma (including lobular capillary haemangioma-pyogenic granuloma), lipoma [4], Pleomorphic Adenoma (PA), and neurofibroma [5]. Malignant entities are fairly uncommon. These entities are not extensively studied but have similar clinical presentations. Assessment of the clinical features, histopathology, along with IHC, helps in reaching an accurate diagnosis in these cases [6-8]. Often, it is difficult to obtain adequate biopsies from oral cavity lesions due to the challenging location for biopsy and inadequate biopsy techniques. Specimens taken from the oral cavity and surrounding structures often pose diagnostic challenges despite evidence that the accuracy of diagnosis directly correlates with biopsy size [9].

There are several studies from around the world on the prevalence of biopsied oral mucosal lesions, like the study by Ali M and Sundaram D in 2012, but these studies do not represent all the lesions seen by clinicians as many soft-tissue lesions are not biopsied [10]. Other studies, such as the one by Byakodi R et al., have determined the overall prevalence of oral soft-tissue lesions found during clinical examination and followed by biopsy when necessary, but more studies are needed in our region [11]. STT exhibit a wide variety of histopathological features, and some tumours share subtle similarities. Distinguishing between different tumour types based on microscopic examination remains a diagnostic challenge for pathologists. Further research is needed to refine diagnostic criteria and improve accuracy in identifying specific STT [12].

Hence, the intermingling of clinical, radiological, and histological features of benign, malignant, and non malignant lesions makes HPE with supportive investigations like IHC almost essential in many cases [13]. Histologic grading of sarcomas by the Fédération Nationale des Centres de Lutte Contre le Cancer (FNCLCC) system was developed as a predictive and prognostic marker in facilitating treatment decisions [14].

Thus, this work studied the spectrum of oral cavity lesions and tumours, including the histopathological and clinical features encountered at a Medical College, with an emphasis on STT so that more research

about oral STT is available to facilitate the recognition of oral STT. This study also emphasises describing the frequency and histopathological findings of various oral STT presenting to a medical college.

## MATERIALS AND METHODS

This was a retrospective cross-sectional study carried out at the Department of Pathology and Otolaryngology , Dr. Ulhas Patil Medical College, Jalgaon, Maharashtra, India over a period of two years, from January 2021 to December 2022, after obtaining Ethical Committee Clearance (letter no. 09/2020).

**Inclusion and Exclusion criteria:** The oral cavity lesion samples that were received in the pathology department for histopathological examination during the duration of January 2021 to December 2022 were included. Lesions in bone, oropharynx, and nasopharynx, submandibular or major salivary glands, and repeated biopsies of already diagnosed cases were excluded.

### Study Procedure

The relevant clinical information, which included age, gender, and site, was carefully recorded and entered into an Excel sheet, and the percentages were calculated. The specimens and Haematoxylin and Eosin (H&E) stained slides were studied, and diagnosis were classified according to the World Health Organisation (WHO) classification of tumours of the oral cavity and mobile tongue (2022, 5th edition) [15], and Oral Cavity-Rosai and Ackerman's Surgical Pathology [5]. The lesions were divided into four major categories based on neoplastic features and microscopic invasion-non neoplastic, benign, epithelial proliferative lesions, intraepithelial neoplastic lesions/precursors or pre malignant, and malignant.

## STATISTICAL ANALYSIS

The data were statistically analysed and tabulated into an Excel sheet. The distribution of variables is expressed in terms of percentages and frequencies.

## RESULTS

A total of 170 cases fulfilled the criteria and were included in the study. When the histopathological classification of the cases was studied, common lesions other than SCC (n=110, 64.71%) found were mucocele, chronic inflammatory lesion, wart (each n=7, 4.12%), and dysplasia-mild/low grade (n=6, 3.53%) [Table/Fig-1].

In the clinical profile of the cases, it was found that the maximum number of patients were in their seventh decade (n=38, 22.35%), with ages ranging from 13 years to 77 years [Table/Fig-2]. The number of patients in the fourth, fifth, and sixth decades were slightly less {4th and 5th decade: 35 (20.59%); 6th decade: 36 (21.18%)}, with the majority of patients falling in the 31 to 70 years age group 144 (84.71%) [Table/Fig-2].

| S. no. | | Histopathological diagnosis | Incisional biopsy | Excisional biopsy | Total cases n (%) |
|---|---|---|---|---|---|
| A. | Non neoplastic16 (9.41%) | | | | |
| | 1. | Mucocele | 5 | 2 | 7 (4.12%) |
| | 2. | Abscess | 1 | 0 | 1 (0.59%) |
| | 3. | Chronic inflammatory lesion | 6 | 1 | 7 (4.12%) |
| | 4. | Fordyce disease | 0 | 1 | 1 (0.59%) |
| B. | Neoplastic 154 (90.59%) | | | | |
| B1. | Benign 7 (4.12%) | | | | |
| | 1. | Haemangioma/Pyogenic granuloma | 2 | 0 | 2 (1.18%) |
| | 2. | Schwanomma | 0 | 1 | 1 (0.59%) |
| | 3. | Ameloblastoma | 1 | 0 | 1 (0.59%) |
| | 4. | Pleomorphic Adenoma (PA) | 1 | 0 | 1 (0.59%) |
| | 5. | Dermoid cyst | 0 | 1 | 1 (0.59%) |
| | 6. | Proliferative fascitis | 0 | 1 | 1 (0.59%) |
| B2. | Intraepithelial squamous proliferative lesions/oral intraepithelial neoplasia, HPV related oral lesions 21 (12.35%) | | | | |
| | 1. | Wart | 6 | 1 | 7 (4.12%) |
| | 2. | Squamous papilloma | 2 | 0 | 2 (1.18%) |
| | 3. | Dysplasia- mild/low grade | 5 | 1 | 6 (3.53%) |
| | 4. | Dysplasia- moderate/high-grade | 3 | 0 | 3 (1.76%) |
| | 5. | Dysplasia- severe/high-grade | 3 | 0 | 3 (1.76%) |
| B3. | Malignant 126 (74.12%) | | | | |
| | 1. | Squamous cell carcinoma – microinvasive | 2 | 0 | 2 (1.18%) |
| | | Squamous cell carcinoma – invasive | 53 | 57 | 110 (64.71%) |
| | 3. | Verrucous carcinoma | 4 | 2 | 6 (3.53%) |
| | 4. | Basaloid SCC | 1 | 0 | 1 (0.59%) |
| | 5. | Adenosquamous carcinoma | 1 | 0 | 1 (0.59%) |
| | 6. | Adenoid cystic carcinoma | 1 | 0 | 1 (0.59%) |
| | 7. | Undifferentiated carcinoma | 0 | 1 | 1 (0.59%) |
| | 8. | Malignant round cell tumour | 1 | 0 | 1 (0.59%) |
| | 9. | Fibrosarcoma | 1 | 1 | 2 (1.18%) |
| | 10. | High-grade sarcoma | 1 | 0 | 1 (0.59%) |

**[Table/Fig-1]:** Histopathological classification of the cases N=170.

A male preponderance of 2.78:1 (M:F=125:45) was noted [Table/Fig-2]. The buccal mucosa/GBS was the most commonly involved site 82 (48.24%), followed by the tongue-lateral border and dorsum 42 (24.71%) [Table/Fig-2].

Malignant lesions were more common in the sixth and seventh decades, with a male preponderance of 2.71:1 (M:F=92:34). They most commonly involved the buccal mucosa/GBS 64/126 (50.79%). Non neoplastic lesions were most common in the third decade 7/16 (43.75%), with males more affected (M:F=3:1), and the palate and buccal mucosa/GBS were involved most frequently 8/16 (50%) [Table/Fig-2].

Among the soft-tissue lesions found, the most common benign tumours were haemangioma/pyogenic granuloma 2 (1.18%), and the malignant ones were fibrosarcoma 2 (1.18%). The soft-tissue lesions found included benign tumours-haemangioma/pyogenic granuloma 2 (1.18%), schwannoma, and PF 1 (0.59%) each [Table/Fig-3]. The malignant STT included fibrosarcoma 2 (1.18%) and high-grade sarcoma 1 (0.59%) [Table/Fig-3]. All three malignant lesions were found in males in the sixth decade involving the buccal mucosa [Table/Fig-3].

Histopathology was helpful in the diagnosis of these STTs. Microscopy of schwannoma showed proliferating spindle cells with cellular and hypocellular areas, and Verocay bodies [Table/Fig-4a,b]. A case of PF presenting as a polypoidal mass at the edge of an ulcerative SCC showed a characteristic histopathological picture with plump spindle cells-fibroblastic and myofibroblastic, in sheet-like areas with large basophilic cells resembling ganglion cells without mitosis and necrosis [Table/Fig-5a,b]. Histopathology in both fibrosarcomas showed a spindle cell tumour of fibroblasts, with herringbone and storiform pattern, high cellularity, and frequent mitosis with CD 34 and Smooth Muscle Actin (SMA) positivity on IHC [Table/Fig-6a-e]. An incision biopsy of the high-grade sarcoma case showed a malignant spindle cell tumour with high cellularity, marked pleomorphism, plenty of mitosis {>20/10 successive High Power Fields (HPFs)}, and necrosis (<50% necrosis). As the patient was lost to follow-up, a specific diagnosis couldn't be given.

## DISCUSSION

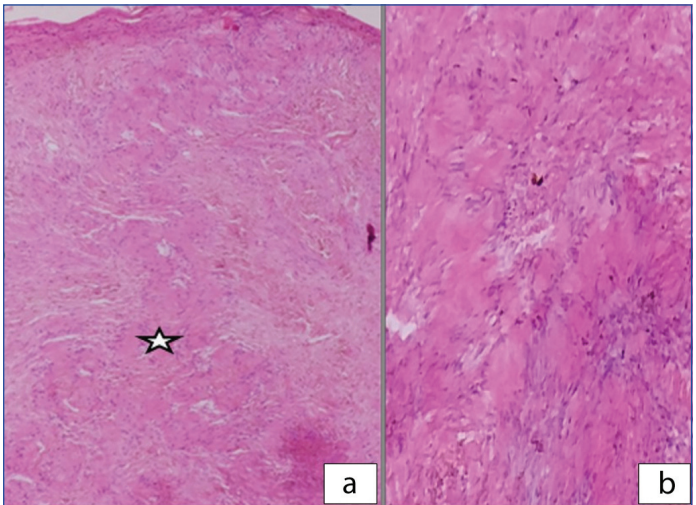
A wide variety of lesions originating from different tissue types are found in the oral cavity. Though clinically the most important is oral cancer-SCC, most of the lesions have only a few clinical presentations, making histopathological evaluation an essential tool [16,17]. Soft-tissue tumours, especially the malignant ones, even when uncommon lesions to be found in this region, should be identified.

| S. no. | Feature | Non Neoplastic (NN) (n=16) | Benign (Bn) (n=07) | OIN, HPV related oral lesions (n=21) | Malignant (Mal) (n=126) | Total (n=170) |
|---|---|---|---|---|---|---|
| **Age-wise distribution (in years)** | | | | | | |
| 1. | 0-10 | - | - | - | - | - |
| 2. | 11-20 | 2 (1.18%) | 2 (1.18%) | - | - | 4 (2.36) |
| 3. | 21-30 | 7 (4.12%) | 1 (0.59%) | 2 (1.18%) | 6 (3.53%) | 16 (9.41%) |
| 4. | 31-40 | 3 (1.76%) | 2 (1.18%) | 4 (2.35%) | 26 (15.29%) | 35 (20.59%) |
| 5. | 41-50 | 2 (1.18%) | 1 (0.59%) | 6 (3.53%) | 27 (15.88%) | 36 (21.18%) |
| 6. | 51-60 | - | - | 3 (1.76%) | 32 (18.82%) | 35 (20.59%) |
| 7. | 61-70 | 1 (0.59%) | - | 5 (2.94%) | 32 (18.82%) | 38 (22.35%) |
| 8. | > 70 | 1 (0.59%) | 1 (0.59%) | 1 (0.59%) | 3 (1.76%) | 6 (3.53%) |
| **Gender-wise distribution** | | | | | | |
| 1. | Males | 12 (7.06%) | 3 (1.76%) | 18 (10.59%) | 92 (54.12%) | 125 (73.53%) |
| 2. | Female | 4 (2.35%) | 4 (2.35%) | 3 (1.76%) | 34 (20%) | 45 (26.47%) |
| **Site-wise distribution** | | | | | | |
| 1. | Tongue - lateral border and dorsum | - | 2 (1.18%) | 8 (4.71%) | 32 (18.82%) | 42 (24.71%) |
| 2. | Alveolar margin/ gingiva/ retromolar Region | - | 1 (0.59%) | 1 (0.59%) | 17 (10%) | 19 (11.18%) |
| 3. | Floor of mouth/ventral part of tongue | - | 2 (1.18%) | - | 7 (4.12%) | 9 (5.29%) |
| 4. | Palate | 7 (4.12%) | - | - | 2 (1.18%) | 9 (5.29%) |
| 5. | Buccal mucosa/ Gingivo-buccal Sulcus (GBS) | 8 (4.71%) | - | 10 (5.88%) | 64 (37.65%) | 82 (48.24%) |
| 6. | Lips | 1 (0.59%) | 2 (1.18%) | 2 (1.18%) | 4 (2.35%) | 9 (5.29%) |

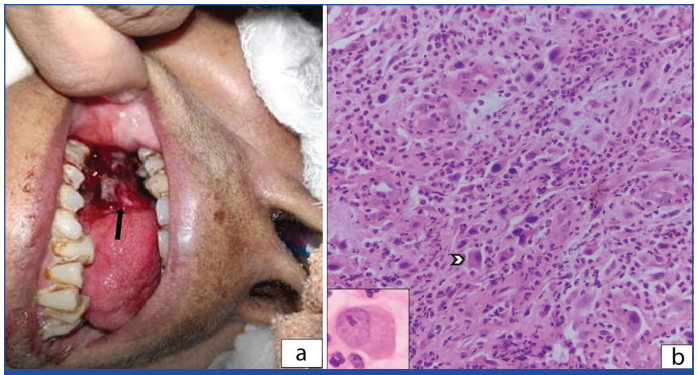
**[Table/Fig-2]:** Clinical profile including age-wise, gender-wise and site-wise distribution of the cases.
NN: Non neoplastic; Bn: Benign; OIN HPV Rel: OIN (Oral Intraepithelial Neoplasia); HPV related oral lesions; Mal: Malignant

| S. no. | HPE diagnosis | Age | Gender | Site | Size |
|---|---|---|---|---|---|
| 1. | Lobular capillary haemangioma | 77 y | M | Lip | Inc Bx |
| 2. | Lobular capillary haemangioma | 35 y | F | Tongue-lateral border | Inc Bx |
| 3. | Schwanomma | 41 y | M | Sublingual | 4×3×2.5 cm |
| 4. | Proliferative Fasciitis (PF) | 50 y | M | Tongue-lateral border | 2.5×2×1 cm |
| 5. | Fibrosarcoma | 59 y | M | Buccal mucosa | 5×3×2.5 cm |
| 6. | Fibrosarcoma | 56 y | M | Buccal mucosa | Inc Bx |
| 7. | High-grade sarcoma | 51 y | M | Buccal mucosa | Inc Bx |

**[Table/Fig-3]:** Soft-tissue Tumours (STT) in oral cavity found in this study.
M: Male; IncBx: Incisional biopsy




**[Table/Fig-4]:** Schwanomma: proliferating spindle cells with cellular and hypocellular area, and Verocay bodies (4a star, 4b) (4a:100x, 4b:400x, H&E stain).

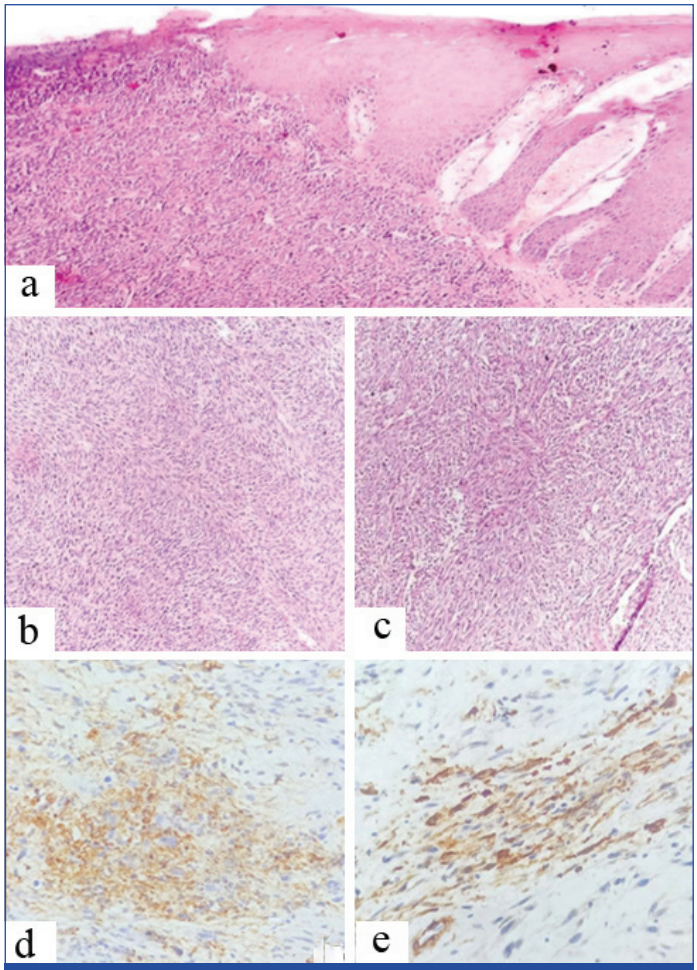



**[Table/Fig-5]:** Proliferative Fasciitis (PF): (clinical picture): polypoidal mass above the surface of tongue at the edge of an ulcerative lesion (5a), plump spindle cells-fibroblastic and myofibroblastic, in sheet like arrangement with large basophilic cells resembling ganglion cells (arrowhead, inset) without mitosis and necrosis (5b). (400x H&E stain).

There is a higher number of malignancies compared to other categories, with malignancies accounting for 74.12%, Oral Intraepithelial Neoplasia (OIN) and Human Papilloma Virus (HPV) related lesions for 12.35%, Non neoplastic lesions for 9.41%, and Benign lesions for 4.12%, a finding common in many studies [17-20]. The reason may be the more frequent referral of cancer cases to medical colleges and hospitals. Most patients were in the fourth to seventh decade, which is another common finding [19,20]. The male preponderance of malignant tumours in the present study (M:F=2.71:1, M=73.02%) is similar to the works of Gupta M et al., (M:F=2.17:1), Fang QG et al., (M=58.33%), Halder B and Halder NR (M=62.96%) [17,21,22].

The buccal mucosa/GBS followed by the tongue-lateral border and dorsum were the most common sites involved overall (48.24% and 24.71%, respectively), in malignancies (37.65% and 18.82%, respectively), and OIN and HPV related oral lesions (5.88% and 4.71%, respectively). These findings are consistent with many researchers such as Gupta M et al., (overall: buccal mucosa- 20.5%, tongue- 15.0%, and malignant: buccal mucosa- 15.6%, tongue- 12.5%), Rauf SPA and Sonwane BR (overall: buccal mucosa- 31%, tongue- 23%, and malignant: buccal mucosa- 31.94%, tongue- 22.22%), and Parikh S et al., (overall: buccal mucosa- n=51/131(38.93%), tongue-n=45/131(34.35%)) [17,19,23]. Non neoplastic lesions included buccal mucosa/GBS and palate; and benign tumours were seen at the tongue-lateral border and dorsum and floor of mouth/ventral part of the tongue.

The most commonly encountered non neoplastic lesions were mucocele and inflammatory lesions {n=7/16 (43.75%) each}, findings similar to other Indian works, for example, by Parikh S et




**[Table/Fig-6]:** Fibrosarcoma: unencapsulated malignant spindle cell tumour of fibroblasts (6a), with herring bone (6b) and storiform pattern (6c) (400x H&E stain). IHC with CD 34 positivity (6d) and SMA positivity (6e).

al., {mucocele and inflammatory lesions both n=4/31(12.9%)} and in different countries as well, as seen in the study by Błochowiak K et al., {mucocele- n=30/73(41.1%)} [22,24]. A wider range of histopathological diagnosis is given abroad in the reactive category (non neoplastic) including epulis and fibroma as common ones [16,24,25]. Moreover, various classifications followed by different authors also add different terminologies.

Frequent benign and malignant lesions found are haemangioma {n=2/7(28.57%)} and SCC {n=112/126 (88.89%)}, respectively, findings similar to other works including those by Rauf SPA and Sonwane BR {haemangioma: 4/12 (33.33%), SCC: 60/72(83.33%)}, Halder B and Halder NR {haemangioma: 14/28 (50%), SCC: 23/27(85.19%)}, and Shahsavari F et al., (haemangioma: 39.5%) [19,22,25]. Benign STTs in the oral cavity found by various researchers are haemangioma [19,24-26], neurofibroma and schwannoma [16-18,23-25], lipomatous tumours (lipoma) [16,24-26], granular cell tumour [16,18], and angiofibroma [24]. It is worth noting that almost only single cases of these tumours have been found except for haemangiomas in these studies. Two cases of haemangioma/pyogenic granuloma have been found; clinically, they presented as smooth, lobulated masses. With a single case of schwannoma, the finding of the present work is comparable with others. It was located on the tongue, which is its usual location in the oral cavity. It was a tan-white mass with a glistening cut surface. Microscopy showed proliferating spindle cells with cellular and hypocellular areas, and Verocay bodies [Table/Fig-4a,b].

A case of PF in the oral cavity has been described as the first case of PF on the tongue [27]. A polypoidal mass above the surface of the tongue measuring 2×1.5×0.5 cm at the edge of an ulcerative lesion was seen [Table/Fig-5a]. The histopathological picture was characteristic, showing plump spindle cells-fibroblastic and myofibroblastic, in sheet-like areas with large basophilic cells resembling ganglion cells without mitosis and necrosis [Table/Fig-5b]. The adjacent ulcer was found to be SCC. Nodular fasciitis in the oral cavity, extremely rare, has a similar histopathological appearance, but the ganglion-like cells are absent [28-30].

Malignant STTs or Soft-tissue Sarcomas (STS) are rare tumours, with an annual incidence of <1% of all malignant tumours and a slight male preponderance. In the oral cavity, they are very uncommon, with Kaposi sarcoma and myofibroblastic sarcoma being mentioned in the WHO classification of the oral cavity and mobile tongue 2022. Occasional cases of rhabdomyosarcoma [18,19,31] and a spindle cell sarcoma [23] have been described in similar research studies. The finding of two cases of fibrosarcoma makes this study unique. Only a few such case reports have been described [32-34]. Both of these cases presented in the sixth decade of life and at the buccal mucosa. One of them was a previously operated case of oral cancer SCC and had received radiotherapy. Grossly, both lesions were raised above the surface. The post-radiotherapy case showed an ulcerated surface, and the cut section was unencapsulated, partially circumscribed, and fleshy. Histopathology in both cases showed a malignant spindle cell tumour of fibroblasts, with a herringbone and storiform pattern, high cellularity, and frequent mitosis [Table/Fig-6a-c]. IHC showed CD34 [Table/Fig-6d] and SMA positivity [Table/Fig-6e].

A single case of an oral ulcerative buccal mucosal growth on incisional biopsy was received, showing a malignant spindle cell tumour with high cellularity, marked pleomorphism, plenty of mitosis (>20/10 successive HPFs), and necrosis (<50% necrosis). As there were no specific histopathologic diagnostic features, a broad category was offered as a diagnosis-'high-grade sarcoma,' which was in accordance with the FNCLCC grading system as a grade 3 sarcoma. The case was lost to follow-up, making the precise diagnosis impossible.

The common findings in the malignant soft-tissue lesions found here were male gender, presentation in the fifth decade, and involvement of the buccal mucosa. Clinical data of such patients is unavailable in similar works, limiting the comparison. Fibrosarcomas in general affect mostly the age group of 40-55 years; a concordant finding is seen in the present work.

The other uncommon lesions found in the present work included dermoid cyst, PA, ameloblastoma, adenoid cystic carcinoma, and undifferentiated carcinoma. A dermoid cyst is a congenital anomaly seen in the midline of the floor of the mouth. This case was observed at the classical site and presented with the well known clinical presentation when secondarily inflamed. The WHO classification of tumours of the oral cavity and mobile tongue (2022) mentions mucoepidermoid carcinoma and PA as salivary type tumours [15]. Accordingly, PA most commonly arises from the palate, upper lip, and cheek. Here, it was observed at the upper lip with characteristic epithelial and myoepithelial components. The peripheral ameloblastoma is a tumour of the oral cavity according to oral cavity-Rosai and Ackerman's surgical pathology, which does not include bone. This case here came as an incisional biopsy from the alveolus. Excision biopsy and clinical-radiological data were not received. The WHO classification of tumours of Head and Neck (HNF) (2022) mentions adenoid cystic carcinoma in the tumours of the base of the tongue [15]. However, here the authors received this case as an alveolar growth biopsy. As the excision biopsy specimen was not received later, the exact site/origin could not be confirmed. The histopathological examination was identical to the tumour arising from the major and minor salivary glands with a cribriform growth pattern. The case diagnosed as undifferentiated carcinoma at the left lateral border of the tongue was lost to follow-up, thus poorly-differentiated SCC could not be ruled out. The uncommon types of SCC found were basaloid, verrucous, and adenosquamous carcinoma.

## Limitation(s)

The present study included samples of oral cavity lesions over a period of two years with seven cases of STT. Thus, the duration of the study became a limitation, and such a study should be conducted over a longer period to study STTs of the oral cavity.

## CONCLUSION(S)

In conclusion, when the spectrum of oral cavity lesions and tumours was studied with a special focus on STTs, HPE facilitated the recognition of the latter, especially the malignant tumours, aiding in proper management. Although benign tumours like haemangioma were found to be the most common STTs, uncommon tumours at this site such as fibrosarcomas and PF also enter the list of differential diagnosis in cancers of the oral cavity. Due to the rarity of these lesions at this site, their documentation becomes of utmost importance.

## REFERENCES


[1] Sathishkumar K, Chaturvedi M, Das P, Stephen S, Mathur P. Cancer incidence estimates for 2022 & projection for 2025: Result from National Cancer Registry Programme, India. Indian J Med Res. 2022;156(4&5):598-607.
[2] Kulothungan V, Sathishkumar K, Leburu S, Ramamoorthy T, Stephen S, Basavarajappa D, et al. Burden of cancers in India- Estimates of cancer crude incidence, YLLs, YLDs and DALYs for 2021 and 2025 based on National Cancer Registry Program. BMC Cancer. 2022;22:527. Available from: https://doi.org/10.1186/s12885-022-09578-1.
[3] Hassawi BA, Ali E, Subhe N. Tumours and tumour-like lesions of the oral cavity: A study of 303 cases. Tikrit Medical Journal. 2010;16(1):177-83.
[4] Pires FR, Souza L, Arruda R, Cantisano MH, Picciani BL, Dos Santos TC. Intraoral soft-tissue lipomas: Clinicopathological features from 91 cases diagnosed in a single oral pathology service. Med Oral Patol Oral Cir Bucal. 2021;26(1):e90-e96. Doi: 10.4317/medoral.24023.
[5] Ackerman LV, Rosai J. Oral cavity and oral pharynx. A textbook of surgical pathology. 11th ed. Mosby St Louis: 2018; Pp. 247.
[6] Baranov E, Hornick JL. Soft-tissue special issue: Fibroblastic and myofibroblastic neoplasms of the head and neck. Head Neck Pathol. 2020;14(1):43-58.
[7] Lokuhetty D, White VA, Cree IA. WHO Classification of Tumours. Soft-tissue and Bone Tumours. 5th ed. Lyon: International Agency for Research on Cancer, 2020. Pp. 01-10.
[8] 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. Doi: 10.1016/j.oraloncology.2004.10.010. PMID: 15792612.
[9] Kristin KM, John RK, Pearls and pitfalls in the diagnosis of small oral biopsies. Semin Diagn Pathol. 2023;40(5):313-20. ISSN 0740-2570.
[10] Ali M, Sundaram D. Biopsied oral soft-tissue lesions in Kuwait: A six-year retrospective analysis. Med Princ Pract. 2012;21(6):569-75.
[11] Byakodi R, Shipurkar A, Byakodi S, Marathe K. Prevalence of oral soft-tissue lesions in Sangli. India J. Community Health. 2011;36(5):756-59.
[12] Umarani M, Shuchita LP, Bharathi M. Histopathological spectrum of soft-tissue tumours in a teaching hospital. IOSR Journal of Dental and Medical Sciences (IOSR-JDMS). 2015;14(4X):74-80 .
[13] Stout AP. Atlas of Tumour Pathology. 1st ed. Washington, DC: Armed Forces Institute of Pathology; 1953.
[14] Wibmer C, Leithner A, Zielonke N, Sperl M, Windhager R. Increasing incidence rates of soft-tissue sarcomas? A population based epidemiologic study and literature review. Ann Oncol. 2010;21(5):1106-11.
[15] WHO classification of tumours editorial board. Head neck tumours (WHO classification of tumours series, 5th ed. vol. 9). Lyon: International Agency forResearch on Cancer 2022.
[16] Masamatti SS, Gosavi AV. Histopathological study of malignant oral tumours- A five-year study. Int J Sci Stud. 2016;4(3)30-34. Doi:10.17354/ijss/2016/312.
[17] Gupta M, Choudhary H, Gupta N, Gupta A. Histopathological study of neoplasticlesions of oral cavity and oropharynx. Int J Res Med Sci. 2016;4(5):1506-10. Doi: 10.18203/2320- 6012.ijrms20161219.
[18] Atram MA, Bhalavi V, Dantkale S. A clinicopathological study of tumours and tumour likelesions of oral cavity. Indian J Bas App Med Res. 2016;5(3):146-53.
[19] Rauf SPA, Sonwane BR. Tumours and tumour-like lesion of the oral cavity: A study of 100 cases at tertiary care hospital. Tropical Journal of Pathology and Microbiology. 2020;6(4):265-74. doi.org/10.17511/jopm.2020.i04.01.
[20] Parkins GE, Armah G, Ampofo P. Tumours and tumour-like lesions of the lower face at Korle Bu Teaching Hospital, Ghana--an eight year study. World J Surg Oncol. 2007;5:48. Doi: 10.1186/1477-7819-5-48.
[21] Fang QG, Shuang S, Zhen NL, Zhang X, Liua FY, Zhong F, et al. Squamous cellcarcinoma of the buccal mucosa: Analysis of clinical presentation, outcome and prognostic factors. Mol Clin Oncol. 2013;1(3):531-34.
[22] Halder B, Halder NR. Histopathological study of tumour and tumour 376 like lesions ofthe oral cavity. Annals of Pathology and Laboratory Medicine. 2019;6(4):A248-A252. Doi:10.21276/APALM.2460.
[23] Parikh S, Prajapati H, Shah NR. Histopathological study of oral cavity lesions. Int J Sci Res. 2013;2(11):430-32.
[24] Błochowiak K, Farynowska J, Sokalski J, Wyganowska-S´wiatkowska M, Witmanowski H. Benign tumours and tumour-like lesions in the oral cavity: A retrospective analysis. Postepy Dermatol Alergol. 2019;36(6):744-51. Doi:10.5114/ada.2018.78805.
[25] Shahsavari F, Khourkiaee SS, Moridani SG. Epidemiologic study of benign soft-tissue tumours of oral cavity in an Iranian population. Journal of Dentomaxillofacial Radiology, Pathology and Surgery. 2012;1(1):10-14.
[26] Allon I, Kaplan I, Gal G, Chaushu G, Allon DM. The clinical characteristics of benign oral mucosal tumours. Med Oral Patol Oral Cir Bucal. 2014;19(5):e438-43. Doi: 10.4317/medoral.19387.
[27] Nagose VB, Vaze VV, Mahajan NA, Todase VN. The first case of proliferative fasciitisof tongue coexistent with squamous cell carcinoma: Case report of a rare lesion. J Oral Maxillofac Pathol. 2022;26(1):129. Doi:10.4103/jomfp.jomfp_127_21.
[28] Leventis M, Vardas E, Gkouzioti A, Chrysomali E, Chatzistamou I. Oral nodular fasciitis: Report of a case of the buccal mucosa. J. Maxillofac. Surg. 2011;39(5):340-42.
[29] de Carli ML, Sá Fernandes K, dos Santos Pinto D Jr, Witzel AL, Martins MT. Nodular fasciitis of the oral cavity with partial spontaneous regression (nodular fasciitis). Head Neck Pathol. 2013;7(1):69-72. Doi: 10.1007/s12105012-0390-3.
[30] Rathna D, Mathew M, Kudva A, Solomon MC. Oral nodular fasciitis- A case reportwith a diagnostic schema. J Oral Med Oral Surg. 2019;25(2):21. Doi: 10.1051/mbcb/2019005.
[31] Riaz N, Warriach RA. Tumours and tumour- like lesions of the oro-facial region atmayo hospital, Lahore- A five year study. Annals of King Edward Med University. 2011;17(2):123-29.
[32] Wadhwan V, Chaudhary MS, Gawande M. Fibrosarcoma of the oral cavity. Indian J Dent Res. 2010;21(2):295-98. Doi:10.4103/0970-9290.66640.
[33] Elkins CT, Wakely PE Jr. Sclerosing epithelioid fibrosarcoma of the oral cavity. Head Neck Pathol. 2011;5(4):428-31. Doi:10.1007/s12105-011-0277-8.
[34] Shrivastava S, Nayak SK, Nayak P, Sahu S. Fibrosarcoma of maxilla: A rare case report. J Oral Maxillofac Pathol. 2016; 20(1):162.



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