

Original Research Article

Oral Cavity Lesions in Patients Attending the Dermatology Department: An Observational Cross-Sectional Study from Kachchh Gujarat

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ABSTRACT

Background: The oral mucosa reflects systemic and dermatological health. OPD-based epidemiological data from the Kachchh region of Gujarat are lacking. This study aimed to determine the frequency and clinico-epidemiological profile of oral cavity lesions in patients attending the DVL OPD.

Material and Methods: An observational cross-sectional study was conducted at the DVL Department, G.K. General Hospital and GAIMS, Bhuj, Kachchh, Gujarat, India (December 2016 – May 2018). Consecutive patients with oral lesions enrolled after informed consent and IEC approval (Ref: GAIMS/IEC/APPROVAL/31/Res.Proj/2016, dated 08 December 2016). Clinical history, examination, photographs, and targeted investigations performed as clinically indicated. Data were analysed using descriptive statistics and expressed as frequencies and percentages (Microsoft Excel 2016).

Results: Of 21,440 patients screened, 400 (1.87%) had oral lesions. Age peak: 21–40 years (60.75%); males 51.25%; tobacco users 25.5%. Isolated oral lesions: 261 (65.25%); combined oral and cutaneous disease: 139 (34.75%). Aphthous stomatitis (24.52%), candidiasis (13.03%), and herpes labialis (9.58%) were the most common isolated lesions. Lichen planus led mucocutaneous disease (21.58%); minor aphthae (90.6%) and reticular lichen planus (48.9%) were the commonest morphological variants. Infective aetiology predominated (29%); pre-malignant/malignant lesions: 3.00%. KOH mount was positive for Candida in 43/301 (14.3%) patients tested.

Conclusion: Oral lesion prevalence was 1.87%. Aphthous stomatitis dominated; lichen planus led mucocutaneous disease. Systematic oral examination enables early diagnosis of pre-malignant, systemic, and mucocutaneous conditions and should be standard practice.

Keywords: Aphthous stomatitis, Oral candidiasis, Lichen planus, Oral mucosa

INTRODUCTION

The oral mucosa has long been regarded as a window to systemic and cutaneous health.¹ Mucocutaneous diseases form a significant proportion of dermatology practice, and oral lesions may be the initial, most florid, or sole manifestation of underlying dermatological or systemic disease.

Epidemiological data from dermatology OPDs in India are heterogeneous across regions.²⁻⁴ Several studies from northern and southern India have documented the spectrum of oral lesions in dermatology OPDs.^{3,5-7} However, no such study exists from the Kachchh district of Gujarat — a semi-arid region with tribal communities, nomadic pastoralists, and post-earthquake resettlement populations.

Oral cavity lesions encompass pigmentary disorders,⁸ ulcerative conditions, mucocutaneous diseases, systemic disease manifestations, pre-malignant/malignant conditions, and miscellaneous entities. The present study was undertaken to determine the frequency, clinico-epidemiological profile, and morphological patterns of oral cavity lesions at GAIMS — the tertiary care centre for the Kachchh district.

Aims and Objectives: (a) Frequency of oral lesions in the DVL OPD; (b) clinico-epidemiological characteristics; (c) morphological variants within common dermatoses; and (d) systemic and cutaneous associations.

MATERIAL AND METHODS

Hospital-based observational cross-sectional study at the DVL Department, G.K. General Hospital and GAIMS, Bhuj, Kachchh, Gujarat (December 2016 – May 2018), following IEC approval (Ref: *GAIMS/IEC/APPROVAL/31/Res.Proj/2016, dated 08 December 2016*). Reported per the STROBE guideline; conducted per the Declaration of Helsinki. Written informed consent was obtained from all participants; for patients below 18 years of age, consent was obtained from a parent or legal guardian. Confidentiality of records was maintained in accordance with Indian Council of Medical Research guidelines.

Participants

Of 21,440 patients screened over the 18-month study period, 400 (1.87%) presented with oral cavity lesions and were enrolled. Patients were drawn from Bhuj city and the surrounding Kachchh district, which has a population of approximately two million, including tribal communities and nomadic populations.

Inclusion Criteria

All new patients of either sex and any age presenting to the DVL OPD with clinically apparent oral cavity lesions, irrespective of lesion duration.

Exclusion Criteria

Patients who declined to give informed consent for participation.

Clinical Assessment

Detailed history encompassed presenting complaints, systemic comorbidities (diabetes mellitus, tuberculosis, HIV), medications, tobacco and alcohol use, and lesion duration. Examination of the oral cavity, including the vermillion and labial mucosa of the lips, documented site, morphology, size, colour, surface, consistency, and margins. Clinical photographs were taken with a 16-megapixel digital camera under flash illumination.

Investigations

KOH 10% mount, Tzanck smear (Giemsa stain), Gram stain, culture, and incisional/shave biopsy were performed when the clinical diagnosis was not conclusive. Biopsy was mandatory in all pre-malignant/malignant lesions. Wood's lamp was used for suspected vitiligo. Microscopy findings were confirmed by two dermatologists.

Laboratory and Biopsy Procedures

For KOH mounts, scrapings from the edge of the lesion were collected with a pre-flamed blunt scalpel, mixed with 10% potassium hydroxide, cover-slipped and gently warmed before examination for fungal elements. For Tzanck smears, a vesicle was de-roofed, its base scraped with a blunt spatula, and the air-dried smear stained with Giemsa for 10 minutes. Swabs for Gram staining and culture were processed in the Department of Microbiology. Oral biopsies were performed after topical 10% lignocaine spray and infiltration of 2% lignocaine with adrenaline, using Allis forceps or a shave technique for easily accessible sites; haemostasis was achieved by compression and specimens were sent in formalin for histopathological examination.

Classification of Lesions

Each patient was assigned a single final diagnosis. Diagnoses were grouped as conditions with exclusively oral lesions or conditions with oral and cutaneous lesions of the same disease, and were further classified into ten aetiological categories: infective (fungal, viral and protozoal), autoimmune, vasculitis, vesicobullous, papulosquamous, pre-malignant/malignant, genodermatoses, lesions involving the tongue, aphthous stomatitis and miscellaneous.

Statistics

Data were compiled and analysed in Microsoft Excel 2016 (Microsoft Corporation, Redmond, WA, USA). Descriptive study; data expressed as frequencies and percentages. No inferential tests applied; no p values or confidence intervals reported.

RESULTS

Frequency and Demographic Profile

Of 21,440 patients attending the DVL OPD, 400 had oral lesions (prevalence 1.87%). Lesions were most frequent in the third and fourth decades, with a near-equal sex distribution (Table 1).

Table-1: Age and sex distribution of patients with oral lesions (n=400)

Age Group (years)	Male n	Female n	Total n	% of 400
0–10	22	14	36	9.00
11–20	15	18	33	8.25
21–30	58	61	119	29.75
31–40	66	58	124	31.00
41–50	24	25	49	12.25
>50	20	19	39	9.75
Total	205	195	400	100.00

Symptomatology and Tobacco Use

Symptomatic lesions were present in 66.25% (265/400). Of the 438 complaints recorded in these patients, the most frequent were soreness/pain while eating (145; 33.1%), burning sensation (139; 31.7%) and oral pain (105; 24.0%). Less frequent complaints were foreign body sensation and inability to open the mouth (11 each; 2.5%), altered tongue

texture (10; 2.3%), bleeding and swelling (7 each; 1.6%), dryness of the mouth (2; 0.5%) and inability to protrude the tongue (1; 0.2%). Tobacco use in any form was documented in 25.5% (102/400): smoked tobacco only in 34 (8.5%), smokeless tobacco only in 37 (9.25%) and both forms in 31 (7.75%).

Distribution of Lesions

Of 400 patients, 261 (65.25%) had exclusively oral lesions (Table 2) and 139 (34.75%) had concurrent cutaneous involvement (Table 3). Infective conditions formed the largest aetiological group (Table 4). Representative clinical photographs are shown in Figures 1–8.

Table-2: Conditions presenting with exclusively oral lesions (n=261)

Diagnosis	n	% of 261	% of 400
Aphthous stomatitis	64	24.52	16.00
Oral candidiasis	34	13.03	8.50
Herpes labialis	25	9.58	6.25
Frictional keratosis	19	7.28	4.75
Mucosal vitiligo	16	6.13	4.00
Angular cheilitis	15	5.75	3.75
Oral lichen planus	15	5.75	3.75
Mucocele	10	3.83	2.50
Oral submucous fibrosis	7	2.68	1.75
Verruca vulgaris	6	2.30	1.50
Oral DLE	5	1.92	1.25
Others (16 diagnoses, 1–4 each)	45	17.24	11.25
Total	261	100.00	65.25

Table-3: Conditions with combined oral and cutaneous manifestations (n=139)

Diagnosis	n	% of 139	% of 400
Oral lichen planus	30	21.58	7.50
Varicella	22	15.83	5.50
Measles	15	10.79	3.75
Systemic lupus erythematosus (SLE)	10	7.19	2.50
Discoid lupus erythematosus (DLE)	9	6.47	2.25
Pemphigus vulgaris	8	5.76	2.00
SJS / Erythema multiforme major	8	5.76	2.00
Vitiligo	6	4.32	1.50
Hand, foot and mouth disease	5	3.60	1.25
Systemic sclerosis	4	2.88	1.00
Fixed drug reaction	3	2.16	0.75
Others (11 diagnoses, 1–4 each)	19	13.67	4.75
Total	139	100.00	34.75



Figure-1: Stevens-Johnson Syndrome — haemorrhagic crusting and erosions over lips with extensive oral mucosal involvement.



Figure-2: Reticular Oral Lichen Planus — Wickham's striae on the buccal mucosa.



Figure-3: Fixed Drug Eruption — oral involvement with hyperpigmented plaque on dorsum of hand.



Figure-4: Acute Pseudomembranous Candidiasis — white curd-like plaques on tongue, hard palate and angles of mouth.



Figure-5: Mucosal Vitiligo — depigmented patches over upper and lower lips.



Figure-6: Black Hairy Tongue — elongation and melanotic pigmentation of the filiform papillae.



Figure-7: Herpetiform Aphthous Stomatitis — multiple small recurrent ulcers on the ventral surface of tongue.



Figure-8: Mucous Membrane Pemphigoid — oral and nasal mucosa involvement with haemorrhagic crusting of lips.

Morphological Variants

Aphthous stomatitis (n=64): minor aphthae 90.62%, major/giant 4.69%, herpetiform 4.69%. OLP (n=45): reticular 48.9%, erosive 33.3%, plaque 6.7%, pigmented 4.4%, bullous 4.4%, atrophic 2.2%; female predominance 55.6%. Candidiasis (n=34): acute pseudomembranous 52.9%, angular cheilitis sub-type 29.4%, acute ulcerative 11.8%, chronic hyperplastic 5.9%. KOH mount (301 patients) was positive for Candida in 43 (14.3%); the 34 cases of oral candidiasis, 1/3 squamous cell carcinoma and, as occult infection, 4/4 SJS, 2/4 erythema multiforme major and 2/10 pemphigus vulgaris. All 10 SLE patients were female, and Tzanck smear showed acantholytic cells in all 10 pemphigus vulgaris patients.

Aetiological Groups

Within the infective group (n=116), oral candidiasis (34; 29.3%), herpes labialis (25; 21.6%), varicella (22; 19.0%) and measles (15; 12.9%) predominated. Vitiligo (22; 42.3%) and DLE (14; 26.9%) were the commonest autoimmune

conditions, pemphigus vulgaris (10/22) the commonest vesicobullous disease, and oral lichen planus (45/47) almost the whole papulosquamous group. Frictional keratosis (19) and angular cheilitis (15) made up half of the miscellaneous group.

Table-4: Aetiological classification of all oral lesions (n=400)

Aetiology	n	% of 400	Constituent diagnoses (n)
Infective (fungal, viral, protozoal)	116	29.00	Oral candidiasis 34, herpes labialis 25, varicella 22, measles 15, verruca vulgaris 6, hand, foot and mouth disease 5, primary herpetic gingivostomatitis 4, molluscum contagiosum 2, tinea faciei with labial involvement 2, leishmaniasis 1
Miscellaneous	67	16.75	Frictional keratosis 19, angular cheilitis 15, mucocele 10, Fordyce spots 4, burning mouth syndrome 4, amalgam tattoo 4, suction blister 4, angioedema 4, torus palatinus 1, granular cell tumour 1, porokeratosis of the lip 1
Aphthous stomatitis	64	16.00	Minor 58, major 3, herpetiform 3
Autoimmune	52	13.00	Vitiligo 22, DLE 14, SLE 10, systemic sclerosis 4, Sjögren syndrome 2
Papulosquamous	47	11.75	Oral lichen planus 45, buccal plaques in patients with psoriasis 2
Vesicobullous	22	5.50	Pemphigus vulgaris 10, SJS 4, erythema multiforme major 4, fixed drug reaction 3, mucous membrane pemphigoid 1
Pre-malignant / malignant	12	3.00	Oral submucous fibrosis 7, squamous cell carcinoma 3, leukoplakia 2
Tongue lesions	13	3.25	Macroglossia 4, black hairy tongue 4, geographic tongue 3, fissured tongue 2
Genodermatoses	6	1.50	Xeroderma pigmentosum 2, hidrotic ectodermal dysplasia 2, tuberous sclerosis 1, lipoid proteinosis 1
Vasculitis	1	0.25	Kawasaki disease 1
Total	400	100.00	

Clinical Profile of Individual Conditions

The clinical profile of the principal conditions is summarised in Table 5. Aphthous stomatitis occurred mainly in the second and third decades as painful ulcers on an erythematous base, most often on the right buccal mucosa and tongue. Oral lichen planus most often involved the left buccal mucosa and presented with burning; 46.6% of patients were in the second and third decades. Oral candidiasis presented chiefly in the fourth and fifth decades, most often as plaques on the dorsum of the tongue. Pemphigus vulgaris affected patients in the fourth and fifth decades, with erosions and bullae mainly on the buccal mucosa and soft palate. All patients with SLE and systemic sclerosis were female, and all four patients with systemic sclerosis had restricted mouth opening.

Table-5: Clinical profile of selected conditions

Condition (n)	Usual age group	Main complaint / site	Associated findings
Aphthous stomatitis (64)	2nd–3rd decade	Burning, soreness on eating; right buccal mucosa, tongue	Tuberculosis 9; prolonged chemotherapy 3
Oral lichen planus (45)	2nd–3rd decade (46.6%)	Burning; left buccal mucosa	Female 55.6%; oral only 15, oral and cutaneous 30
Oral candidiasis (34)	4th–5th decade	Soreness/pain on eating; dorsum of tongue	Diabetes 4, HIV 2, tuberculosis 1; tobacco 11
Angular cheilitis, all (25)	3rd decade	Burning at angles of mouth	Candida on KOH mount 10/25
Herpes labialis (25)	2nd decade	Burning; lower lip more than upper lip	Multinucleated giant cells on Tzanck smear
Varicella (22)	1st–3rd decade	Hard palate	Cutaneous lesions in all
Measles (15)	1st decade	Koplik spots on right buccal mucosa	Cutaneous rash present
DLE (14)	3rd decade	Burning; plaque on lower lip, then hard palate	–
SLE (10)	2nd–3rd decade	Burning, soreness; right buccal mucosa, soft palate	All female; diabetes 1
Pemphigus vulgaris (10)	4th–5th decade	Pain, burning; erosions and bullae on buccal mucosa, soft palate	Acantholytic cells 10/10; KOH positive 2/10
Oral submucous fibrosis (7)	4th–5th decade	Reduced mouth opening; buccal mucosal fibrosis	Smoked and smokeless tobacco in all
Stevens-Johnson syndrome (4)	2nd decade	Pain, burning; buccal mucosa, palate, tongue	KOH positive 4/4
Systemic sclerosis (4)	Late 2nd–3rd decade	Restricted mouth opening 4/4; dryness 1/4	All female
Black hairy tongue (4)	3rd decade	Coated, blackish tongue	HIV-reactive 4/4
Squamous cell carcinoma (3)	After 45 years	Left buccal mucosa	Tobacco in all; coexisting candidiasis 1

DISCUSSION

The overall oral lesion prevalence was 1.87% (400/21,440), consistent with Roy and Varshney³ (1.26%) and with a series of 3,500 dermatology patients from South India⁷ (1.8%), suggesting that oral lesions are the presenting or recorded problem in about 1–2% of dermatology outpatients. Studies that systematically examined the oral cavity of every patient with skin disease report much higher frequencies (57.9% in a Sudanese dermatology clinic²), so OPD-based figures such as ours capture presenting oral disease rather than total oral involvement. Aphthous stomatitis was the most prevalent isolated lesion (24.52%),⁹ with tuberculosis as an associated illness in 9/64 (14.06%). Oral candidiasis (13.03% of isolated lesions) was associated with diabetes mellitus (4/34), HIV (2/34), and tobacco use (11/34);¹⁰ Candida was also demonstrated in 10 of 25 cases of angular cheilitis (40%).¹¹

The near-equal sex distribution in our series (male:female 1.05:1) contrasts with the female predominance (2:3) reported by Roy and Varshney.³ The spectrum of disease also differed: in their series aphthous ulcers (28.57%) and pemphigus vulgaris (26.60%) formed the bulk of patients, followed by SLE (17.02%), oral candidiasis (16.07%), DLE (13.83%) and lichen planus (12.77%),³ whereas in ours lichen planus, varicella and measles led the combined oral-cutaneous group and pemphigus vulgaris accounted for only 2.5% of all patients. Among patients with oral lesions in the South Indian series of 3,500 dermatology patients, psoriasis (32.3%), lichen planus (18.4%) and Stevens-Johnson syndrome (18.4%) were the commonest diagnoses,⁷ whereas psoriasis accounted for only two of our 400 patients.

Such differences probably reflect referral patterns, case definitions and the local burden of infectious disease rather than true differences in disease biology.

Candida was demonstrated on KOH mount in 4/4 SJS, 2/4 erythema multiforme major and 2/10 pemphigus vulgaris patients without clinically evident candidiasis. Such infection is easily missed on inspection alone; a KOH mount should therefore be considered routinely in erosive oral mucosal disease, particularly in patients receiving systemic immunosuppressants. OLP (21.58% of combined lesions) showed predominance of the reticular variant (48.9%). Erosive disease predominated in a prospective series of 214 patients,^[12] whereas the reticular form is generally described as the most common clinical variant;¹³ the worldwide pooled prevalence of OLP has been estimated at 1.01%.¹⁴ Varicella (15.83%) and measles (10.79%) together formed 26.6% of combined oral-cutaneous lesions; this may reflect gaps in immunization coverage among Kachchh's tribal and nomadic communities, although immunization status was not recorded in this study.

All 10 SLE and all 10 pemphigus vulgaris patients in this series had oral lesions. Because enrolment required an oral lesion, this reflects case selection rather than the frequency of oral involvement in these diseases: an early series found mucosal involvement in 11 of 53 patients with SLE (21%),¹⁵ and a meta-analysis of 113 studies (53,307 patients) estimated oral lesion prevalence in SLE at 31% (95% CI: 28–35%),^[16] while oral lesions are a frequent and often presenting feature of pemphigus vulgaris.^{17–19} Pre-malignant/malignant conditions (3.00%) comprised oral submucous fibrosis (7), squamous cell carcinoma (3) and leukoplakia (2); every patient with leukoplakia, oral submucous fibrosis or squamous cell carcinoma used tobacco in smoked and/or smokeless form.^{20,21}

Lesions in our patients with pemphigus vulgaris were concentrated on the buccal mucosa and soft palate, in keeping with the predominantly buccal and palatal involvement described by Scully et al. in 55 patients with oral pemphigus, more than half of whom also had non-oral mucosal lesions.^[18]

HIV seropositivity was documented in all four patients with black hairy tongue, three of six with verruca vulgaris, two with oral candidiasis, one of two with molluscum contagiosum and the patient with mucous membrane pemphigoid (Table 5). Such lesions should prompt evaluation for underlying immunosuppression, including HIV testing when status is unknown. Systemic associations were also frequent in other groups: tuberculosis in nine patients with aphthous stomatitis, diabetes mellitus in four with candidiasis and in both patients with fissured tongue, and hypothyroidism in eleven of 22 patients with vitiligo (with diabetes in two of them).

Several conditions were confined to children: hand, foot and mouth disease (all younger than 10 years), measles (first decade), suction blisters (infants younger than six months), Kawasaki disease (a 7-year-old girl with strawberry tongue) and xeroderma pigmentosum, in which a biopsy from a lip plaque in one child was suggestive of squamous cell carcinoma. These findings underline the value of oral examination in pediatric dermatology.

Three practical implications follow. First, the oral cavity should be examined at every dermatology consultation, since lesions spanned infective, autoimmune, papulosquamous, vesicobullous and neoplastic categories. Second, the KOH mount is a simple, inexpensive test that identified clinically unsuspected candidal infection in erosive disease. Third, the uniform history of tobacco use among patients with leukoplakia, oral submucous fibrosis and squamous cell carcinoma supports cessation counselling and early biopsy of suspicious lesions in tobacco users.

Limitations: Single-centre tertiary care study with referral bias. Data from 2016–2018. Histopathological confirmation not obtained in all cases; no multivariate risk factor analysis. Because enrolment required an oral lesion, the proportion of each dermatosis with oral involvement could not be estimated. Assigning a single final diagnosis to each patient may under-represent coexisting conditions such as candidiasis in erosive disease. Generalization to community settings should be cautious.

CONCLUSIONS

The oral mucosa deserves a place in every dermatological examination. In this first OPD-based survey from Kachchh, Gujarat, about one in every 54 dermatology outpatients (1.87%) had an oral lesion, and these lesions spanned the breadth of dermatology, from infections and autoimmune disease to genodermatoses and cancer. Aphthous stomatitis was the commonest isolated lesion, oral lichen planus the commonest mucocutaneous disease and infection the largest etiological group. Three findings carry immediate practical weight: a simple KOH mount uncovered candidal infection that inspection had missed in erosive mucosal disease; every patient with leukoplakia, oral submucous fibrosis or squamous cell carcinoma used tobacco; and black hairy tongue, oral warts and candidiasis were repeatedly associated with HIV seropositivity. A torch and a KOH mount cost little; a missed early carcinoma or unsuspected systemic disease costs far more. Intra-oral examination should therefore be routine at every dermatological consultation,^[22] and prospective studies with histopathological confirmation and dermoscopic evaluation of oral lesions are warranted.

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