ORIGINAL RESEARCH

Velscope-for Detection of Site for Biopsy for Lesions in the Oral Cavity

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ABSTRACT

Aim: Diagnostic biopsies are the gold standard for oral lesions ranging from simple periapical lesions to malignancies. Site specific biopsies with adequate depth are essential for meaningful diagnosis, and therefore ultimately and more importantly, to the patient. The study we will uses tissue autofluoroscence using Velscope to determine the most favorable site for biopsy in patients. **Material and Method**: It's a prospective study performed over a period of 3 to 6 months amongst the Indian population above 18 years of age using velsope ae a early screening tool. A biopsy is performed from the site of loss of fluorescence and evaluated. **Results:** We screened 739 patients between the age group of 20 to 99 majority (57.8%) from the age group 40 to 59, male> female, with 89.5% chewing tobacco, 4.1% smoking tobacco and 6.4% doing both. On clinical examination, fibrous bands were observed in 1.5% of patients, ulceration in 1.2% and 4.0% of white lesions. 0/16 biopsies of patients showing LOF were positive for malignancy. **Conclusion:** We conclude that decision to perform biopsy should be based on clinical features and not on loss of fluoroscence.

KEYWORDS: Diagnostic Biopsies, Autofluoroscence, Velscope

INTRODUCTION

Oral cancer is one of the most common cancers in India, and approximately accounts for thirty per cent of all carcinomas. Its prevalence is high amongst the Indian population. Most important factors in late detection of the lesion are unawareness amongst patients, fewer diagnostic aids and low affordability. Secondly, rural areas in middle and low-income countries also have inadequate access to trained providers and limited health services. This delay leads to detection at advanced stages of oral cancer. Patients with early lesions have better chances of cure and lesser treatment associated morbidities.

clinical detection of oral cancer, gold standard are diagnostic biopsies, using a velscope we try to pick up the most favorable site for biopsy considering economic benefits and decreasing overall rate of number of biopsies.

MATERIALS AND METHODS

A Prospective study was conducted in BSES MG HOSPITAL using Oral Cancer screening camps for a period of 3 to 6 monthson Indian population comprising of male and female population, above 18 years of age.

Study Design: Patients were screened in the high-risk group. (patients who are tobacco chewers or smokers)and were screened and evaluated using VELSCOPE

Inclusion Criteria: All Patients with tobacco habits chewing and/or smoking, history of malignancy

Exclusion criteria:

- Patients unwilling to participate in the study
- Patients with grade III & IV trismus

Method: Appropriate subjects were selected according to the inclusion criteria of the study and

- subject were asked to sit on a chair
- brief history was taken
- the oral cavity was examined with naked eyes under the illumination with a torch light.

Following Examinations were done:

- lower and upper lip
- commisures of mouth
- lower labial mucosa and sulcus
- buccal mucosa and buccal sulcus
- upper labial mucosa and sulcus, gingival sulcus, tongue(dorsal, ventral, lateral borders)
- floor of the mouth, hard palate, soft palate, uvula, anterior and posterior faucial pillars- right and left tonsils- right and left.
- If any abnormality seen on naked eye examination- SCREEN WITH VELSCOPE take a biopsy from the site showing maximum loss of fluorescence. (Fig 1)

Mechanism of action of velscope: Velscope works on the mechanism of TISSUE AUTOFLUROSCENCE.
Visualising tissue autofluroscence takes place on basis of different wavelengths exhibited.
Tissue Fluoropres:

- Components of cell metabolism- FAD
- Structural components – collagen, keratin, fibrin

Progressive dyplasia in oral mucosa absorbs light at different wavelengths and shows loss of fluorescence.

RESULTS

We screened 739 patients between the age group of 20 to 99 majority (57.8%) from the age group 40 to 59, male>

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female, with 89.5% chewing tobacco, 4.1% smoking tobacco and 6.4% doing both. On clinical examination, fibrous bands were observed in 1.5% of patients, ulceration in 1.2% and 4.0% of white lesions.

Sr. No		Number	Percent
1	20-39	186	26.1
2	40-59	438	57.8
3	60-79	114	15.9
4	80-99	2	0.2

Table 1: Age Distribution

Sr. No		Number	Percent
1	Female	83	11.2
2	Male	657	88.8

Table 2: Sex Distribution

Sr. No		Number	Percent
1	Smoked	30	4.1
2	Smokeless	663	89.5
3	Both	47	6.4

Table 3: Habits- Tobacco

Sr. No		Number	Percent
1	Depapillation of tongue	1	0.1
2	Fibrous band	11	1.5
3	Fibrous patch	1	0.1
4	Firm nodule	4	0.4
5	Inflammation	1	0.1
6	Linear elevation and pigmentation	2	0.3
7	Loss of epithelium	1	0.1
8	Mucosal changes	6	0.8
9	Red patch	5	0.7
10	Ulceration	10	1.2
11	Speckled appearance	1	0.1
12	White linear elevated lesion	1	0.1
13	White lesion	30	4.0
14	Yellow elevated dots	2	0.3
15	NAD	664	90.2

Table 4: Clinical Examination

Sr. No		Number	Percent
1	Buccal mucosa	43	5.5
2	Labial mucosa	2	0.2
3	Buccal vestibule	6	0.6
4	Labial vestibule	9	1.1
5	Palate	3	0.3
6	Tongue	3	0.3
7	Corner of mouth	1	0.1

Table 5: Biopsy Site

Sr. No		Number	Percent
1	Mild loss of fluorescence	13	1.8
2	Moderate loss of fluorescence	31	4.2
3	No loss of fluorescence	696	94

Table 6: Velscope examination

Sr. No		Number	Percent
1	Apthous ulcer	2	0.2
2	Cheek bite	8	1.1
3	Denture stomatitis	1	1.1
4	Denture trauma	2	0.3
5	Depapillation of tongue	1	0.1
6	Erythroleukoplakia	4	0.5
7	Fibroma	3	0.4
8	Fordyces spots	1	0.1
9	Food burn	1	0.1
10	Frictional keratosis	1	0.1
11	Leukoplakia	11	1.5
12	Lichen Planus	2	0.3
13	Linea Alba	2	0.3
14	Maxillary tori	1	0.1
15	Mucosal changes	6	0.8
17	Oral submucous fibrosis	11	1.5
18	Preleukoplakia	9	1.2
19	Tobacco pouch keratosis	2	0.3
20	Traumatic ulcer due to denture	1	0.1
21	Ulcer	2	0.2
22	NAD	669	89.7

Table 7: Provisional Diagnosis

Sr. No		Number	Percent
1	Not taken	724	97.8
2	Taken	16	2.2

Table 8: Biopsy

Sr. No		Number	Percent
1	Buccal mucosa	6	0.8
2	Labial mucosa	1	0.1
3	Buccal vestibule	3	0.3
4	Labial vestibule	1	0.1
5	Palate	1	0.1
6	Angle of the mouth	1	0.1
7	Gingivobuccal sulcus	1	0.1

Table 9: Biopsy Site

Sr. No		Number	Percent
1	Inflamed hyperkeratotic and parakeratotic squamous mucosa	1	0.1
2	Benign hyperkeratotic and parakeratotic squamous mucosa and congested blood vessels in the subepithelial zone	1	0.1
3	Benign hyperkeratotic squamous mucosa	3	0.4
4	Benign hyperplastic squamous mucosa and congested blood vessels seen beneath	1	0.1
5	Benign inflamed hyperplastic squamous mucosa	1	0.1
6	Benign inflamed squamous mucosa	2	0.3
7	Benign squamous mucosa	1	0.1
8	Chronically inflamed hyperkeratotic squamous mucosa	1	0.1
9	Hyperkeratotic and parakeratotic benign squamous mucosa	2	0.3
10	Inflamed hyperplastic squamous Mucosa	1	0.1
11	Mildly inflamed hyperplastic mucosa	1	0.1
13	Oral submucous fibrosis	1	0.1
14	NAD	724	98.1

Table 10: Final Diagnosis

Age	Mild LOF	Moderate LOF	No LOF	Total
20-39	2 (3.2)	7 (8)	177 (174.6)	186 (185.8)
40-59	6 (9.4)	206 (207.5)	221 (221.0)	433 (437.9)
60-79	3 (4.1)	91 (79.8)	88 (88.0)	182 (171.9)
80-99	0 (0.0)	2 (1.8)	2 (2.0)	4 (3.8)

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	160.538[a]	112	.002
Likelihood Ratio	113.473	112	.443
N of Valid Cases	715		

a. 130 cells (76.0%) have expected count less than 5. The minimum expected count is .02.

Table 11 a: Velscope Exam Vs Age

	Mild LOF	Moderate LOF	No LOF	Total
Female	3 (1.5)	2 (3.5)	78 (75.4)	83 (80.4)
Male	10 (11.1)	29 (26.5)	593 (573.8)	632 (611.4)

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	741.553[a]	6	.000
Likelihood Ratio	214.002	6	.000
N of Valid Cases	739		

a. 6 cells (50.0%) have expected count less than 5. The minimum expected count is .42.

Table 11 b: Velscope Exam Vs Sex

	Mild LOF	Moderate LOF	No LOF	Total
Smoked	1 (0.5)	9 (1.3)	20 (27.2)	30 (29)
Smokeless	10 (11.2)	22 (26.8)	606 (579.3)	638 (617.3)
Both	2 (0.9)	0 (1.9)	45 (47.0)	47 (49.8)

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	866.497[a]	12	.000
Likelihood Ratio	253.565	12	.000
N of Valid Cases	739		

a. 13 cells (65.0%) have expected count less than 5. The minimum expected count is .05.

Table 11 c: Habits- Tobacco

	Mild LOF	Moderate LOF	No LOF	Total
Not taken	12 (12.3)	18 (29.3)	669 (634.7)	699 (676.3)
Taken	1 (0.3)	13 (0.7)	2 (14.5)	16 (15.5)

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	983.560[a]	6	.000
Likelihood Ratio	288.477	6	.000
N of Valid Cases	739		

a. 6 cells (50.0%) have expected count less than 5. The minimum expected count is .28.

Table 11 d: Biopsy

	Mild LOF	Moderate LOF	No LOF	Total
Buccal mucosa	1 (0.1)	4 (0.2)	1 (5.4)	6 (5.7)
Labial mucosa	0 (0.0)	1 (0.0)	0 (0.9)	1 (0.9)
Buccal vestibule	0 (0.0)	3 (0.0)	0 (2.7)	3 (2.7)
Labial vestibule	0 (0.0)	1 (0.0)	0 (0.9)	1 (0.9)
Palate	0 (0.0)	1 (0.0)	0 (0.9)	1 (0.9)
Angle of the mouth	0 (0.0)	1 (0.0)	0 (0.9)	1 (0.9)
Gingivobuccal sulcus	0 (0.0)	1 (0.0)	0 (0.9)	1 (0.9)

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	268.297[a]	33	.000
Likelihood Ratio	83.004	33	.000
N of Valid Cases	739		

a. 44 cells (91.7%) have expected count less than 5. The minimum expected count is .02.

Table 11 e: Biopsy Site

	Mild LOF	Moderate LOF	No LOF	Total
Depapillation of tongue	1 (0.0)	0 (0.0)	0 (0.9)	1 (0.9)
Fibrous band	0 (0.2)	2 (0.4)	8 (9.1)	10 (9.7)
Fibrous patch	0 (0.0)	0 (0.0)	1 (0.9)	1 (0.9)
Firm nodule	0 (0.0)	1 (0.0)	0 (0.9)	1 (0.9)
Inflammation	0 (0.0)	1 (0.0)	0 (0.9)	1 (0.9)
Linear elevation and pigmentation	0 (0.0)	1 (0.1)	1 (1.8)	2 (1.9)
Loss of epithelium	1 (0.0)	0 (0.0)	0 (0.9)	1 (0.9)
Mucosal changes	0 (0.1)	0 (0.3)	6 (5.4)	6 (5.8)
NAD	1 (11.2)	6 (26.8)	631(579.3)	638 (617.3)
Red patch	3 (0.1)	1 (0.2)	1 (4.5)	5 (4.8)
Ulcerated lesion	0 (0.0)	1 (0.0)	0 (0.9)	1 (0.9)
Speckled appearance	0 (0.0)	0 (0.0)	1 (0.9)	1 (0.9)
White linear elevated lesion	0 (0.0)	0 (0.0)	1 (0.9)	1 (0.9)
White lesion	0 (0.0)	0 (0.0)	1 (0.9)	1 (0.9)
Yellow elevated dots	0 (0.0)	2 (0.1)	0 (1.8)	2 (1.9)

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	1431.541[a]	72	.000
Likelihood Ratio	415.347	72	.000
N of Valid Cases	739		

91 cells (91.0%) have expected count less than 5. The minimum expected count is .02.

Table 12: Clinical Examination

	Mild LOF	Moderate LOF	No LOF	Total
Apthous ulcer	0 (0.0)	1 (0.0)	0 (0.9)	1 (0.9)
Cheek bite	4 (0.1)	1 (0.3)	3 (7.3)	8 (7.7)
Denture stomatitis	0 (0.0)	1 (0.0)	0 (0.9)	1 (0.9)
Denture trauma	0 (0.0)	2 (0.1)	0 (1.8)	2 (1.9)
Depapillation of tongue	1 (0.0)	0 (0.0)	0 (0.9)	1 (0.9)
Erythroleukoplakia	2 (0.1)	0 (0.2)	2 (3.6)	4 (3.9)
Fibroma	2 (0.1)	1 (0.1)	0 (2.7)	3 (2.9)
Fordyces spots	0 (0.0)	1 (0.0)	0 (0.9)	1 (0.9)
Food burn	0 (0.0)	1 (0.0)	0 (0.9)	1 (0.9)
Frictional keratosis	0 (0.0)	0 (0.0)	1 (0.9)	1 (0.9)
Leukoplakia	1 (0.2)	7 (0.5)	3 (10.0)	11 (10.7)
Lichen Planus	0 (0.0)	1 (0.1)	1 (1.8)	2 (1.9)
Linea Alba	0 (0.0)	1 (0.1)	1 (1.8)	2 (1.9)
Maxillary tori	0 (0.0)	0 (0.0)	1 (0.9)	1 (0.9)
Mucosal changes	0 (0.1)	0 (0.3)	6 (5.4)	6 (5.8)
NAD	2 (11.2)	6 (26.8)	631 (580.2)	639 (618.2)
Oral submucous fibrosis	1 (0.2)	2 (0.5)	8 (10.0)	11 (10.7)
Preleukoplakia	0 (0.2)	2 (0.5)	8 (10.0)	10 (10.7)
Tobacco pouch keratosis	0 (0.0)	0 (0.1)	2 (1.8)	2 (1.9)
Traumatic ulcer due to denture	0 (0.0)	1 (0.0)	0 (0.9)	1 (0.9)
Ulcer	0 (0.0)	0 (0.0)	1 (0.9)	1 (0.9)

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	1258.568[a]	69	.000
Likelihood Ratio	391.681	69	.000
N of Valid Cases	739		

a. 86 cells (89.6%) have expected count less than 5. The minimum expected count is .02.

Table 13: Provisional Diagnosis

	Mild LOF	Moderate LOF	No LOF	Total
Inflamed hyperkeratotic and parakeratotic squamous mucosa	0 (0.0)	1 (0.0)	0 (0.9)	1 (0.9)
Benign hyperkeratotic and parakeratotic squamous mucosa and congested blood vessels in the subepithelial zone	0 (0.0)	1 (0.0)	0 (0.9)	1 (0.9)
Benign hyperkeratotic squamous mucosa	0 (0.1)	3 (0.1)	0 (2.7)	3 (2.9)
Benign hyperplastic squamous mucosa and congested blood vessels seen beneath	0 (0.0)	1 (0.0)	0 (0.9)	1 (0.9)
Benign inflamed hyperplastic squamous mucosa	0 (0.0)	1 (0.0)	0 (0.9)	1 (0.9)
Benign inflamed squamous mucosa	1 (0.0)	1 (0.1)	0 (1.8)	2 (1.9)
Benign squamous mucosa	0 (0.0)	1 (0.0)	0 (0.9)	1 (0.9)
Chronically inflamed hyperkeratotic squamous mucosa	0 (0.0)	0 (0.0)	1 (0.9)	1 (0.9)
Hyperkeratotic and parakeratotic benign squamous mucosa	0 (0.0)	2 (0.1)	0 (1.8)	2 (1.9)
Inflamed hyperplastic squamous Mucosa	0 (0.0)	1 (0.0)	0 (0.9)	1 (0.9)
Mildly inflamed hyperplastic mucosa	0 (0.0)	1 (0.0)	0 (0.9)	1 (0.9)
NAD	1 (0.1)	0 (0.2)	3 (3.6)	4 (3.9)
Oral submucous fibrosis	1 (0.0)	0 (0.0)	0 (0.9)	1 (0.9)

Chi-Square Tests

	Value	Df	Asymptotic Significance (2-sided)
Pearson Chi-Square	386.827[a]	39	.000
Likelihood Ratio	106.857	39	.000
N of Valid Cases	739		

a. 52 cells (92.9%) have expected count less than 5. The minimum expected count is .02.

Table 14: Final Diagnosis

	Mild LOF	Moderate LOF	No LOF	Total
Adjacent to lower right molars	0 (0.0)	0 (0.0)	1 (0.9)	1 (0.9)
Adjacent to mandibular left premolar vestibule	0 (0.0)	0 (0.0)	1 (0.9)	1 (0.9)
Anterior 2/3 of the tongue towards midline	1 (0.0)	0 (0.0)	0 (0.9)	1 (0.9)
Anterior 2/3 of tongue	0 (0.0)	1 (0.0)	0 (0.9)	1 (0.9)
Anterior lower vestibule	0 (0.0)	0 (0.1)	2 (1.8)	2 (1.9)
Buccal mucosa	0 (0.0)	1 (0.1)	1 (1.8)	2 (1.9)
Buccal vestibule adjacent to maxillary left molars	0 (0.0)	1 (0.0)	0 (0.9)	1 (0.9)
Hard palate	0 (0.0)	0 (0.0)	1 (0.9)	1 (0.9)
Left and right buccal mucosa	1 (0.1)	0 (0.2)	3 (3.6)	4 (3.9)
Left buccal	0 (0.0)	0 (0.0)	1 (0.9)	1 (0.9)
Left buccal mucosa	3 (0.3)	8 (0.8)	7 (16.3)	18 (17.4)
Left buccal mucosa at 3rd molar region	0 (0.0)	1 (0.0)	0 (0.9)	1 (0.9)
Left corner at the angle of the mouth	0 (0.0)	0 (0.0)	1 (0.9)	1 (0.9)
Left lower anterior vestibule	0 (0.0)	0 (0.0)	1 (0.9)	1 (0.9)
Lower anterior vestibule	0 (0.1)	0 (0.1)	1 (0.9)	1 (1.1)
Lower left back buccal vestibule	0 (0.0)	0 (0.0)	1 (0.9)	1 (0.9)
Lower left labial mucosa towards the corner of the mouth	0 (0.0)	1 (0.0)	0 (0.9)	1 (0.9)
Lower left labial vestibule in relation to incisors	0 (0.0)	0 (0.0)	1 (0.9)	1 (0.9)
Lower right 3rd molar region	0 (0.0)	0 (0.0)	1 (0.9)	1 (0.9)
Lower right back region	0 (0.0)	1 (0.0)	0 (0.9)	1 (0.9)
Lower right vestibule	0 (0.0)	0 (0.0)	1 (0.9)	1 (0.9)
Left and right pterygomandibular raphe region	0 (0.0)	0 (0.0)	1 (0.9)	1 (0.9)
Midline of palate	0 (0.0)	1 (0.0)	0 (0.9)	1 (0.9)
Right buccal mucosa	0 (0.0)	0 (0.0)	1 (0.9)	1 (0.9)
Right and left buccal mucosa	0 (0.0)	1 (0.1)	0 (0.9)	1 (1.0)
Right and left buccal mucosa	0 (0.0)	1 (0.1)	1 (1.8)	2 (1.9)
Right buccal mucosa	3 (0.1)	1 (0.3)	4 (7.3)	8 (7.7)
Right buccal vestibule	0 (0.0)	0 (0.0)	1 (0.9)	1 (0.9)
Right labial mucosa	0 (0.0)	0 (0.0)	1 (0.9)	1 (0.9)
Right lateral border of tongue	1 (0.0)	0 (0.0)	0 (0.9)	1 (0.9)
Right lower vestibule in region of central incisors	0 (0.0)	1 (0.0)	0 (0.9)	1 (0.9)
Right mucobuccal fold	0 (0.0)	1 (0.0)	0 (0.9)	1 (0.9)
Right palate	0 (0.0)	1 (0.0)	0 (0.9)	1 (0.9)
Traumatic ulcer in the vestibule near upper left 1st molar due to denture	0 (0.0)	1 (0.0)	0 (0.9)	1 (0.9)

Chi-Square Tests

	Value	Df	Asymptotic Significance (2-sided)
Pearson Chi-Square	601.573[a]	105	.000
Likelihood Ratio	191.272	105	.000
N of Valid Cases	739		

a. 138 cells (95.8%) have expected count less than 5. The minimum expected count is .02.

Table 15: If yes, site

DISCUSSION

More than half (57.5%) of global head and neck cancers occur in Asia. In India, head and neck cancer accounts for 30% of all the cancers & 60-80 % present with advanced disease.[1] Thus, it is imperative and a need of the hour to have a screening device which is simple to use, non-invasive and quick for early detection of oral cancer.[2,3,4]

Velscope (Visually Enhanced Lesion scope) is a device which acts as an adjunct to clinical examination to determine abnormal oral tissue. Hence, the present study attempted to determine whether Velscope may be useful in early picking the most favorable site of biopsy oral cancer or precancer/dysplasia[5,6], when used as an adjunct screening tool in the general population who have a history of tobacco habits and a visible lesion in the oral cavity.[7,8,9]

Amongst the 739 tobacco chewers whose screening was performed 89% were men and 11% were females. Majority of the population screened was in the age group of 40-60 years of age. Almost 90% of the screened people chewed smokeless form of tobacco which is one of the major potential risk factors for development of oral cancer.[10,11]

Upon clinical examination 71(10.3%) patients had mucosal abnormalities. Out of this 11(1%) showed mild and 22(2.8%) showed moderate loss of fluorescence (LOF). 37(64.3%) showed no loss of fluorescence.

There were 8 cases with no abnormality on clinical examination, but on velscope showed LOF. However biopsy did not confirm dysplasia, the lesions were benign. Huff et al reported an increase in prevalence of mucosal disorders with epithelial dysplasia in a cohort of patients subjected with VELscope®, compared to the same cohort examined with incandescent light only.

This was contradictory to Huber et al. study which did not prove that the autofluorescence examination detects any additional suspicious lesions not identified by conventional oral examination.[11- 13]

Out of 44 lesions that showed LOF, 16 biopsies were taken in patients willing to do a biopsy. None was positive for dysplasia or malignancy.

Out of 21 cases of leukoplakia detected, 11 showed no LOF, 1 showed mild, and 9 showed moderate LOF. Most leukoplakia patches showed a central white opacity with a rim of LOF. Cases with LOF, on clinical examination, showed patches of pigmentation around the lesion. Some showed no LOF.

Melanin pigmentation absorbs light and thus appears as LOF. 4 lesions of erythroplakia were detected, 2 showed LOF and 2 did not show LOF. Out of 11 cases of oral submucous fibrosis, 1 showed mild LOF, 2 showed moderate LOF and 8 showed no LOF.

Many OSMF and leukoplakia showed white opacity surrounded by small areas of LOF on velscope.

1 case was diagnosed as verrucous carcinoma on biopsy but that did not show loss of fluorescence.

In many of the cases observed, in whom the habit of tobacco had recently developed showed early mucosal changes on COE, which also showed a certain degrees of LOF.

Even in normal mucosa, there was varying degree of LOF; some parts of normal mucosa appeared less fluorescent compared to the adjacent tissue.[14,15] Thus because of the varying degree of LOF seen all over the oral cavity it was difficult to determine the correct site for

biopsy, thus we need a sort of grading for the varying degrees of LOF to determine the biopsy site.

Majority of the indian population have cheek bite/linea alba.

Apthous ulcer, cheek bite, denture trauma, denture stomatitis, depapillation of longue,fordyces granules, fibroma, food burn, linea alba. All showed mild to moderate LOF. According to Huber et al study also mucosal pigmentations and ulcerations are associated with loss of fluorescence.[11,17]

This increase in the number of false positive results is a major drawback as this confuses the operator whether to take a biopsy or not to.[18] If young practitioners are using this device for routine screening, there would be quite a lot of ambiguity to decide whether to take a biopsy or not.

Something like denture trauma or ulceration due to sharp tooth also shows LOF due to increased vascularity[19,20]. These are also risk factors for carcinoma, thus a novice would find it difficult to take a decision whether to take a biopsy and also there would be an unnecessary increase in cost and anxiety.

VELscope is a commercially available light-based system that is based on the theory that abnormal metabolic or structural changes have different absorbance and reflectance properties. VELscope is a portable device using visible light in the 430 nm. [17,18] The sensitivity of VELscope is poor-50%.[20] VELscope along with a conventional screening examination is not useful to diagnose dysplasia or cancer and results in false positives.[20] Additional studies are required to prove the efficacy of this device in oral carcinoma patients to detect site of biopsy.

CONCLUSION

Thus according to the results of our study we did not find any added benefit of velscope to clinical examination and biopsy taking, It is to be used as a routine screening aid for oral cancer. Most of the mucosal abnormalities found on COE and biopsy was necessary, whether or not velscope examination was done. According to a study by Huff et al. where velscope was used as a screening adjunct, decision to perform biopsy was based on clinical features and not on LOF.

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