

## EVALUATION OF THE UTILITY OF CHEILOSCOPY IN PATIENTS WITH ORAL PRE-MALIGNANT DISORDERS OF THE KANPUR POPULATION

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### ABSTRACT

**Background:** Several studies have demonstrated that genetic and environmental factors are significant factors in the causation of oral and oral cancer and potentially malignant diseases. Chelioscopy could also be a valuable resource for other testing methods to classify different genetic disorders in this context. The Aim of the study the pattern of lip prints in patients with oral pre-malignant disorders. **Materials and methods:** The present study was conducted in the Department of Oral Medicine of the dental institute. A written informed consent was obtained from the participants after explaining them the procedure of the study. For the study, we selected 212 subjects from the outpatient department. The subjects having full dentition were included. Patients were grouped into 2 groups, Group 1: Patients without oral premalignant lesions (n=105) and Group 2: Patients with oral premalignant lesions (n=107). **Results:** We observed that most frequent type of lip print in Group 1 was Type III lip prints. Similarly, the most frequent type of lip print in Group 2 was Type II lip prints. The results were comparable and were statistically non-significant. We observed that oral leukoplakia was seen in 17 subjects, oral lichen planus was seen in 18 subjects, oral erythroplakia was seen in 22 subjects and oral sub mucous fibrosis (OSMF) was seen in 50 patients. The results were comparable and observed to be statistically significant among OSMF patients. **Conclusion:** From the results of the present study, we conclude that the association of lip prints with oral pre-malignant lesions is significant only in oral sub mucous fibrosis therefore further studies are required to support the theory.

**KEYWORDS:** Lip prints, pre-cancerous lesions, pre-malignant lesions.

### INTRODUCTION

Forensic odontology, was defined by Keiser- Neilson in 1970 as “a branch of forensic medicine which in the interest of justice deals with the proper handling and examination of dental evidence and with the proper evaluation and presentation of the dental findings.”<sup>[1,2]</sup> Cheiloscopy (from the Greek words cheilos meaning ‘lips’ and eskopein meaning ‘to see’) is the name given to the lip print studies. The importance of cheiloscopy is linked to the fact that the lip prints are unique to one person, except in monozygotic twins.<sup>[3,4]</sup> It is possible to identify the lip patterns as early as the 6th week in uterine life. From that moment on, the lip groove patterns rarely change, resisting many afflictions, such as herpetic lesions.<sup>[5,6]</sup> In current scenario, dermatoglyphics is widely used in the dentistry to detect the genetic basis of various conditions like cleft lip and palate, early childhood caries, developing malocclusion in pediatric population, periodontal diseases, bruxism, and also potentially malignant and malignant conditions.<sup>[7,8]</sup>

Several researches have proven that genetic and environmental factors are important determinants in causation of oral potentially malignant diseases and oral cancer. In this context, cheiloscopy can also be useful tool to other diagnostic methods in identifying various diseases of genetic origin. Hence, the present study was conducted to assess the association of lip prints with oral pre-malignant disorders at Kanpur.

### MATERIAL AND METHODS

The present study was conducted in the Department of Oral Medicine of the dental institute. The ethical clearance for the study was obtained from the research ethical committee of the institute. A written informed consent was obtained from the participants after explaining them the procedure of the study. For the study, we selected 212 subjects from the outpatient department. The subjects having full dentition were included. Lips free from any pathology, having absolutely normal transition zone between the mucosa

and the skin were included in the study. Subjects with malformation, deformity inflammation trauma and surgical scars (e.g. operation for cleft palate) and other abnormalities of the lips were excluded because of their unsuitability for this investigation. Patients were grouped into 2 groups:

Group 1: Patients without oral premalignant lesions (n=105)

Group 2: Patients with oral premalignant lesions (n=107)

A detailed case history was obtained with conducting a thorough clinical examination. Findings were recorded. The cases of potentially malignant disorders were diagnosed on the basis of their clinical features and their association with supporting etiological factors. In order to classify the lip prints in this study, the classification scheme proposed by Suzuki and Tsuchihashi was used:<sup>[8]</sup> Type I—clear-cut groove running vertically across the lip,

Type II—partial length groove,

Type III— branched groove,

Type IV—intersected groove,

Type V— reticular pattern,

Type VI—other patterns.

Red and brown colored lipstick, cellophane tape, white A4size paper and magnifying lens were used to analyze the lip prints, where red lipstick was used for females and brown for males. Lips of the subjects were cleaned with wet cotton and allowed for air dried. Study participants were asked to open the mouth when lipstick was applied in a single motion. They were asked to

gently rub the lips together to spread the lipstick evenly and to make a lip impression in the normal rest position of the lips by dabbing it in the center first and then pressing it uniformly toward the corners of the lips. The cellophane strip was then stuck to the white chart paper for permanent record purpose and then the recorded lip prints were visualized by magnifying lens.

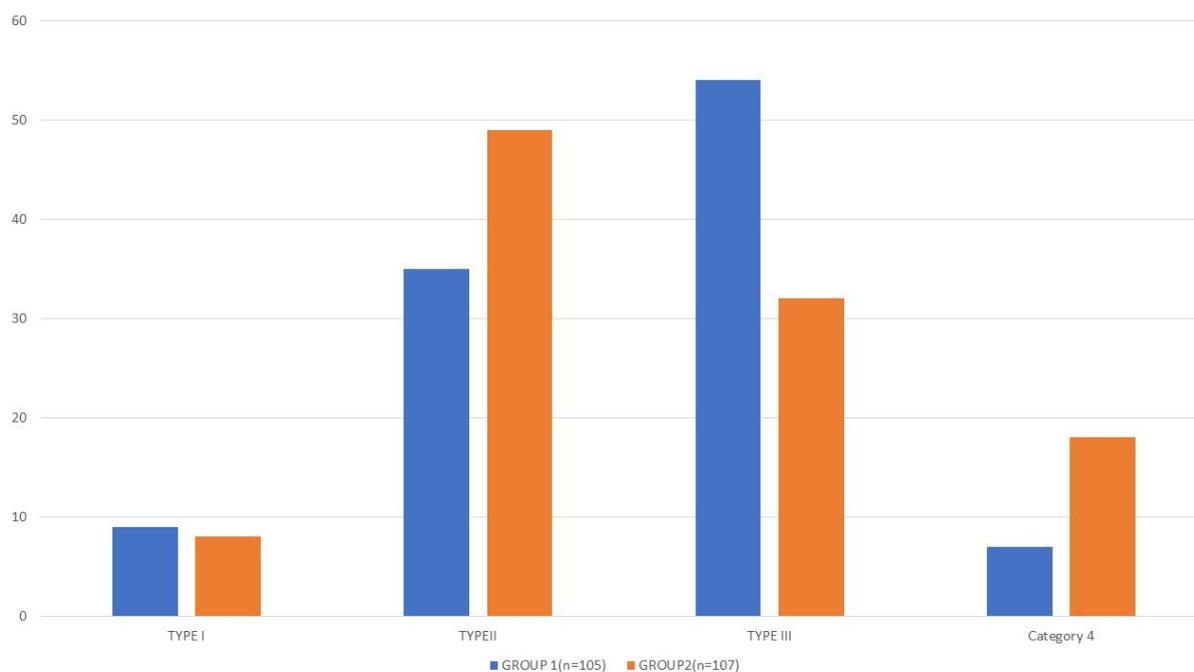
Data were analyzed using the Statistical Package for the Social Sciences, version 17.0 (SPSS Inc., Chicago, Illinois, USA). Chi-squared and t-tests were used, as appropriate, to calculate p-values. The level of statistical significance was  $p < 0.05$ .

## RESULTS

The present study was planned to analyze lip prints pattern in patients with oral pre-malignant lesions. Table 1 shows the types of Lip prints in both groups of the study. We observed that most frequent type of lip print in Group 1 was Type III lip prints. Similarly, the most frequent type of lip print in Group 2 was Type II lip prints. The results were comparable and were statistically non-significant. [Table-1, Fig-1]

**Table 1: Types of Lip prints in both groups.**

	GROUP 1(n=105)	GROUP 2(n=107)	P-VALUE
<b>TYPE I</b>	9	8	0.992
<b>TYPE II</b>	35	49	0.864
<b>TYPE III</b>	54	32	0.728
<b>TYPE IV</b>	7	18	0.996



**Fig. 1: Comparative analysis of types of lip prints in Group 1 and 2.**

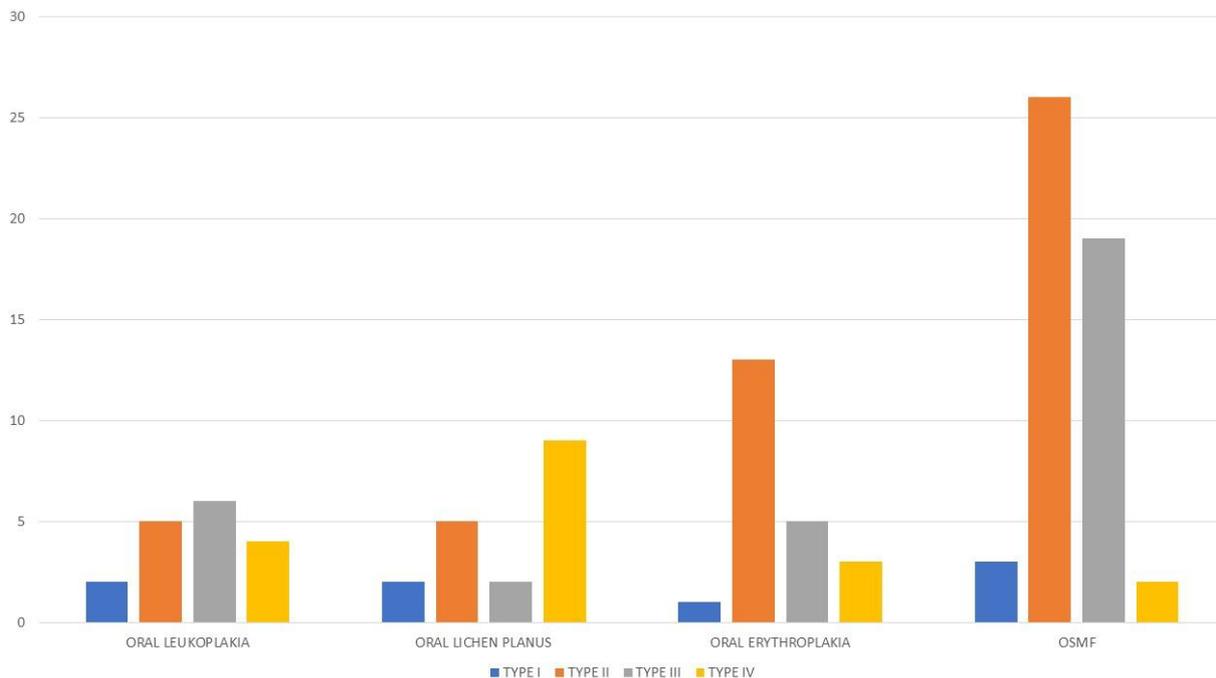
Table 2 shows the oral pre-malignant disorders and types of lip prints in study population. We observed that oral leukoplakia was seen in 17 subjects, oral lichen planus

was seen in 18 subjects, oral erythroplakia was seen in 22 subjects and oral sub mucous fibrosis was seen in 50 patients. The results were comparable and observed to be

statistically significant in OSMF group of patients while in rest oral premalignant disorders it was found not significant. [Fig-2]

**Table 2: Oral pre-malignant lesions and types of lip prints.**

Oral Premalignant Lesion	TYPE I	TYPE II	TYPE III	TYPE IV	TOTAL	P VALUE
ORAL LEUKOPLAKIA	2	5	6	4	17	0.689
ORAL LICHEN PLANUS	2	5	2	9	18	0.765
ORAL ERYTHROPLAKIA	1	13	5	3	22	0.862
OSMF	3	26	19	2	50	<b>0.0437</b>



**Fig. 2: Oral pre-malignant lesions and types of lip prints.**

## DISCUSSION

Every human being is distinct and discernible in that they exhibit their own pattern of characteristics. There are many well-known implanted methods of human identification based on these characteristics, and one of the most interesting emerging methods of human identification is human lips recognition. Normal lines and fissures in the form of wrinkles and grooves are present in the zone of transition of the human lip between the inner labial mucosa and outer skin. These form a characteristic pattern, and the imprint produced by these are called lip prints.<sup>[9]</sup>

Theory of uniqueness is a strong point used in the analysis of finger prints and bite marks to convince the court of law; likewise, even lip prints are unique to an individual. Lip print patterns appear to be genotypically determined, unchanged from birth.<sup>[10]</sup> The lips can be horizontal, elevated, or depressed, and according to their thickness, it is possible to identify the following four groups:<sup>[11]</sup>

1. Thin lips (common in the European Caucasian),
2. Medium lips (from 8 to 10 mm is the most common type),

3. Thick or very thick lip (usually having an inversion of the lip cord and is usually seen in negroes),
4. Mix lips (usually seen in Orientals).

Lip prints are genetically determined and form a pattern that is unique for each individual. Pre-malignant disorders, having a strong genetic background, can be influenced by these lip prints features. Furthermore, lip print analysis is simple and noninvasive methods, when compared with biochemical tests for pre malignant disorders. Footprints can also be used for similar anatomization.

In the current study most frequent type of lip print in Group 1 was Type III (branched groove) lip prints and the most frequent type of lip print in Group 2 was Type II (partial length groove) lip prints, similar to the study done by Kaur I et al.<sup>[8]</sup>

We also analyzed the lip prints patterns in pre-malignant disorder group and controls. It was found that when seen individually lip prints showed the highest percentage of type II (partial length groove) in oral sub mucous fibrosis cases and controls. However, the results were not significant statistically in other pre malignant disorders

like oral leukoplakia, erythroplakia and oral lichen planus which was found similar to the study done by Kaur I *et al.*<sup>[8]</sup>

We conclude from the results of the present study that the association of lip printing with oral pre-malignant lesions is relevant only in the category of patients with oral submucous fibrosis, so further studies with a large sample size are needed to support the scientific consensus.

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