Original Article

EVALUATING UNIQUENESS AND PREDOMINENT PATTERN OF LIP PRINTS: A STUDY ON STUDENTS FROM ACADEMIC INSTITUTE

Dr. M Kulkarni, Dr. M Ashraf

Authors

Dr. Meena Kulkarni, Prof. & Head, Department of Oral Pathology, Rural Dental College, PIMS (DU), Loni, Maharashtra

Dr. Muzamil Ashraf, Resident, Department of Oral Pathology, Rural Dental College, PIMS (DU), Loni, Maharashtra

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Address for correspondence: Dr. Muzamil Ashraf, Resident, Pravara Rural Dental College, PIMS (DU), Loni, Maharashtra
drmuzamilashraf@gmail.com
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Abstract:
Cheiloscopy is a forensic investigating technique that deals with identification of humans based on lips traces. Lip print has already proven to be unique to each individual, its examination and comparison at the crime scene with those of suspected person might prove to be an important tool in persuasion to secure law and justice. The prime aim of the study was to evaluate the predominant pattern of lip print by using two different methods and to study the uniqueness of lip prints. The pattern of lip prints was recorded by two methods and studied along the entire length and breadth and classified according to Suzuki and Tsushihashi’s classification. No two lip prints matched with each other, thus establishing the uniqueness of lip prints. Type I and I’ pattern was predominant in females; type II pattern showed almost equal distribution between males and females whereas type III, IV and V was seen to be more prominent in males. Both methods of recording lip print are equally accurate.

Key Words: lip prints, identification, sex determination.

Introduction:
Establishment of a person’s individuality is of significance for legal as well as humanitarian purpose and gender determination is an essential step in identifying an individual. Many methods are being used for this purpose like DNA analysis, dental assessment, finger printing. However, since they cannot always be used, so there is a need for a reliable alternative method for establishing identity. [1]

Similar to finger, palm and foot prints, lips possess furrows and grooves that can be classified into various types for identification purposes. The grooves present on lips are unique to an individual and hence can be used as a tool for identification process. The study of these grooves of furrows present on the red part of the lips is known as Cheiloscopy. [2]

Earlier studies have clearly shown that the lip prints can be used for personal identification as well as determination of sex [3, 5]. R. Fischer an Anthropologist was the first to describe these groves and fissures in 1902. [3] In 1932, Edmond Locard acknowledged the importance of importance of Cheiloscopy. In 1950, Le Moyer Snyder mentioned in his book ‘homicide Investigation’ about the possibility of using lip prints in human identification. [4]

Aims and Objectives:
1. To evaluate the predominant pattern of lip Print by using two different methods.
2. To study uniqueness of lip prints.

Materials and Methods:
The materials used in the present study are red coloured lipstick, cellophane paper, bond paper, cello tape, microscope glass slide, fine black carbon powder (No.2015), ostrich brush, magnifying glass[11].

The study was conducted on a group of 100 students of Rural Dental College, Loni, within the age group of 17 to 21years. Care was taken in selecting subjects having no lip
lesion or any lip scar or deformity. Subjects having hypersensitivity to lipstick were not included in the study.

The subjects were divided in two groups, Group A and Group B. Each group contains 50 males and 50 females. A verbal consent was obtained from the subjects. The subjects were made to sit on the dental chair in a relaxed position.

Two methods were used to record the lip prints:

**Method 1:** Lipstick was applied to the lips of the subject in a single stroke then, a cellophane paper was applied over the lips and lip prints were recorded on the cellophane paper. This cellophane paper was placed over the bond paper and a sticking cello tape was applied over it. The print was then studied using a magnifying glass under bright light.

**Method 2:** Latent lip prints are taken on a clean and dry microscopic glass slide in a single motion without applying anything. They are developed by sprinkling black carbon powder using an ostrich brush. Any excess carbon powder was dusted off and a cello tape was placed on top of the glass slide. Then using a magnifying glass, the lip prints were studied in bright light.

Lip prints obtained by both the methods are classified according to Suzuki and Tsuchiashi classification. These authors considered six different types of grooves:

<table>
<thead>
<tr>
<th>Classification</th>
<th>Groove type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type I</td>
<td>Complete vertical</td>
</tr>
<tr>
<td>Type II</td>
<td>Incomplete vertical</td>
</tr>
<tr>
<td>Type III</td>
<td>Branched</td>
</tr>
<tr>
<td>Type IV</td>
<td>Intersected</td>
</tr>
<tr>
<td>Type V</td>
<td>Reticular pattern</td>
</tr>
<tr>
<td>Type VI</td>
<td>Irregular</td>
</tr>
</tbody>
</table>
RESULTS:

- No two lip prints matched with each other, thus establishing the uniqueness of the lip prints.
- The Type I pattern was seen predominantly in females by both methods. Type I’ pattern was seen only in females by both methods.
- Type II pattern was equally seen in males (%) and females (%).
- Type III pattern and IV pattern was prominently seen in males (%) than females (%).
- Type V pattern did not show any significant difference in male and female (%).

Discussion:

Cheiloscopy is the study of lip prints and has presently become one of the upcoming tools for the identification of a person. Lip prints are considered to be unique to an individual and do not change during the lifetime of a person. Lip print identification is widely used in criminal and forensic practice [7,8].

Lip prints left at the crime scene should be dealt and handled carefully. At the crime scene lip prints can be obtained from windows, doors, cups, cigarette butts, clothes and other sites. Lip pattern can be used as a tool to identify the gender of victim & suspect in crime or other calamities. Lipstick smears can lead to indirect proof of a relationship or contact between a victim and a suspect or suspect and a crime scene. [7]

While searching for lip prints, one must always consider that not all lipstick smears are colored. Recently the cosmetic industry has developed lipsticks which do not leave mark or a smear, these are known as persistent lipsticks[9]. In such situation, although invisible, these prints can be lifted using materials such as aluminum powder and magnetic powder.

The identification of latent print evidence is often considered the key in solving a crime. [10]

The present study was carried out on 100 students, divided equally in males and females. The lip prints were studied using two different methods, one method used visible lip print (lipstick method) while the other used the invisible lip prints (slide and carbon powder method).
method) Lip prints obtained were classified according to Suzuki and Tsuchiashi classification.

In our study, no two lip prints matched with each other thus establishing uniqueness of lip prints which was in accordance with earlier studies done by Simarpreet et al, Rashmi et al, Jagdish et al.

It was found that Type I pattern [clear cut vertical grooves that run across the entire lip] was seen predominantly in females which was established by both methods. Type I’ pattern [the grooves are straight but disappear half way instead of covering the entire length] was seen only in females by both methods.

Type II [the grooves fork in their course] was seen equally in males and females which is an agreement with earlier studies done by Maheshwari et al and Shilpa et al.

Type III [the grooves intersect] and IV pattern [the grooves reticulate] was prominently seen in males which is in agreement with studies done by Gondivkar et al.

Type V [the grooves do not fall into any of the types I-IV and cannot be differentiated morphologically] did not show any significant difference in male and female lip patterns.

The present study is able to convey that lip prints behold the potential of determination of the sex. Both methods which were used to record lip prints showed almost similar results thus confirming the fact that both methods are reliable and can be used to record lip prints for future study on lip prints.

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References: