Lip Prints As A Method Of Identification In Human being

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Abstract : The analysis of finger prints and bite marks are used to establish identity of an individual in the court of law, lip prints and vermilion borders has been considered to establish the identity of an individual. The study was conducted on 300 North Indian individuals both male and females in the age group between 18- 65 years. The lip prints were studied with help of a magnifying lens using Suzuki’s classification. The study revealed that the lip prints of all the experimental subjects did not match with each other and the type II was the most common pattern prevailed. No change was observed in the lip prints of same individual after a period of one year.

Key words : Cheiloscopy, Lip Prints, Suzuki’s classification

Introduction:
Lips are two fleshy folds surrounding the oral orifice. They are lined externally by skin and internally by mucosa. The skin is continuous with the mucosa at the transitional or Vermilion border, a reddish zone covered by the thin keratinized epithelium (Fig.1). Line of contact between lips (oral fissure) lies just above the cutting edges of the superior incisor teeth and on each side a labial commissure forms the angle of mouth, usually near the first premolar tooth. Epithelium of the vermillion area exhibits a less well developed stratum corneum than skin (1,2).

Fig. 1: Showing skin continuous with mucosa at vermilion border

The labial mucosa and a part of the oral mucosa are not smooth like the buccal mucosa and soft palate. It has many elevations and depressions forming a characteristic pattern called lip prints, examination of which is referred to as Cheiloscopy (3).

Tsuchihashi Y. stated that the wrinkles and grooves in the ruddy part and the zone of transition of the human lips have not been given anatomical names. Therefore, he named these grooves as “sulci labiorum rubrorum”. The figure formed by these sulci was called “figura linearum labiorum”, in Japanese which means “lip prints” (4).

Detailed investigation regarding the measurements of lips, color of rouge and its differentiation from a blood stain are the methods to obtain useful data for practical forensic application. It was observed that lip prints made by rouge varied from person to person. Cheloscopic techniques have an equal value in relation to the other types of forensic evidences for personal identification (5, 6, 7).

Materials and Methods:
The study was conducted on 300 North Indian individuals of 18 to 65 years of age in the Department of Anatomy, Himalayan Institute of Medical Sciences, Dehradun, Uttarakhand. Males and females were equal in number. The study was performed over a period of twelve months.

Out of 300 individuals, 50 subjects comprising 25 males and 25 females were taken for studying the permanence of lip prints. Lip prints of this group were taken in the beginning and at the end of the study i.e. after 12 months. The individuals with inflammation, trauma, malformation, deformity, surgical scars and other pathology of the lips were excluded.

Materials:
A dark- colored frosted lipstick, thin bond paper (4"x10"), magnifying lens, scale for taking measurements of lips, a piece of cardboard (4"x10"), two clips, pen/ pencil for labeling, tissue paper/ cotton for cleaning the lips.
Methods:
A 4"x10" strip of thin bond paper was fixed on the cardboard of same size with the help of the clips. The paper was then labeled with name, age, sex, occupation and address of the subject to be filled after taking the lip prints. Before the application of the lipstick the subject was asked to thoroughly clean the lips to remove any foreign substances sticking to it with a wet tissue paper or by washing them with soap. The subject was then provided with dry tissue paper to dry the lips. The lipstick was applied with a single motion evenly on the lips. The subject was asked to rub his/ her lips together to spread the lipstick evenly. The cardboard bearing the bond paper was then pressed to the subject’s lips with the central portion of the lips dabbed first and then pressed uniformly up to the left and right corners of the lips. Care was taken to avoid sliding of the lips so as to prevent smudging of the print over the entire area of the red part of the lips. The paper was removed from the cardboard and was folded along the length and was pressed between the two lips, so that the transition zone was also covered in the print (Fig: 2,3).

Observations:
We studied lip prints with help of a magnifying lens according to the classification given by Suzuki’s (8) as follows -:
1. Type I- Vertical, comprising of complete [end- to- end] longitudinal fissure patterns.
2. Type I- Partial length groove of type I.
3. Type II- Branching, Y- shaped pattern.
4. Type III- crisscross pattern.
5. Type IV- Reticular, typical checkered pattern fence like.

Figures 4,5,6,7 shows various patterns on the lip prints obtained after application of lipstick. Using the aforesaid classification lip prints were recorded in a way resembling a dental formula as commonly used in dental clinics (Fig: 8)
Examination of lip prints showed that in each quadrant combinations of patterns were present. It was observed that no two lip prints of individuals’ matches with each other.

A total of 1200 quadrants were studied in 300 individuals. The types of patterns were analyzed irrespective of the quadrant in which it was present.

Table – I
Distribution of Lip Prints patterns in total Number of subjects

<table>
<thead>
<tr>
<th>Classification of Lip print patterns</th>
<th>MALE</th>
<th>FEMALE</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>600 quadrants</td>
<td>Percentage (%)</td>
<td>600 quadrants</td>
</tr>
<tr>
<td>Type I</td>
<td>321</td>
<td>53.50</td>
<td>394</td>
</tr>
<tr>
<td>Type I’</td>
<td>355</td>
<td>59.16</td>
<td>303</td>
</tr>
<tr>
<td>Type II</td>
<td>363</td>
<td>60.50</td>
<td>401</td>
</tr>
<tr>
<td>Type III</td>
<td>178</td>
<td>29.66</td>
<td>162</td>
</tr>
<tr>
<td>Type IV</td>
<td>237</td>
<td>39.50</td>
<td>192</td>
</tr>
</tbody>
</table>

The most frequent pattern in all the males studied was type II (60.50%) and the least observed pattern was type III (29.66%) irrespective of quadrant studied. Patterns in the order of frequency were II, I’, I, IV & III.

The most common single pattern in all the females was type II (66.83%) and the least observed pattern was type III (27%) irrespective of the quadrant studied. Patterns in order of frequency were II, I, I’, IV & III.

The most common single pattern in all the individuals studied was type II (63.66%), type III (28.33%) was the least common pattern found irrespective of the quadrant studied. Patterns in the order of frequency were again found to be same i.e. II, I, I’, IV & III.

Lip prints of 50 subjects were recorded at the beginning of the study and were again recorded after one year. The observations revealed no change in the lip prints patterns, with changing time.

Discussion:
Suzuki and Tsuchihashi examined lip prints collected from 280 individuals consisting of 150 males and 130 females aged between 6-57 years in a Japanese population. They analyzed the lip prints by using the photographic method and concluded that lip prints varied from person to person. Tsuchihashi conducted a study on lip prints of 1364 Japanese subjects, consisting of 757 males and 607 females.
aged between 3- 60 years. He adopted photographic methods to record the lip prints. He concluded that lip prints consisted of combinations of patterns in every quadrant and no two lip prints were identical. In the present study we used the magnifying glass to study lip prints and it was observed that no two prints matches with each other (9,6).

A study conducted by Tsuchihashi on lip prints of 64 Japanese subjects, consisting of 22 males and 42 females aged between 20- 30 years concluded that type III was commonest in both sexes and the order of frequency of the patterns were III, I, II, IV & V. Shivapathasundharam B et al observed that the intersecting pattern (resembling type I in Suzuki's classification) was most common (43.33%) while the reticular pattern (resembling type IV in Suzuki's classification) was least commonly seen (10.71%). Hirarth found that branched pattern (resembling type II in Suzuki's classification) was the most common type in the upper lip and partial length pattern (resembling type I' in Suzuki's classification) was most common in lower lip. But present study type II was the commonest pattern whereas type III was least common and the order of frequency was II,I,I', IV & III.

No change in the lip prints patterns were observed during one year duration in the sample study.

Since lip prints is different in every individual and does not change with time so it can also be used as a method for identification.

References: