Survey of Lip Prints among the People of Maharashtra

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ABSTRACT

Aim: Lip prints are unique to each individual. They remain the same throughout life and are uninfluenced by environmental changes, diseases and trauma. The present study was conducted at Bharati Vidyapeeth dental college,pune, India among 30 randomly-selected dental students belonging to age group of 18–25 years. **Materials and Methods**: The study group comprised of 30 subjects. The materials used were dark-colored lipstick, bond paper, cellophane tape, a brush, magnifying lens. **Results**: we found that 12 of actual 15 lip prints of males were correctly identified. Out of 15 female we got the correct results for 13 females. By using Chi-square test, statistical analysis was done and a p-value < 0.05 was obtained. **Conclusion**: Our study showed that lip prints are unique to each individual and can be used for personal identification**.**

KEYWORDS: Chelioscopy, Lip Prints, Forensic Identification

INTRODUCTION

Forensic dentistry or forensic odontology is the proper handling, examination and evaluation of dental evidences which will be then presented in the interest of justice.[2] The imprint produced by these grooves is termed lip print. Study of lip print is referred to as cheiloscopy (from greek word: chelios - lips, scopy - study. Lip prints are similar to finger prints, palm prints and footprints in that individual characteristic are used for identification. Lip prints can be instrumental in identifying a person positively and can be used to verify the presence of a person at the scene of crime.[3] Suzuki and Tsushihashi (1970) introduced their classification and divided lip prints into 6 types, which are as follows: Type (I) is a longitudinal groove running through the whole width of the lip.

Type (I') is partial longitudinal l groove,Type (II) is branched groove,Type (III) is intersected groove,Type (IV) is reticular groove ,Type (V) is undetermined groove.[4, 5] The purpose of this study is to evaluate the possibility of using cheiloscopy for sex determination.

In forensic identification, the mouth allows for a myriad of possibilities. Collection of information from bite marks, lip prints and teeth in crime scenes such as murder and rape can play a major role in criminal investigations. Occasionally, visible or latent lip prints are found at a crime scene which can be developed, recorded and compared with the prints of suspected persons and the donor can be identified.The importance of cheiloscopy is linked to the fact that lip prints are genetic, once developed at the 6th month of intrauterine life they are permanent, unchangeable even after death, and unique to each person except in monozygotic twins. The present study is an attempt to bring into light the uniqueness of lip prints for personal identification. Lip prints are unique and do not change during the life of an individuals. The lip prints of parents and children have shown some similarities. Lip prints are similar to finger prints, palm prints and footprints in that individual characteristic are used for identification. Lip prints can be instrumental in identifying a person positively and can be used to verify the presence of a person at the scene of crime.[3]

Santos et al (1967) suggested that the fissures and lines in the lips could be divided into simple and compound types. The simple types were either straight, curved angled, or sine shaped lines (curved) and the compound ones were bifurcated, trifurcated or anomalous where as Suzuki and Tsushihashi (1970) introduced their classification and divided lip prints into 6 types, which are as follows:

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- Type (V) is undetermined groove.[4,5]

In a crime investigation, lip prints can link a subject to a specific location if found on clothes or other objects such as glasses, cup or even cigarette butts. Experts can lift lip prints from objects found at crime scenes and compare these prints to a suspect's lip pattern. Lip prints in form of lipstick are frequently encountered in forensic science laboratories as one of the most important forms of transfer evidence.[6]

Research studies and information regarding the use of lip prints as evidence in personal identification and criminal

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investigation in forensic dentistry are very much scanty, but it exists as a methodology in forensic dentistry. Studying lip prints in depth and establishing further facts about lip prints will certainly help as useful evidence in forensic dentistry.[7] Inspite of few studies available, Suzuki and Tsushihashi gave their own standardized classification of different types of lip print in 1970. Keeping this classification as standard, further studies can be done in this regard.[5]

Aims

- To observe patterns of the lip prints.
- To study the distribution of various lip print patterns in the population of Maharashtra aged between 20 to 40 years.
- To observe the variou lip print patterns in males and females.

Objectives

- To evaluate any differences in the lip prints between the sexes and to investigate the potential role of lip prints in personal identification and crime scenes.

MATERIALS AND METHODS

- **Materials:** The materials used were lipstick, bond paper, cellophane tape, disposable brush for applying lipstick and a magnifying lens.
- **Source of data collection:** The study was conducted on 30 subjects aged between 20 to 40 years.
- **Methods:** The lips of the individuals were cleaned and the dark colored lipstick was applied on the lips. Glued portion of cellophane tape was placed over the lips with lipstick and subjects were asked to make a lip impression in the normal rest position of lips by dabbing lips in centre first and then pressing them uniformly towards the corners of the lips.

The cellophane tape is then attached to a white chart paper for permanent record purpose and then it is viIn the present study Suzuki. K and Tsuchihashi Y classification were used for the analysis of recorded lip prints.

In a study conducted by Vahanwala-Parekh, it was suggested that certain pattern trends were prevalent in either sex .In this present study suggested pattern trends were used for sex determination.[4] Table 1

Vahanwala Parekh

Lip pattern type	Type I& Type I'	Type II	Type III	Varied pattern	Similar pattern
Site predilection	Right upper lip (1st quadrant)	Left upper lip (2nd quadrant)	Never occurs in lower lips	In all quadrants	In all quadrants
Gender predilection	Female	Male	If so, only in male	Male	Female

Table1:Vahanwala Parekh Classification

Examination of the prints for Conventional Technique: Lip prints obtained were coded, keeping in account the name and sex of the respective individuals. At the time of analysis the sex of the print was not disclosed. The lip print was divided into 4 quadrants as following four areas: upper right (UR), upper left (UL), lower right (LR), lower left (LL). During the analysis of the prints, the most lateral part of the lip print (near the angles of the mouth) was excluded as it was usually wrinkled.In the male lip prints, it was occasionally difficult to determine the philtrum (usually masked by the moustache), so the middle area of each lip (about 15 mm) was considered as upper middle and lower middle areas. The obtained prints were examined by magnifying hand lenses (with direct light focused on it) and the groove types were analyzed according to Suzuki.K and Tsuchihashi Y and Vahanwala–Parek classification.[3]

RESULTS AND DISCUSSIONS

Results of the above analysis showed that the most common patterns seen in study population was the vertical type (42%). This was followed by the intersecting pattern, which was 27%. The frequency of other 4 types branched, incomplete vertical, reticular and undetermined was 8.3%, 12.25%, 7.50% and 1.67% respectively. Graph 1

- According to this study most common patterns seen is type I (complete vertical groove).In females most common pattern is type I (complete vertical groove) whereas in males it is type II (Branching pattern).
- In evaluation of lip patterns in sex determination we found that 12 of actual 15 lip prints of males were correctly identified. The sensitivity of this classification over original gender i.e. the percentage of correct measurement is 80 %. Out of 30 subjects 25 were correctly identified which include 12 females and 13 males. The sensitivity of this classification over original gender i.e. the percentage of correct measurement is 80 % for males.The sensitivity of this classification over original gender i.e. the percentage of correct measurement is 86 %for females.It indicates there is perfect correlation between person's identification among males and females. By using Chi-square test, statistical analysis was done and a pvalue < 0.05 was obtained. Table 2

ACTUAL GENDER	TOTAL	PREDICTED GENDER	PERCENTAGE
MALE	15	12	80%
FEMALE	15	13	86%

Table 2: Sex Determination

CONCLUSION

Limitation of cheiloscopy which needs to be considered is the existence of some pathological conditions (lymphangiomas, congenital lip fistula, Merkelson-Rosenthal syndrome, syphilis, among others) which can invalidate the cheiloscopy study. Inspite of this limitation this study may help to add certain new aspects to the use of the lip prints in forensic practice since lip prints behold the potential for sex identification. The study of lip prints needs to be developed further to prove its use as an effective tool for identification just like fingerprints. Though the results obtained by this study does not prove to be a full-proof one it does seem to promise to go one step closer to the "Truth"…..locating justice. Lip prints thus hold potential promise as a supplementary tool along with other modes to recognize the sex of an individual. The existing classification does not take into account the various other types of patterns occurring on the lips. This study also noticed few new patterns which need further classification and can be added as a separate lip patterns. It showed horizontal lines, multiple branching appearance and whorl pattern. Perhaps a more comprehensive classification of the lip print patterns is the need of the hour. It will be better if a method is standardized to analyze the lip prints with the help of some software programs in the wake of recent technological advancements in forensic investigations. Exploration of literature reveals that very few have ventured this area and that there are many untreaded paths which have to be covered. Hope this study invites at least a few curious minds to think over the wonderful science of cheiloscopy. However further longitudinal studies with even larger sample sizes are around thousand recommended to substantiate the results.[7,8]

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