

ORIGINAL ARTICLE

Medicolegal Importance of Sex Determination with the Help of Lip Prints: CheiloscopyIMRAN JAWAAD¹, MUHAMMAD MUSHTAQ², FARAZEN SADIA MUSHTAQ³, ZOYA IMRAN⁴, SAMREEN RIZWAN⁵¹Prof Forensic Medicine, UCM, UOL, Lahore²Associate Professor Forensic Medicine, UCM, UOL, Lahore³Women Medical Officer⁴Final year MBBS student at Shalimar Medical College, Lahore⁵3rd Year BDS Student, University College of Medicine & Dentistry, The University of Lahore.Correspondence to: Imran Jawaad, Email: imranjawaad@hotmail.com, Cell: 03009482626**ABSTRACT**

Introduction: Identification whether of living person or of dead bodies have always been an uphill task for forensic experts. Traditional ways of identification are used commonly due to limited resources and lack of trained personals in the relevant field. Identification becomes very important when victim or assailant is unknown. To establish identification, methods commonly used are finger prints, foot prints, DNA technology. Lip prints a relatively neglected field of identification can be used to establish identification and sex determination producing almost same results as other methods of identification.

Objectives: To determine whether lip prints can be used from their configuration to determine the gender identification.

Material and Method: 75 medical college students with equal gender distribution, 35 male and 35 females were included in the study. Students were aged between 18 to 25 years.

Inclusion criteria: Students with no lip abnormality were included in the study.

Exclusion criteria: Students with any abnormality of lips or who have some lip surgery were excluded from the study.

Results: The uniqueness of the lips was established by the facts that no two lips matched with each other.

Females revealed type I, I' most abundant, whereas type IV was abundantly observed among males.

From the current study, with inexperienced observers it was revealed that from sample of 20 lip patterns from each gender, 18 females and 17 males were easily identified.

Conclusion: Identification of a person whether living or dead is a challenging task for forensic experts around the globe. Lip prints are among the cheapest and easily available methods of identification producing almost same results as finger prints. It is a rather neglected area which needs to be focused more as it is cheap and can be equally effective in producing almost same results as other related methods used for identification and sex determination in particular unknown cases.

Keywords: Sex determination, Lip prints, Medicolegal importance.

INTRODUCTION

Identification is a big issue which needs to be resolved in legal matters related to a crime(1). It becomes more important when the victim or assailant is unknown(2). To establish identification different methods are in vogue such as finger prints, foot prints, DNA technology(3). Lip prints can be used effectively to establish identification, producing almost same results as rest of the methods(4).

Lip prints are produced due to wrinkles and grooves on the lips i.e. on the labial mucosa. These grooves produce a specific pattern which is known to us as lip prints. The knowledge of lip prints and its characteristics is acknowledged as Cheiloscopy. Just like finger prints it is unique to each individual.

Lip prints were first discussed in detail by Fisher(5). Edmond Locards famous French Criminologist in 1932 suggested the use of lip prints for identification(6).

In 1999 Illinois state gave a judgment, that lip prints are equally accepted as finger prints for identification. Although used quite rarely but they are effective means of identification whenever available.

Objective: To determine whether lip prints can be used from their configuration to determine the sex of an individual.

MATERIAL AND METHODS

This study is conducted at Amna Inayat Medical College among students of 3rd year MBBS. Study was conducted from 1st February to 20th September, 2021. 75 medical college students 35 male and 35 females were included in the study. Students aged between 18 to 25 years were inducted in the study according to WHO criteria.

Students with any wound on the lips or hypersensitive to lip glow were excluded from the study. Technique using a single stroke of tan shade lipstick was evenly employed on the lips. The lips were gently rubbed to spread the lipstick. With a span of a couple of minutes, lip prints were taken on the glued side of the cellophane tape. This impression was taken on a white bond paper. This record could be used for future reference.

With the help of a magnifying lens the lips were closely observed for lines and furrows. Their length branching and combination were recorded. The name and gender of the participants were recorded and its coding was done. Sex of the print was not disclosed at the time of analyses.

The lines suggested by Tsuchihashi Y on lips were followed and the classification proposed by him (figure-1, figure-2, figure-3)

1. Type I: Clear cut vertical grooves that run across the entire lip.
2. Type I': Similar to type I, but do not cover the entire lip.
3. Type II: Branched grooves (branching Y-shaped pattern).
4. Type III: Criss cross pattern, reticular grooves.
5. Type IV: Undetermined.

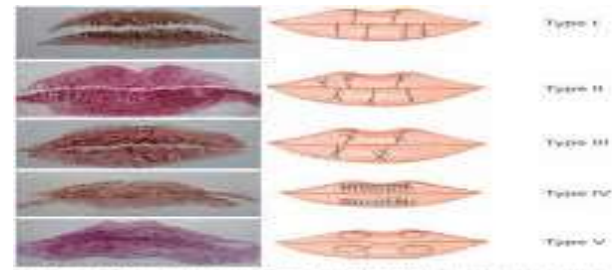


Figure-1

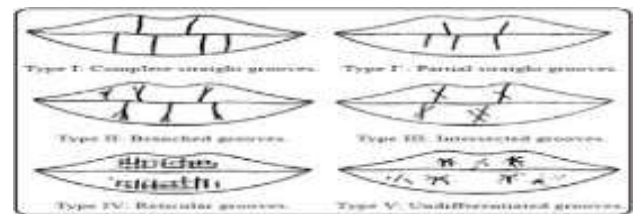


Figure-2

The lower lip median area was chosen for our study. This area was selected because it is always visible in any trace.

Gender determination was determined as

Type I I' pattern dominant: Female.

Type I and II pattern are dominant: Female.

Type III pattern present: Male.

Type IV showing varied pattern: Male.

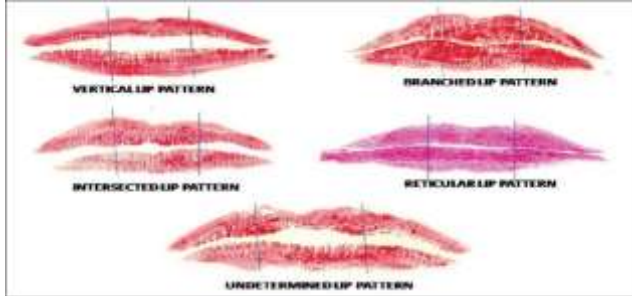


Figure-3

RESULTS

The lip pattern of 35 males and 35 females uncovered the following facts.

The uniqueness of the lips was established by the facts that no two lips matched with each other.

Females revealed type I, I' most abundant, whereas type IV was abundantly observed among males.

From the current study, with inexperienced observers it was revealed that from sample of 35 lip patterns from each gender, 28 females and 27 males were easily identified.

DISCUSSION

Identification of an unknown person whether living or dead is a challenging task for forensic experts around the globe a study conducted in 2021 by Hemlata P, Chaudhary SK, Harish P, Nuzzolese E to identify unknown persons supports our study(7).. Finger prints being most common and cheapest method in vogue and the latest method i.e. identification through DNA one of the surest but expensive method of identification a survey conducted by Win KN, Li K, Chen J, Viger PF, Li K in 2020 is in favor of the present study(8).. Lip prints is among the cheapest and easily available methods of identification producing almost same results as finger prints a study conducted in 2019 by Fonseca GM, Ortíz-Contreras J, Ramírez-Lagos C, López-Lázaro S on lip print identification supports the current study(11), . In such cases where fingerprints are not available, lip prints provide added evidence to a crime scene that can be valuable a study conducted in 2020 by Bernardi S, Bianchi S, Continenza MA, Pinchi V, Macchiarelli G is favor of lip prints which can be used as an evidence(13), .

Dominating the ambiguous and cloaking facts is very easy now. Hence the outlaws can be free of charge by betraying the law and misleading the investigating agencies. The lip prints can therefore be used which can easily be registered on utensils a study conducted in 2019 by Fonseca GM, Ortíz-Contreras J, Ramírez-Lagos C, López-Lázaro S and another study conducted by Kanokwongnuwut P, Kirkbride KP, Linacre A in 2019 is in favor of present study(11, 15).. Lip prints could be a valuable evidence in a vast criminology cases, such as in asphyxial cases of gagging , lip prints on a drinking glass or cigarette butts a study conducted in 2021 by Khanagar SB, Vishwanathaiha S, Naik S, Al-Kheraif AA, Divakar DD, Sarode SC, et al about use of artificial intelligence for identification is in favor of this study(16).. For crime scene investigation lip prints could be retrieved from these possible places. However, because of limited use of lip prints in the court of justice its credibility needs to be established, a study conducted in 2020 by Zopiyactle D supports the credibility of present study(18)..

Second to finger prints, lip prints are available at the scene of crime which not only help in identification but also confirms the presence of the suspect at the scene of crime. In the recent past some new forms of lipsticks have been devised which do not leave prominent trace once they are in contact with the surface they come across a study conducted by Richard C in 2021 supports our study(20).. Such prints are commonly referred to as persistent lip prints. Such prints which are invisible but can be lifted from the surface they come in contact with the help of aluminum and magnetic powder a study conducted by Sosiawan A, Pulunggono C, Kurniawan A, Utomo H, Marini MI, Rizky BN, et al in 2021 supports this study(21)..

Lipsticks are established by using multiple substances in different compositions, a study conducted in 2013 by Beri A, Norton J, Norton I supports the present study(23). Before looking for lip prints, it should be known that all lipsticks are not coloured; in fact, in recent past lipsticks which do not leave a visible mark to the place where they are applied are available in the market. Lip prints whether visible, invisible or latent are important. Sebaceous and salivary glands are scarce at the vermilion border of the lips, which, together with the tongue moisture results in latent lip prints a study conducted in 2019 by Sharma S, Rohatgi S supports latent lip print for identification(24).. Latent print serve as a key point is resolving some tricky crimes.

Lip margins have sweat glands embedded between sebaceous glands on either side. The secretion from both glands results in latent lip prints similar to latent finger prints. In majority of the studies only the middle portion of the lips is taken considered for studies, whereas lines and furrows are present throughout the lip margins, the reason being that this portion is observed to leave traces considered to be important for evidence a study conducted by Sharma P, Saxena S, Rathod V in 2009 and another study in 2020 by Okeke CM, Ann O, Ukoha UU, Dimkpa U, Enemuo I supports our study(26, 27). Latent lip prints should be considered and due weightage given in investigating a crime scene, even in the absence of visible lipstick marks. Lip print identification have provided satisfactory results in sex determination and in postmortem studies a study conducted in 2012 by Karki R, another study conducted by Gnanasundaram N in 2010 and in 2020 study conducted by Kengadaran S, John J, Anusha D, Kengadaran S, Sekar H, Sekar H supports present study (28-30).

It was considered that lip prints are helpful for identification but it was unclear that they could be helpful for determination of gender a study conducted in 2019 by Ravikumar R, Darshan C supports the current study(31).. However, later researches denied these facts. Many researches are available which support the fact that lip prints are helpful in determination of gender. A study by Sonal-Nayak disclosed the fact type I and type I' are more predominantly present in females whereas type III and type IV are predominant in males, a study conducted by Sharma P, Saxena S, Rathod V in 2009 and another study conducted by Vahanwala S, Nayak C, Pagare S in 2005 supports the current study(26, 32).

In this study a pertinent pattern was labeled on the bases of numerical superiority of types of lines present on the lips, this pattern could be vertical, intersected, branched or reticular. The type is termed as undetermined when more than one pattern predominates. In the present study type I and I' were dominated by females and type IV was observed in males. However, the encouraging thing observed was that no two lips matched each other.

Due to uniqueness of lip print pattern, it has been successfully used to resolve conflicted cases of identification in addition to gender discrimination a study conducted in 2021 by Gładysz M, Król M, Kościelniak P is in favor of our study(33).. Literature review has shown that lip prints can be used in cadavers not only for identification purpose but also for gender discrimination a study conducted in 2019 by Bhargava A, Saigal S, Rehan AD, Kausar T supports current study(35)..

The data derived from present study is promising as it argue the singularity and permanence of lip prints(11).. This method of

identification is quite cheap, simple and inexpensive. Based on the finding of this study it could easily be suggested that lip prints can effectively be used as a source of identification in the field of forensic science. The pitfall of the study is the limited number of cases, the population used in the study was almost of same ethnicity leaving room for study at larger scale and among different races. In addition, a standard and uniform procedure needs to be put forth for the collection, development, recording, and computerized analysis of the lip prints.

CONCLUSION

Identifying of a person whether living or dead is a challenging task for forensic experts around the globe. Lip prints is among the cheapest and easily available methods of identification producing almost same results as finger prints. It is a rather neglected area which need to be focused more as it is cheap and can producing almost same results as other related methods used for identification and sex determination in particular unknown cases.

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