LIPS DON'T LIE- A FORENSIC PERSPECTIVE

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Abstract

Lip prints deal with the characteristics found on one's lips. Identifying a specific person by those characteristics (lip prints) is referred to as cheiloscopy. This form of identification is gaining popularity throughout the world. Lip prints are based on physical properties of an individual and during the occasions when the person's lip prints are either smeared or smudged on a suitable surface, it is possible to obtain biological evidence in the form of skin flakes or saliva. Apart from this, latent lip prints left unknowingly can be as beneficial as fingerprints in tying a crime to the perpetrator.

***Key words**: Lip print, Forensic, Cheiloscopy*

With crime rates ever on the rise and the corresponding increase in burden on the law enforcement to obtain ample physical evidence, in order to bring culprits to justice, there is always a need for methods, other than the age old dactyloscopy, that will serve as physical evidence in court. Apart from criminal investigations, identification is also of consequence in legal matters, genetic research purposes etc. Identification of a person, deceased or not is grounded on the fact that every individual is unique[1].

Cheiloscopy is a forensic investigative technique which deals with the identification of an individual through the markings on their lips. Any avenue which has the capability to be useful in forensic investigations must be exhaustively studied, gauged and exploited. Cheiloscopy falls into this category. Since it's inception, it has been shown to be a reliable method and has been in use in the field of forensics for the last few decades[2,3].

History

1902- An anthropologist named Fischer described the furrows seen on the red part of human lips.

1932-Edmond Locard, renowned as one of France's best criminologists, recommended cheiloscopy in identification.

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1950-Snyder mentioned lip prints are as individualistic as the ridge characteristics on fingers in his book 'Homicide investigation'.

1967-Suzuki conducted investigations on the measurement of lips, use of rouge and the method by which useful data could be obtained from it.

1970-Suzuki and Tsuchihashi named the grooves on the labial mucosa (labiorum rubrorum) as 'sulci labiorum' and the lip prints as 'Figura linearum labiorum rubrorum'

1972-Mc Donell after studying lip prints in twins, reported that identical twins, can be distinguished by lip prints, although indistinguishable by all other means.

1981- Cottone included in his book 'Outline of forensic dentistry' that lip prints are one of the specialized techniques used in identification.

1990-Kasprzak after doing a five year research elaborated on the practical uses of cheiloscopy[1,4].

Classification of Lip Prints

I) Santos(1967)

1. Straight line
2. Curved line
3. Angled line
4. Sine-shaped line

II) Suzuki and Tsuchihashi classification (1970)

Type I	A clear-cut groove running vertically across the lip
Type I′	Partial-length groove of Type I.
Type II	A Branched groove.
Type III	An intersected groove
Type IV	A Reticular pattern
Type V	Other patterns.

Table 1-Suzuki and Tsuchihashi classification.

This classification is the most commonly used for recording the pattern on the lips[5]

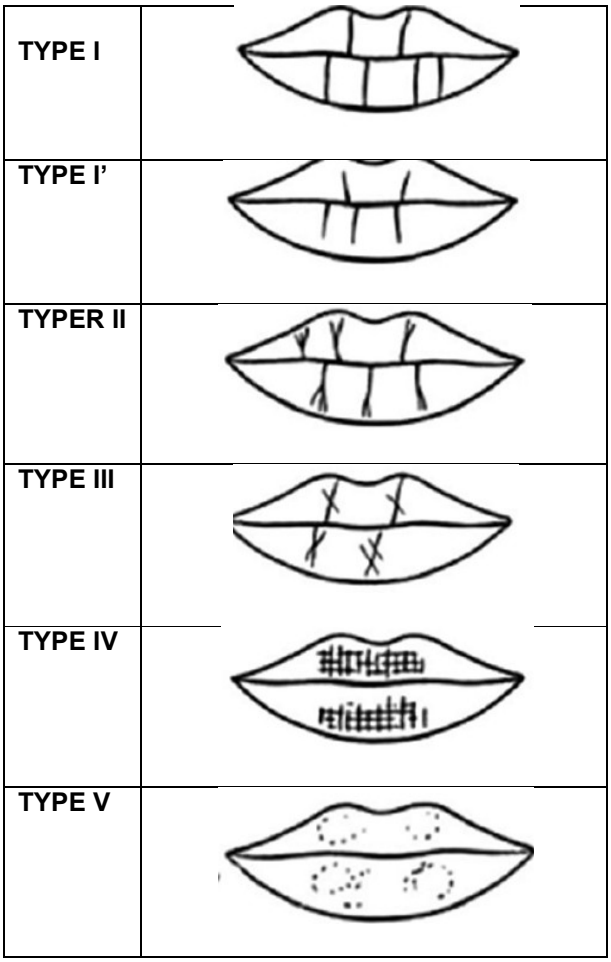


Fig 1:Pictorial representation of Suzuki and Tsuchihashi classification

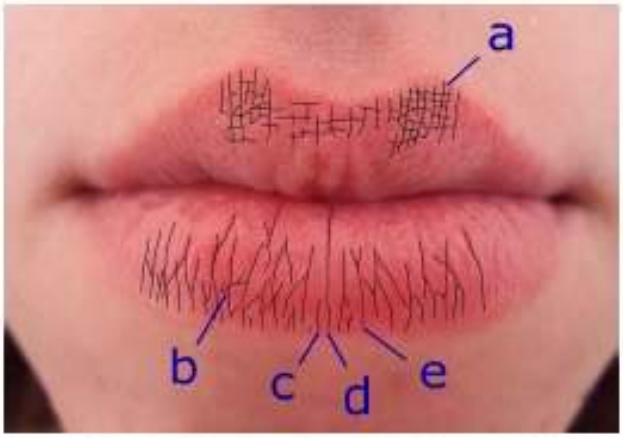


Fig 2: Photograph showing different groove patterns: (A) Reticular Grooves/ Type IV, (B) intersecting grooves/type III, (C)incomplete vertical grooves/type I^{l} ,(D) Complete Vertical Grooves/ Type I , (E)Branched Grooves/Type II

III) Renaud classification

This is, probably, the most complete classification. The lipsare studied in halves (left and right), and every groove,according to its form, has a number, using capital letters to classify the grooves, and small letters to separate left from right sides.

A	Complete vertical
B	Incomplete vertical
C	Complete bifurcated
D	Incomplete bifurcated
E	Compete branched
F	Incomplete branched
G	Reticular pattern
H	X or coma form

Table 2-Renaud Classification

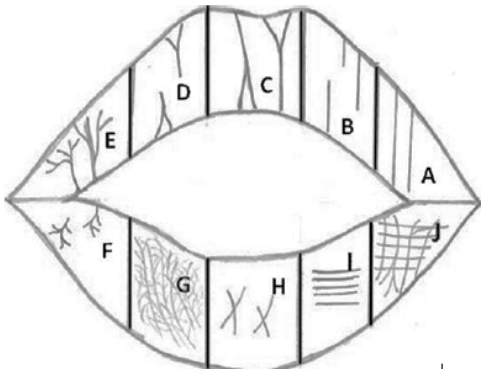


Fig 3: Pictorial representation of Renaud's classification of lip groove patterns

IV) Afchar-Bayat classification (1979)[7]

A1	Vertical and straight grooves, covering the whole lip
A2	Like the former, but not covering the whole lip
B1	Straight branched grooves
B2	Angulated branched grooves
C	Converging grooves
D	Reticular pattern grooves
E	Other grooves

Table 3-Afchar-Bayatclassification

V) Kasprzak classification

Kasprzak gave a classification that has been proven to be useful in practice, in which he determined the pattern based on the numerical superiority of properties of the lines on the fragment and after the patterns of lines had been established, a first catalogue of individual features was prepared, 23 types of individual properties were differentiated. As the basis for classification, the middle part of the lower lip, 10 mm wide, was taken, since this fragment is almost visible in the trace. If the lines prevail, the pattern is described as linear, "L." If the bifurcation is dominant, it is called bifurcate, "R." If the lines cross, the pattern is dubbed reticular, "S." In the case where no superiority can be established, the pattern is named undetermined, "N"

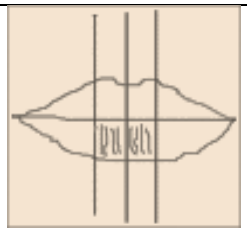
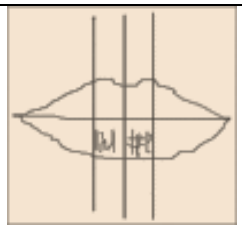
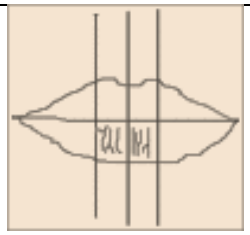
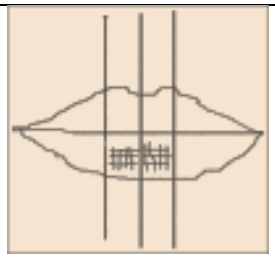
Linear "L" pattern	
Undetermined "N" pattern	
Bifurcate "R" pattern	
Reticular "S" pattern[6]	

Fig 4:Kasprzak's classification of lip grooves

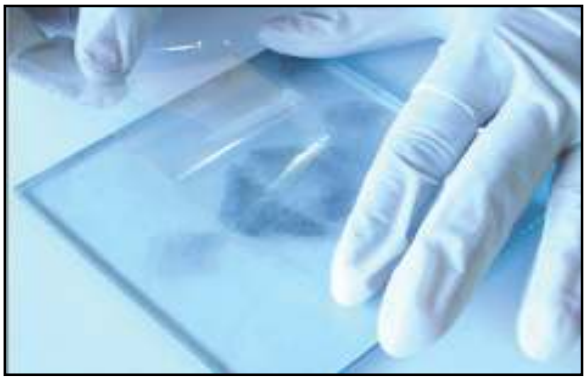
Lip Print Recording and Processing

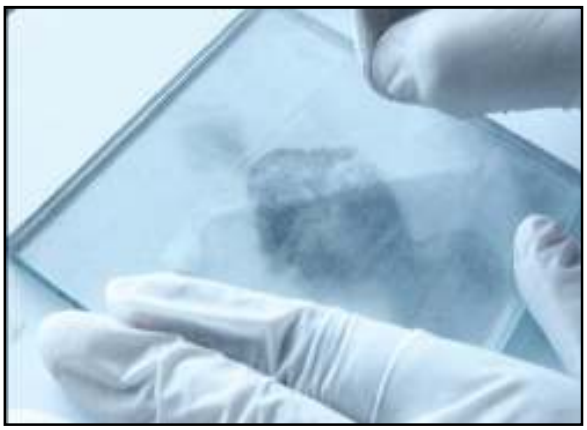
The suspect's lips can be photographed for comparison. If the prints are on a flat surface like a mirror, then it can just be photographed as well and tracings can be made of the grooves. Another method is to ask the person to press their lips to a clean piece of paper or cellophane sheet after their lips are applied with lipstick or other medium, which can help to transfer the lip prints. Alternatively, a finger printer can also be used.

Even without lipstick, the latent lip prints on a suitable surface can be obtained with a method similar to that used in obtaining fingerprints,where print developing powder or a magna brush and magnetic powder may be used. A number of different powders or cyanoacrylate can be used. This is then photographed.

For many crime scene investigators, more than half of the powder they use is regular, nonmagnetic powder. Regular powders are available in colours such as black, silver/gray, bichromatic and white. Proper colour is chosen to provide sufficient contrast with the background surface if a clear photograph of the latent print has to be obtained.

To record lip prints using the magna brush method, the person should impress his or her lips against a glossy porous surface or a smooth nonporous surface.These lip prints should then be subjected to a heat source until they solidify or should be allowed to air dry. These prints should then be powdered using a magna brush and magnetic powder. The advantage of using magnetic powder and a magna brush is that, unlike the conventional brushes which tends to smear or leave streak marks on the print, these do not. These streaks may then be interpreted as false characteristics by the comparer. But magnetic powders and magna brush are costlier compared to that of conventional ones[5].





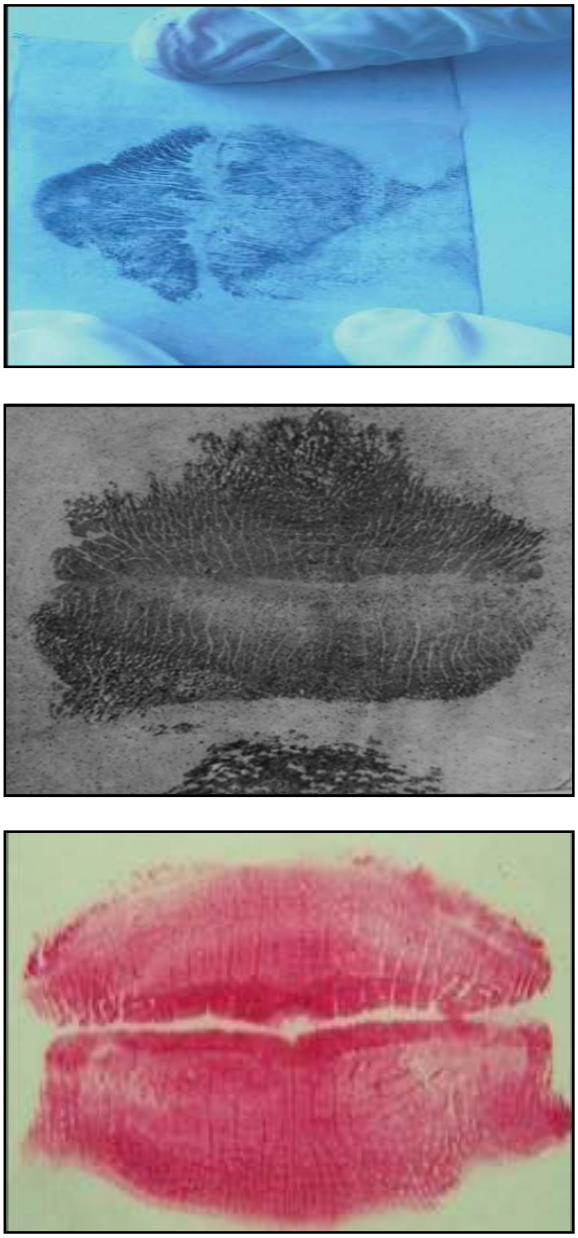


Fig 5-Method of developing latent lip prints

Technique

The lips of the individual should be cleaned and a colored lipstick is applied evenly with a single stroke on the vermillion border and asked to rub both the lips and spread the applied lipstick .After about 2 min, the glued portion of the cellophane tape should be placed over the lipstick.Lip prints should be obtained in the normal rest position by dabbing in the centre first and then pressing it comfortably towards the corner of the lips. The cellophane strip should then be stuck to a white bond paper for a permanent record and then visualized through a magnifying glass or using computer aided software. The number of lines and furrows present on the middle part of the lower lip, their length, branching and combination should be noted.

Disadvantages

There are several instances where an erroneous lip print data may be obtained. Post mortem alterations tend to set in if the prints are not obtained within a day of death.The position of the lips changes depending on whether the mouth is kept open or closed.Well formed lip prints are only available if the lips are closed. Lip print pattern is also subject to changes if affected by any pathology like mucocoeles. Debris on the lips, lack of support due to loss of anterior teeth or over smudging due to application of thick layer of lipstick can all lead to alterations in lip prints.[8]

Conclusion

Being individualistic and possessing unique characteristics,cheiloscopy should be considered as admissible evidence in court and thus to be widely used in the field of forensic science. Further research over time is required to understand whether the lip prints change with age or whether racial factor plays a role in which type of lip print predominates. Training in the field of forensic science should involve first responders to be aware of the importance of lip prints, so that the evidence is not compromised or tampered with in any way, as well as be taught the methods for lip print developing.

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Conflict of Interest: *None Decl*ared