



Cheiloscopy; Since instigation to vital role in an investigation

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Abstract: Personal identification through various evidences, plays a vital role in any investigation which makes the process relatively flawless. During the investigation, police study the evidences thoroughly and correlate them as a link between the suspect and victim. Cheiloscopy (Lip Prints) which are understood perpetual, unique and reliable means of identification due to numerous elevations and depressions that from the pattern on external skin of lips like to the fingerprints. In the last decade, Cheiloscopy attracted the investigators as a new tool of human identity in criminal issues. Now a day, the sexual harassment cases in our society are coming in light very rapidly which are tactful and sometime undetailed. Although awareness about the advanced techniques, that is used in criminal identification have alarmed the criminals from taking sufficient precautions, yet they make mistakes and leave another aspects as their identity in form of lip prints on the body of victim, cigarette butts, eatable, crockery used for drink etc. By enlightening with the fact that possibilities to identify any suspect from the lip prints with conclusion such as age gender etc. is wider. Lip prints can also be further used for the DNA process to confirm who this person may be for sure.

Keywords: Age, harassment, Identification, evidences, suspect, society.

I. Introduction

In forensic field, the confirmative identification of the suspect through the various aspects of evidences has long been used. Any trace of evidences that may be left over the crime scene is used to carry out the information about the suspect [1]. Since early phase of the investigation, Certain bodily features that makes individuality of every person have been used for identification such as fingerprints [2] palm prints, DNA, while in advance technology retina patterns came across to establish the identity of human in forensic [3].

It's became easier to estimate about the nature of the person, gender and also the type of crime from the evidences encountered from the crime scene. With the changing time "Cheiloscopy" also has proved its own valuable and evidential significance in any investigation. Cheiloscopy "Study of lip prints" that deals with the new systematic techniques and forensic examination of the furrows, wrinkles and cracks present on the red part of human lips [4]. In 1902, Anthropologist R. Fischer is known as first investigator who described the lip prints and their uniqueness [5]. These lines and rucked present on human lips that are present on human lips that looks a like the usual outlines and cracks present at the region of transition of external and internal layer of skin (mucosa) forming uniqueness like fingerprints and establish an identity of an individual for legal, social and personal reasons [6].

The devoid friction ridges which have been used now a day for the evidential purpose of identification are for lip impression [7]. Similar like to the fingerprints and palm prints, lip impressions are perpetual and unique of every individual. These impressions have been verified and examined which could be recovered after gone through the alterations such as trauma, inflammation, herpes etc. [8]. Even being genotypic, it is dissimilar in identical twin. It is quite possible that some hereditary resemblance like the fingerprints (Class characteristics and individual) could show identical characteristics between the patents and offspring.

Lip prints can be confronted in any condition at a crime scene (Latent form, visible or semi visible) which could be needed a treatment of intensification for effective identification. The presence of the lip prints on the scene of occurrence is not most frequent; it may be occasionally left behind or intentionally left over the scene to distract the investigators from the league. Lip impressions smears over a crime scene are encountered on various surfaces especially on the wine glass, love letters, eatables (fruits and vegetables). Mostly, the lipstick coated prints are encountered and considered a key in the solving of crime. These types of prints required a careful attention for development, verifiable and a comparative examination as a baseline to fix an identity.

With the changing time, the investigators also looking upon the lip impressions for the conclusive identification of suspect instead of the traditional evidences such as, anthropology, odontology, fingerprints etc. [9]. This technique associates the identification of individuals based on the characteristics of the labial mucosa or lips traces marks as one of the most important transferred evidence. On the basis of the variations in lip impression patterns (the elevated and depressed characteristics), the gander of the suspect also can be identified. Analysis of the

variations in lip patterns can differentiate between two genders which will standardized the system of gender identification in forensic field. It has been noticed that the environment does not affect the furrows and grooves of the lip impression.

This study was taken to prove the potential vital role of the lip prints in the forensic investigation and to make the understanding that a little clue/impression can be so harmful for a suspect to be identified. Like to the other impression evidences such as fingerprints, palm, and sole prints, cheiloscopy still does not exist most frequently as a tool of human identification [10]. We have to prove the potentially importance of lip prints and to look out for any new identical characteristics in forensic field.

II. Historical background

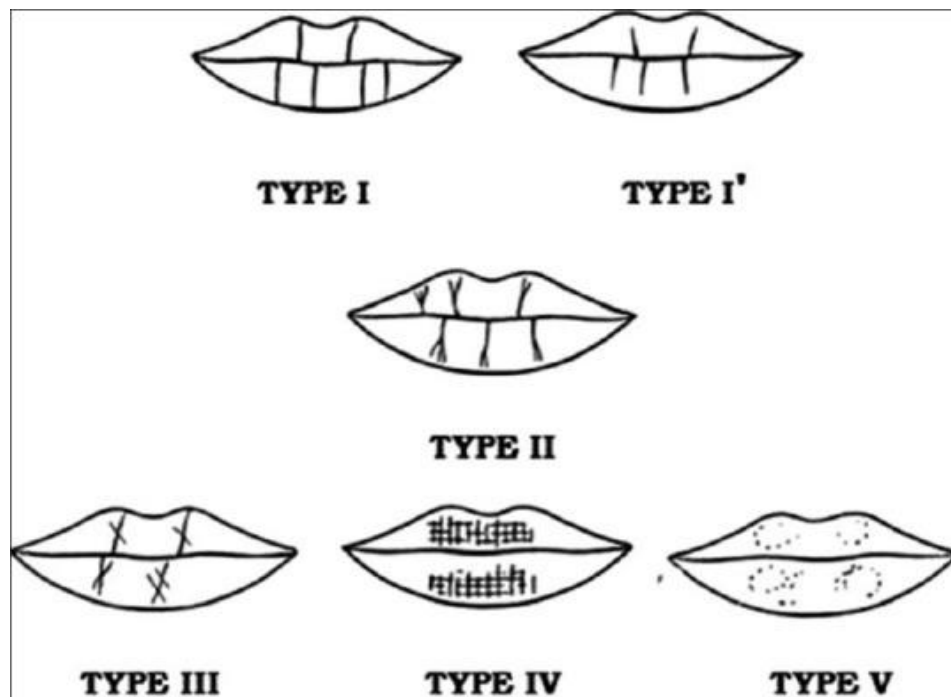
Anthropologist R. Fischer was the first person who studied the phenomenon of the system of furrows and wrinkles of the human lips in 1902. This phenomenon of furrows of human lips was existence without a practical use until the Japanese scientists Y. Tsuchihashi and T. Suzuki carried out the extensive research on lip prints [11]. Based upon this existence work, they suggested that the wrinkles and furrows of the each human lips are individual and unique like to the fingerprints and palm prints. De- Lille (1930) developed some studies related to the lip prints which led their use in criminology. Edmond Locard (1932), who is known for the mutual exchange principle throughout the world also acknowledge the use (Importance) of lip prints in the crime investigation.

Le Moyer Snyder introduced the subject lip prints as a tool of human identification in his book "Homicide investigation" in 1950. Santos (1960) also put his opinion about the division of lip prints into different groups and divided the line and furrows of lips into four categories which were straight lines, curved lines, angled line and the sine shaped line [12].

In 1961, a study was conducted by the Japanese scientists in Hungary using the arrangement of lines of lips for the examination of heredity and personal identification of an individual [13]. This was first time when the identification of a suspect was done through the successful examination of lips traces and usefulness of the lip furrows and lines was proven in criminalistics identification.

In 1972, Renaud also confirmed the individuality and uniqueness of lip prints of an individual. A study on twins was conducted by the Mc Donell in 1972, in which he reported that an even identical twin that seems to be indistinguishable by every aspects of identification can be differentiated from the lip prints [14]. Continuing further research work on lip prints in 1974, Tsuchihashi and Suzuki proposed () a new classification of lips prints which were 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) and Type V (Other mix or specific patterns). Shown in figure 1- [21]

Figure-1: classification of lip prints



In 1981, Cottone mentioned in his book Outline of Forensic Dentistry that lip prints is one of the specific tool of personal identification. In 1982, a project was conducted by the Forensic Institute of Warsaw University criminal

law department in which 1500 samples were collected from various locations and country for the examination of individuality [15]. As resultant, Un-changeability in the lines and furrows was proved in practicable for identification. Since 1985, investigation of lip prints and recovery of comparative material have been introduced in Poland [16].

The practical use of the lip prints in crime investigation was elaborated by the Kasprzak in 1990. In 2001, Sivapathasundaram and colleagues studied about the lip prints in a specific area diameter (10mm) of the middle part of lower lip and reported that the fragments of traces are always visible [17]. The last 15 years (200-2015) were the period in which several researchers from all over the world including India conducted studies on cheiloscropy [18]. All of these researches were focused on the different aspects of cheiloscropy like the morphological patterns (furrows, lines, and wrinkles), gender determination, uniqueness among the different groups of population and countries. Resultant, it was concluded that lip prints can be used an adjuvant technique in identification of an individual.

III. Discussion

Human identification is always the paramount importance for the safety and security of the society. Identification can be made on the available evidences (any form) from the scene of occurrence. Evidence provides the valuable aspects about the suspect in the crime investigation. Lip prints which are the new scientific tool of suspect's identity can be encountered in any form (visible or latent) which could be intensified successfully by using the battery of intensification. Lip prints are very useful elementary in resolving a criminal act [18]. It is an important aspect to determine the nature of facts and establish a correlation between the suspect and crime scene. Lip prints provide the quantitative and qualitative information by their analysis of the system of furrows, lines and individual characteristics the labial mucosa. Environmental factors do not affect the furrows and line of lip prints [20], but the alteration in pattern and morphology of grooves, size and shape can be rendered by the surgical treatment or major trauma.

Examination of the variation in lip patterns among the people of different genders will help in forensic investigation and standardized the identification system. Utsuno H. [21] and his colleges examined the patterns with various condition of death from the lip prints to analyze the effects of fixation on post-mortem changes in cheiloscropy. Cheiloscropy is used as a source of DNA because the epithelial cells could be retrieved from the lip prints which increase its identifying value in forensic.

IV. Feasibility in forensic Investigation

With the ever-increasing pressure placed upon law enforcement agencies to facilitate the physical evidences linking to a suspect of a crime. This makes a sight to utilize the evidences to provide the identity of an individual that is prerequisite for personal social and legal aspects. Lip prints, which are perpetual and individual by nature, are referred to as persistent prints and can provide a direct relation between a suspect and crime scene.

These prints can be revealed as a stratified surface trace with visible furrows, because of the deposition of sebaceous glands secretion along with sweat glands which secretes the organic and inorganic material. These enable the intensification of the invisible prints.

In the case when the lines are not clear (only the shape of the lips is printed), individual identification of a human being based on this trace is extremely difficult (unless the trace contains more individual characteristics, e.g. scars), and often identification ends with group identification. In these cases it is possible to examine the substance which constitutes the trace e.g. saliva, as a biological trace. However, if the lip impressions are screened with residue of food or some other artificial or nonessential and the impressions are not visible clearly, than the material can be examined for the chemical analysis to testify the source of material.

Lip traces with clear furrows and lines and other individual constituents enables the identification of a human being. By the aspect of evidence, lip impressions have similar value of fingerprints, palm prints and sole prints. The Importance and evidential value of the lip prints seems in the literature and with that it can be put on the bar of other evidences in court of law.

V. Conclusion

In forensic investigation, to expose the suspect is the ultimate challenging task by that an investigator confronted every time. A tinge of any kind can be pragmatic to revealed any case and fleck the oversight of the crime scene. The premises of lip prints as a constant anatomical structure in all times are perpetuity and uniqueness that is the robust flyspeck in the examination of lip prints which holds the potential of identification and can convince the court of law. To decree and resumption of latent lip impression is not a difficult from the object of crime scene. For positive identification, lip prints trim can be used as one of the arbalest against the suspect. Lip prints can be looked specifically on cutlery and crockery items at the scene of occurrence which can ascertain the gender and conclusive identification of the suspect. The battery of intensification such as powder method or the fuming method can be applied which can be later on compared with the specimen of suspect. To find out the definitive conclusion, nevertheless, no need to evaluate the larger samples. Their use (Lip prints) in forensic identification

is rather justified which is not requiring specific instrumentation. The significant gender dimorphism can be made from the lip prints.

By the mean of cheilo-scopic techniques, it has equal in value to other types of forensic evidence and can be included in evidence for presentation in court.

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