

## **LATENT LIP PRINT, A TOOL IN CRIME INVESTIGATION**

**Dr. Surekha Rathod<sup>1</sup>, Dr. Yogesh Rathod<sup>2</sup>,  
Dr. Ishita Wanikar<sup>3</sup>, Dr. Prashasti Sarode<sup>4</sup>**

- 1) Dr. Surekha Rathod - Professor, Department of Periodontics & Implantology, VSPM Dental College & Research Centre
- 2) Dr. Yogesh Rathod - Reader, Department of Conservative Dentistry & Endodontics, VYWS Dental College , Amravati
- 3) Dr. Ishita Wanikar - Post Graduate Student, 104, Department of Periodontology & Implantology VSPM Dental College & Research Centre
- 4) Dr. Prashasti Sarode - Prashasti Sarode, Undergraduate Student, VSPM Dental College & Research Centre

### **Abstract**

#### **Introduction**

Fingerprints are the most common means of identification in crime scene investigations. There are different physical and chemical methods that enable locating and developing latent lip prints relying on sweat and body oils which have been transferred from the body to an object react with a number of reagents to become visible.

#### **Aim**

The aim of the study was to study visible and latent lip print pattern by comparing them on common biological material found at the crime scene and determine the effectiveness of the technique.

#### **Material and Methods**

The study comprised of 50 students. The students were asked to rub both the lips on a bond sheet and glass slab after applying a dark-coloured lipstick followed by sprinkling a small quantity of black powder on it.

### **Results**

When lip prints were compared between latent lip print and lip stick print, 34 % lip prints matched and 66% lip prints did not matched.

### **Conclusion**

Every individual has a unique lip print. Latent lip prints are reliable practical method for crime scene investigation.

### **Key Words**

Cheiloscropy, lip print, crime scene investigation, glass slab, black powder

## **INTRODUCTION**

In crime scene investigations, fingerprints are the most common means of identification. However research of lip prints are less studied than finger prints. At present time more and more women use permanent lipsticks. With these lipsticks a latent lip print is generated by contact with a surface and like with the latent finger print occur, this latent lip print can be developed. There are different physical and chemical methods that enable locating and developing latent lip prints. Latent lip prints are developed by number of methods which rely on the fact that sweat and body oils which have been transferred from the body to an object react with a number of reagents to become visible.<sup>1</sup>

To state the importance of cheiloscropy in forensic science identification, Ball stated that latent lip prints would be available at all crime scenes as the vermilion borders of lips have minor salivary glands and sebaceous glands with latter being principally present around edges of the lip associated with hair follicles, sweat glands in between, and secreting oils. It is these secretions and continual moisturizing by the tongue due to occasional sebaceous glands present on the lip, there are chances for the presence of the latent lip prints on items such as glass.<sup>2</sup> These lip prints can be obtained up to 30 days after being produced.<sup>3</sup>

There is a paucity of research studies and information regarding the use of lip prints as evidence in personal identification and criminal investigation in forensic dentistry. In spite of few studies available, the study of Tsuchihashi gives a standard classification of his own for different types of lip prints.<sup>4</sup> On the basis of this classification; the current study was conducted to study the latent lip prints of different individuals on different objects, to establish facts so as to aid in giving further details of lip prints. The aim of the study was to study visible and latent lip print pattern by comparing them on common biological material found at the crime scene and determine the effectiveness of the technique.

### **Materials and Methods**

The study comprised of 50 students (25 males and 25 females), aged from 18 to 25 years, who were willing to participate voluntarily from our institute. Informed consent was taken from all the subjects. Persons with lip scar, lip lesions, lip deformities and persons were excluded from the study. A dark-coloured lipstick was applied with a single stroke and the students were asked to rub both the lips to spread the applied lipstick, after which a lip print was made on bond sheet and glass slab. After collecting these latent lip prints on bond sheet and glass slab surfaces. Using a super soft feather brush, a small quantity of black powder was carefully and gently applied on the surfaces where the latent lip print impressions were taken. The lip impressions were observed with a magnifying lens and photographs were taken.

### **Results**

A total of 50 individuals were included in the study, comprising of 25 males and females each, in the age group of 18 to 25 years. Y. Tsuchihashi classification of lip pattern was used in the present study. Throughout the whole work, no similar lip print pattern appeared in two subjects. Every individual has a unique lip print. When lip prints were compared between latent lip print and lip stick print, 34 % lip prints were matching and 66% lip prints were non matching. Also on comparison between latent lip prints on bond sheet and latent lip print on non –biological object, 36% lip prints matched and 64% lip prints did not match.

### **Discussion**

On the transparent glass slab, good results were found with black powder used. The quality was good with reagent well as older lip prints. However, unsatisfactory results were obtained on bond sheet.

No comprehensible lip grooves and lines were visible.

The quality of the development of the latent lip prints basically depends on three factors, the type of the reagent used, the supporting surface type, and the age of the latent lip-print. The object surfaces and colour are very important for use of reagents. The study stated that, fingerprint black powder acted best on white ceramics and transparent glass while gray powder was excellent on dark green glass showing the fine lines and grooves of the lips. While smoother surfaces and recent lip prints showed better quality lip prints, rough surfaces like cotton fabric and tissue paper showed incomprehensible results. The results are in accordance with our study. However, on the contrary, some investigators have shown that lysochromes are very effective on long-lasting lipstick prints on paper or fabrics, where detection is usually difficult<sup>5,6,7</sup>. Some investigators have proved the significance of invisible lip prints at the crime spots as their development may help provide cell remains from which DNA can be extracted<sup>8</sup>.

## **Conclusion**

Research has proven that uniqueness of latent lip print as confirmed using different tracing technique. The present study revealed the degree of efficiency of latent lip print as against lip prints found on common non- biological object. Latent lip prints are reliable practical method for crime scene investigation. Also, it is concluded that every individual has a unique lip print and no two lip prints are similar to each other. Most of the crime-detecting agencies are unaware of the usefulness of lip prints in the identification of the suspects. The crime investigator should begin to consider lip print analysis and used as an important tool in human identification.

Future prospects—

Further refining is needed to develop easy and efficient technique for development of latent lip prints and their use in suspect identification in order to make it comparable with the finger print in the crime scene area, we can use technology to increase the validity of this technique.

## **References**

1. Sivapathasundaram B, Prakash A. Sivakumar G. Lip prints sweating (cheiloscopy). Indian J Dent Res 2001;12:234-7.

2. Ball J. The current status of lip prints and their use for identification. J Forensic Odontostomatol. 2002; 20: 43-6.
3. Lee HE, Gaensslen RE; Advances in fingerprint technology , 2<sup>nd</sup> edition. London. CRC press 2005
4. Suzuki K, Tsuchihashi Y. A new attempt of personal identification by means of lip print. J Indian Dent Assoc 1970;42:8-9.
5. Akil Agarwal, Nidi Dwivedi, Parul Khare; Latent lip print review: A new possibility, Indian Journal of forensic odontology 2013;6(1):17-20.
6. Chow L. Latent fingerprints with powders and chemicals.  
Available from: <http://www.bxscience.edu/forensics/articles/fingerprinting/ffing03.htm>.
7. Castello A, Alvarez M, Miquel M, Verdu F. Long-lasting lipsticks and latent prints. Forensic Sci Commun 2002;4:14.
8. Castello A, Alvarez M, Verdu F. Just lip prints? No: There could be something else. FASEB J 2004;18:615-6.