



ROLE OF LIP PRINTS IN PERSONAL IDENTIFICATION

Shilpa Jain¹, Arpit Jain² and Umesh Palekar³

¹Department of Prosthodontics, Crown & Bridge & Implantology, CDSH, Rau, Indore M.P

²Department of Oral Medicine & Radiology

³Department of Prosthodontics, Rural Dental College, Loni (M.H)

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ABSTRACT

Background and objective: Study of lip Prints in Forensic Identification (Chelioscopy) deals with the study of grooves on the lips. Lip Prints are important tool for the individual identification as they are unique. This study aims at determining the lip print pattern as an adjunct to individual identification in crime investigation.

Aim and Objectives: The aim of this study was to compare the lip print pattern among the individuals in central India. Materials and Method: Hundred Individuals (50 males and 50 females) of age group 17-25 years were selected randomly. Dark coloured lipstick was applied on the upper and lower lips after which the lip print was taken on a bond paper. Lip print was then analysed with a magnifying glass.

Result:

Conclusion: although lip print patterns can be used for personal identification in forensics, more research in this direction needs to be conducted to confirm its uniqueness. Therefore, chelioscopy needs to be done on the larger sample size using new technology.

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INTRODUCTION

Personal identification plays an important role in investigation at the crime scene. Identification is defined as determination of individuality of a person¹. It may be complete (Absolute) or incomplete (partial). Complete identification means the absolute fixation of individuality of a person. Partial identification implies ascertainment of only some facts about the identity while others remain unknown. Experts that can help in the identity of an individual include pathologists, physicians, dentists, anatomists, physical anthropologists etc.

Identification of a living is usually carried out by a police. But, when medical knowledge is needed for solving any disputed case, consultation from a medical professional may be taken.

The need to identify an individual may be required in the natural mass disasters like earth quakes, tsunamis, landslides, floods etc., or in man-made disasters such as terrorist attacks, bomb blasts, mass murders, or in cases when the body is highly decomposed or dismembered to deliberately conceal the identity of the individual [1]. Traditional methods for identification include- anthropometry, finger prints, sex determination, age estimation, blood group identification etc. The study of lip prints is important in that they are unique (like finger prints or palatal rugae) in individuals except in monozygotic twins. So, like fingerprints, lip print identification can also be considered in forensics for personal identification.

**Corresponding author: Shilpa Jain*

Department of Prosthodontics, Crown & Bridge & Implantology, CDSH, Rau, Indore M.P

The present study aims in determining predominant lip patterns among the study group and to validate its use in forensics.

AIM and Objectives

The aim of this study was to determine the uniqueness of the lip print pattern and also the predominant lip print pattern among the population in central India.

MATERIALS AND METHODS

The study comprises of 100 individuals (50 males, 50 females) of age range 17-50 years of age who visited the out patient department of a dental institute in central India. Individuals who gave consent for the study were selected, while those who refused to give consent or those with any lip scar, lip lesion or pathosis were excluded from the study.

Dark coloured lip stick was applied on both the lips and individuals were then asked to make the lip print on butter paper²¹. The lip print on the middle part of about 10 mm was considered for the study as there are more chances of pathology in the lateral part²¹. Lip lines and furrows, branching pattern and combinations were analysed according to Tsuchihashi classification.

Type I- vertical, comprising of complete longitudinal fissures.

Type I'- Incomplete longitudinal fissures

Type II- Branching Y' shaped pattern

Type III- criss cross pattern

Type IV- Reticular, typical chequered pattern, fence like

Type V- all other patterns

Each lip print was compared with other to check the uniqueness.

RESULT

Comprehensive evaluation of lip prints revealed that these are unique to each individual. Lip print of each individual showed different pattern.

Table I Percentage distribution of each type of lip print pattern in females:

Lip print type	Quadrant 1	Quadrant 2	Quadrant 3	Quadrant 4
Type I	8	10	5	5
Type II	13	12	8	2
Type III	7	9	1	1
Type IV	8	7	1	3
Type V	0	0	0	0

Table II Percentage distribution of lip print pattern in males

Lip print type	Quadrant 1	Quadrant 2	Quadrant 3	Quadrant 4
Type I	3	2	1	0
Type II	9	9	8	3
Type III	0	5	11	14
Type IV	5	5	15	10
Type V	3	0	2	0

Table III One sample ‘T’ test for different lip patterns

Sex	Mean	Standard deviation	T Value	P Value
Male	21	-14.3353	10.3585	0.0001
Female	20	13.17194	10.7366	0.0001

Table IV Percentage calculation for different lip print pattern in male and female group

Type	Percentage (Male)	Percentage (Females)
Type I	6	28
Type II	29	35
Type III	30	18
Type IV	30	19
Type V	5	0

Statistical analysis used for the study was one sample ‘T’ test. One sample T test was used to check the difference between males and females for different lip patterns and significance level was set at 5%.

Significant differences were observed for each type of groove between males and females for all quadrants.

- Type I- observed more in Females in second quadrant (10%)
- Type II- observed more in females in First and second Quadrant (8%, 10%)
- Type III- observed in males in third and fourth quadrant (11%, 14%)
- Type IV- More in males in third and fourth quadrant (15%, 10%)
- Type V- observed more in males in first and third quadrant (3%, 2%)

DISCUSSION

The present study describes the lip print pattern in population of central India. The study was carried out to determine the role of lip prints in personal identification and in forensics.

In our study, lip prints of each individual were different thus none of the patterns were identical. Findings in our study was

in accordance with similar studies conducted by Tsuchihashi & Suzuki^{3,9} and various other authors¹⁰⁻¹⁵.

Lip print of an individual does not comprise of a single pattern, rather it is a combination of various types.⁹

Ball (2002) reported the history of lip prints and its importance in the forensics. Lip prints are present in all crime scenes as they contain sebaceous glands and minor salivary glands.²⁰

But lip prints are rarely mentioned at the crime scene as most of the investigators consider fingerprints as unidentifiable. In our study, we used the method described by Kumar GS *et al* (2012) as it was easy to use and accurate.²⁵

In our study, we found that Type I and II lip patterns were more predominant in females. While in males, Type III and type IV pattern predominate. This finding was in accordance to the study by Kumar *et al* (2012). However, in our study, no type V pattern was present among females. While, in males 5% have type V lip pattern. This finding was against the study by Molano *et al*¹³, J. Augustine *et al*¹⁵ in which type III pattern was most common pattern.

Manipady S¹² studied lip prints in 100 subjects of both Indian as well as Chinese origin (50 males, 50 females of age group 18-22 years) and concluded that the distribution is unaffected by sex or origin. In their study, type II pattern was the most common pattern.

We found that the most common lip print pattern was type II which was in contrast to the study by Verghese *et al*¹⁶ in which type IV lip print pattern was more common. In a study by RV Prabhu¹⁹, the most predominant pattern was type V, followed by Type I, Type II, Type III. While type III was most common pattern in the study carried out by Prakash P.A.

According to our study, all the lip prints were distinct and no identical lip prints were observed in any two individuals.

CONCLUSION

Our study proves that the study of lip print patterns can be used for identification of sex and identification of individual as they remain stable and unique over time. Further studies are required for the accurate assessment of lip print patterns.

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