

Cheiloscopy : Study of correlation of lip prints in a family

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Abstract

Cheiloscopy, deals with the identification of Humans based on lip traces, is based on the fact that the grooves present on the lips (sulci labiorum) are unique for every person and can be used in individual identification. It plays a major role as a stomatological means of identification in addition to bite marks, tooth morphology, restorations and palatal rugae patterns. Research indicates the existence of heredity in the Lip prints. Lip prints are normal lines and fissures in the forms of wrinkles and grooves present in the zone of transition of human lip of inner oral labial mucosa and outer skin or vermilion border. This article presents correlation of lip prints in 50 parents alongwith their children.

key words- Cheiloscopic, forensic odontology, lip print.

Introduction

Forensic Odontology involves the handling, analysis, and appraisal of dental evidence in criminal cases. In addition to assisting investigating agencies in identifying recovered human remains, forensic dentists are involved in the identification of entire or fragmented bodies. 'Cheilos' means 'lip' in Greek, and 'scopy' means 'to inspect.' Cheiloscopy (quiloscopy) is a way of

identifying an individual related to particular pattern of lines visible over the red part of the lips.¹ It's a forensic investigative approach for identifying people based on their lip traces. Crimes of various kinds are on the rise in India, as well as throughout the globe. Both the educated elite of society and criminals use well-known strategies to keep police, forensic expert and the general people away from the crime sight.

The distinctiveness of the wrinkles and grooves of the lips may be utilised as evidence in determining sex or in circumstances of individual recognition, which is an intriguing component of cheiloscropy.² Patterns are visible on the lips initially around sixth week of intra-uterine life.³ With exception of monozygotic twins, lip prints are unique, permanent and immutable even after death. Lip prints are used to confirm the presence or absence of a person at a crime scene. Various authors conducting study defined it in different ways. It was originally supposed to be a technique of identifying an individual related to the distinctive distribution of lines over the red area present on the lips. Tsuchihashi coined the terms 'Sulci Labiorum Rubrorum' to describe wrinkles & grooves present over the lips.⁴ However, it is safe to say that Cheiloscropy, in its current state of development, has gone beyond the scope of a procedure, and has evolved into a method of criminalistic identification including lip prints.

Lip prints are one-of-a-kind that does not alter throughout an individual lifecycle.⁴ Lip prints have been proven to recover despite modifications whenever any infection or inflammation or any trauma occurs. The location and shape of furrows are unaffected

by environmental influences. Parents and children's lip prints, as well as siblings, have demonstrated some similarities¹. Variation in pattern between males and females has also been reported to aid in personal identification and sex determination.^{5,6}

Materials and methods

1. One lip stick
2. One brush
3. Cellophane tape
4. Disinfecting solution
5. 50 A4 size sheet

Procedure in detail

A lipstick of red color was placed uniformly over both lips of the subject using brush. Then cellophane tape was cut of the size of lips and applied with minimum pressure over both the lips. Then the impression was recorded on A4 size sheet. Then the brush was washed off with disinfecting solution and ready to be used for other members of same family. After completion of one family, then new family was done in same manner and total 50 families were studied and recorded.

Assessing the lip prints:

With the magnifying lens, the impression was then visualized. The lip prints were separated into IV quadrants, with the upper right quadrant being I, upper left being II, lower left being III& lower right being IV. The lip print

patterns were examined using Suzuki and Tsuchihashi classification [Table:1]. The information was collated, and the following conclusions were formed. [Figure:1]

Table 1: Lip print classification as given by Suzuki and Tsuchihashi

Type I refers to clearly seen full grooves traversing parallel to long axis of tooth.

Type I' refers to same grooves but they vanish in-between and covers only half of the lip width.

Type-II refers to forking grooves.

Type-III refers to intersecting grooves.

Type-IV refers to reticulate grooves.

Type-V refers to grooves that doesn't come into either of the above mentioned types.

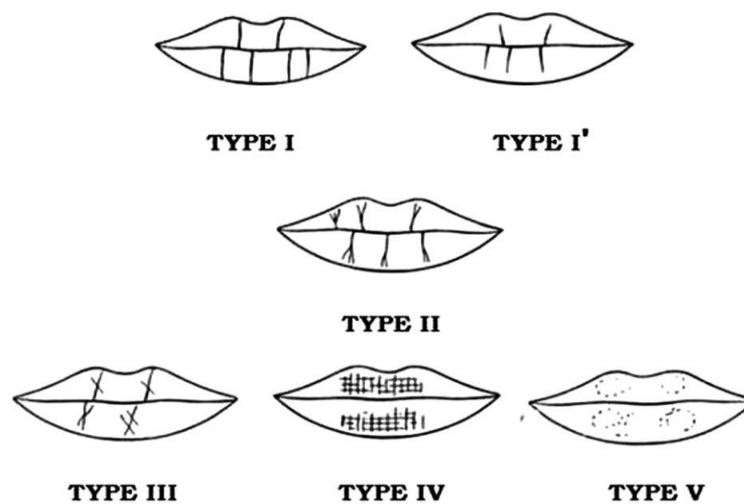


Figure 1

Statistical Analysis

Data was statistically analyzed using computer software, Statistical Package for Social Sciences (SPSS) version 16 for Windows Operating System.

Observations and results

All lip prints showed different patterns. The lip print did not consist simply of one type of groove, else mixture of different types of grooves were seen. [Figures 2].

46% father were reported having Type III cheilosopic pattern and 50% females

showed Type II cheilosopic pattern whereas 38.5% of male child showed Type II cheilosopic pattern and in female child, Type I' pattern was reported in 37.5% of cases.

Whereas resemblance of cheilosopic pattern of children with parents was statistically reported insignificant, P value = .267%.

According to our study, on comparing father with male child and so on, all comparisons were non significant and parents lip prints have no role in children lip prints



Figure:2

Table1. Percentage division of lip print among parents

Types of lip prints	Father		Mother		Total		
	Frequency	Percent	Frequency	Percent	Frequency	Percent	
Type I	3	6.0	8	16.0	11	11.0	
Type II	3	6.0	25	50.0	28	28.0	
Type III	23	46.0	4	8.0	27	27.0	
Type IV	12	24.0	3	6.0	15	15.0	
Type V	6	12.0	3	6.0	9	9.0	
Type I'	3	6.0	7	14.0	10	10.0	
Chi Square value	25.087						
p value	0.458						

Graph1. Lip print pattern distribution percentage wise among parents

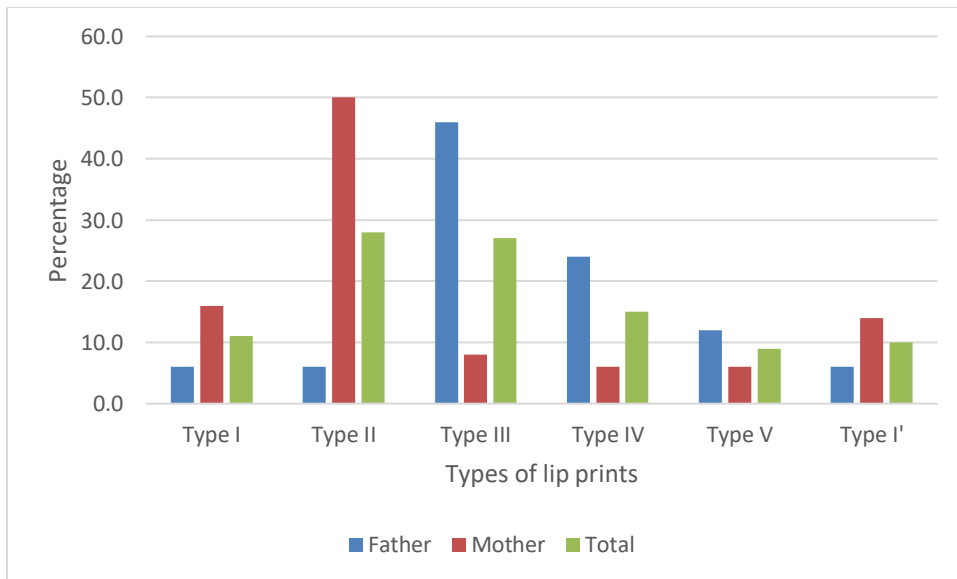


Table2. Percentage division of lip print among children

Types of lip prints	Male child		Female child		Total		
	Frequency	Percent	Frequency	Percent	Frequency	Percent	
Type I	4	15.4	4	16.7	8	16.0	
Type II	10	38.5	7	29.2	17	34.0	
Type III	4	15.4	1	4.2	5	10.0	
Type IV	1	3.8	0	0.0	1	2.0	
Type V	2	7.7	3	12.4	5	10.0	
Type I'	5	19.2	9	37.5	14	28.0	
Chi Square value	4.59						
p value	0.466						

Graph2. Lip print pattern distribution percentage wise among children

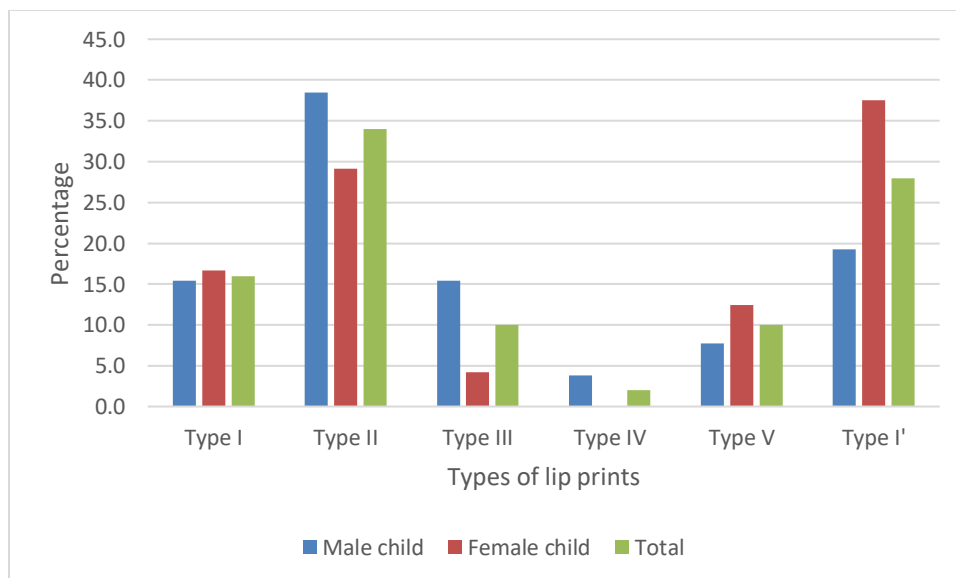


Table3. Percentage of resemblance of lip print patterns of children with parent

Type of lip print	Both		Father		Mother		Total	
	Mode	%	Mode	%	Mode	%	Mode	%
Type I	1	33.3	0	0.0	2	15.4	3	15.8
Type II	1	33.3	1	33.3	8	61.5	10	52.6
Type III	0	0.0	2	66.7	1	7.7	3	15.8
Type V	0	0.0	0	0.0	1	7.7	1	5.3
Type I'	1	33.3	0	0.0	1	7.7	2	10.5
Total	3	100.0	3	100.0	13	100.0	19	100.0
Chi Square value	9.970							
p value	0.267							

Graph3. Percentage of resemblance of lip print patterns of children with parent

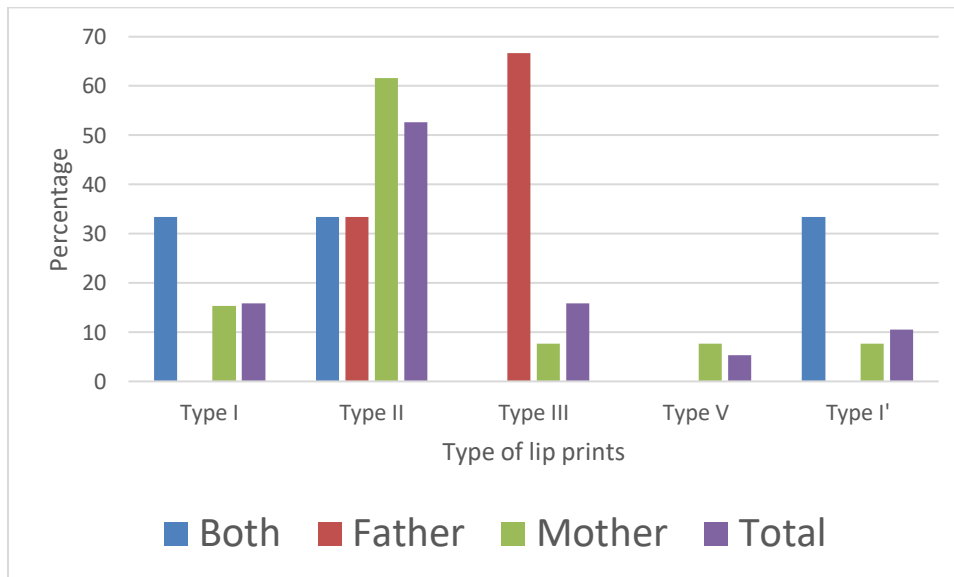


Table 4 Comparison of father with male child

	Malechild						Total
Father	Type:-I	Type:-II	Type:-III	Type:-IV	Type:-V	Type:-I'	
Type:-II	0	0	0	1	0	0	1
Type-III	1	6	2	0	2	1	12
Type-IV	2	3	1	0	0	1	7
Type:-V	0	0	1	0	0	2	3
Type:-I'	1	1	0	0	0	1	3
Total	4	10	4	1	2	5	26
Chi square value	37.87						
p value	0.09*						

Table 5 Comparison of father with female child

	FemaleChild					Total
Father	Type:I	Type:II	Type:III	Type:V	Type:I'	
Type-I	1	0	0	0	2	3
Type:-II	0	2	0	0	0	2
Type:-III	2	2	0	3	4	11
Type:-IV	1	2	1	0	1	5
Type-V	0	1	0	0	2	3
Total	4	7	1	3	9	24
Chi square value	16.24					
p value	0.436					

Table 6 Comparison of mother with male child

Mother	Male Child						Total
	Type:-I	Type:-II	Type:-III	Type:-IV	Type:-V	Type:-I'	
Type:-I	1	0	0	0	0	0	1
Type:-II	3	6	2	0	0	3	14
Type:-III	0	0	1	0	1	0	2
Type:-IV	0	0	0	0	1	0	1
Type:-V	0	1	1	0	0	0	2
Type:-I'	0	3	0	1	0	2	6
Total	4	10	4	1	2	5	26
Chi square value	35.564						
p value	0.078						

Table 7 Comparison of mother with female child

Mother	FemaleChild					Total
	Type I	Type II	Type III	Type V	Type I'	
Type-I	2	2	0	0	3	7
Type-II	2	3	1	0	5	11
Type:-III	0	0	0	1	1	2
Type:-IV	0	1	0	1	0	2
Type:-V	0	0	0	1	0	1
Type:-I'	0	1	0	0	0	1
Total	4	7	1	3	9	24
Chi square value	20.522					
p value	0.426					

Discussion

Lip prints add to a crime scene's evidence, which can be useful in circumstances where other evidence, such as fingerprints, is insufficient. Lip prints can be found in a variety of crimes, including rape when a victim is bound or gagged, prints over glass from which the victim drank, over cigarette butt, and over glass or window. All of these are possible locations where lip prints could have been visible and useful in case of criminal examination. But lip print usage in unlawful cases is restricted as their reliability in judicial system has yet to be proven.⁷ All 150 participants had different lip print patterns, and none of them were the same. This outcome was consistent with findings from previous investigations by Tsuchihashi and Suzuki⁴ and others. This demonstrates that each person's lip print pattern is distinct. Lip print patterns did not appear to be made up of just one kind, but rather a mixture of many types, as in a prior study by Tsuchihashi. Type II grooves were the most common in our analysis, followed by Types III. This finding was consistent

with previous research in the Indian population.

When family members lip prints were compared, diverse unique patterns emerged, however a few comparable grooves could be seen. This observation is consistent with the findings of other investigations.^{4,8}

When performing cheiloscopy, it's also important to examine lip architecture, such as thickness and location. The lips may be elevated or low & they can be divided into 4 types according to its thickness: Thin lips (common in Caucasian of Europe); medium lips (8-10 mm); thick / very thick lips (typically seen with lip cord inversion) & mix lips.⁹

Results of this study are promising since they show the distinctiveness and persistence of lip prints. Furthermore, analyzing lip print is a straightforward and in-expensive method. As a result, in the realm of forensic research, it can be suggested that lip prints may be employed in identification of individuals.

Conclusion

We came to the conclusion that there is no substantial relationship between the mother's, father's, and child's lip prints. However, more research on more no. of people of various ethnicities, family member's, twin's & sibling's is needed. In addition, a consistent & standardised technique for collecting, developing, recording & computerised examination of lip prints must be established.

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