Cheiloscopy - A Tool For Identification in Twins

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Abstract

Introduction : Lip prints are an adjuvant tool for identification in forensic medicine. The grooves on the lips have discrete characteristics to make it different from one other. This study was conducted on 24 pairs of twins out of which 22 pairs were Monozygotic twins and 2 pairs were Dizygotic twins. Dizygotic twins are unique in all aspects while Monozygotic twins are similar phenotypically and genotypically. The objective of this study is to find the most common pattern in the twins , the commonest pattern among the male and female twins and to know the variations in the pattern of lip prints among Monozygotic and Dizygotic twins.

Materials and Methods: A lipstick, drawing chart and magnifying lens were the materials used to record the imprints of the lips. A four compartment method with a clockwise direction approach was used and the analysis was done based on Suzuki and Tsuchihashi classification.

Results: The present study shows Type 1' was the most common lip prints observed among the 24 pairs of twins. This pattern was predominantly present in the right lower lip quadrant. Out of the study subjects of 24 pairs of twins, 38 were males and 10 were females in which Type I ' is common in males and type I is common in females. Among the monozygotic twins those which had < 50 % resemblance were 14 pairs, 50% resemblance were 6 pairs, >50% resemblance were 2 pairs in which Type is the commonest. Among the dizygotic twins, both the pairs were totally different from each other yet Type was the common pattern.

Conclusion: Based on the analysis of the lip print patterns among monozygotic twins, though similarities were prevailing between them , they are not identical .Whereas among dizygotic twins both the pairs of twins are unique. Hence Lip print can be utilized as a differentiating tool for identification.

Keywords: *Lip prints, patterns, twins, identification.*

Introduction

Identification is a crucial and important role in forensic medicine from the ancient times till date as there are many tools for personal identification which includes Anthropometry, Dactylography, sex determination, differentiation by blood groups, DNA profiling, Odontology etc[5]. Among the various tools the most commonly used is the fingerprints because of its uniqueness in each individual[12]. Yet another tool which can be used based on its uniqueness is the Lip prints, but its contribution in identification is still in trials and not yet confirmed about its feasibility and reliability because of its never

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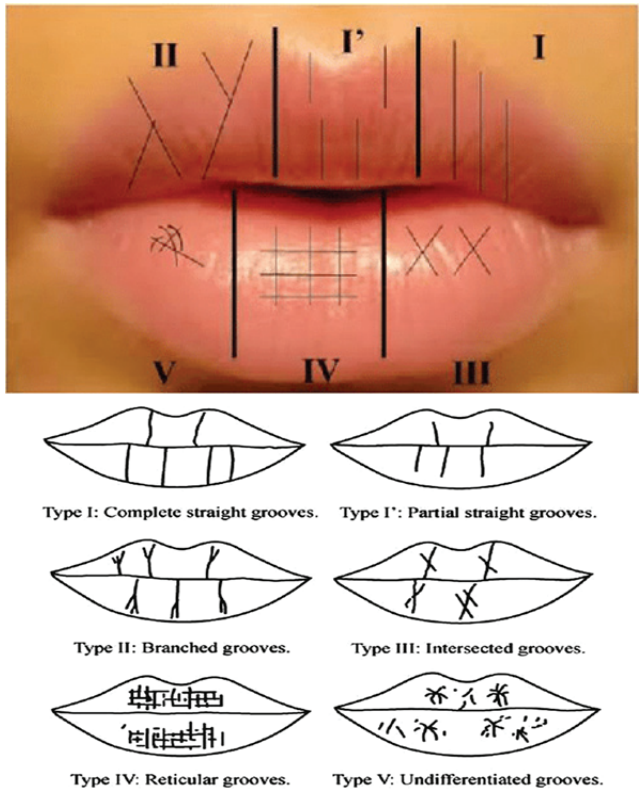
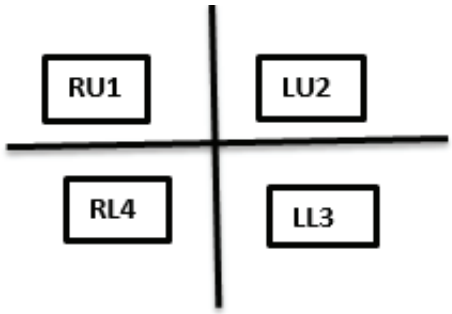
ending debate. Moreover it is used as an adjuvant technique[12]. The patterns of wrinkles on the lips have discrete characteristics as that of finger prints. The wrinkles and the grooves on the labial mucosa form a characteristic pattern called lip prints[12]. It is least invasive and is easily available method to study. The study of lip prints is called Cheiloscopy. The term is derived from the word Cheilos meaning Lips and Scopy meaning to see[5]. Among the various studies done based on the lip prints, those which are done on twins are comparitively less and still an area of research with lacunae.The present study aims at determining the most common pattern of lip print among the twins, the variations and differences among the patterns ,whether they are identical or not, so that it gives a better understanding and a clear way in the approach of identification among the twins. So the study of Lip print pattern in twins would be a significant contribution, since it has been mentioned in previous studies , that uniovular twins share the same proteins , same genetic information but have different finger prints[5] . So any major differences found in the lip print patterns would be of great importance in the field of forensic medicine.

Methods

The present study was conducted on 24 pairs of monozygotic twins. Twin A was elder, and Twin B was younger. Subjects with inflammation trauma, congenital abnormalities, and surgical scars and other abnormalities of the lips were excluded because of their unsuitability for this study[5]. Lip prints were collected from the subjects after obtaining informed consent from the parents of the family. The subject was made to sit on a stool in front of a table and was advised not to move so that the recording of the lip prints will be accurate. First the observer demonstrated how to imprint the lips on the drawing chart. Then the observer stood in front of the subject and asked to keep the mouth closed, lip muscles relaxed and record the lip print. A dark colour lip stick was applied all over the lips upto the lip line and the individual was made to bend forwards and imprint the lips on to the drawing chart, press it firmly forwards and then roll it sidewards to right and left side respectively. The drawing chart was made to air dry for few minutes and marked with serial number at the back of it for its identity. The lip prints were visualized using a magnifying lens , grooves, wrinkles and various patterns were appreciated and noted. The lip prints obtained were entered in a proforma along with name and sex of the individual. The analysis of lip prints was based on Suzuki and Tsuchihashi Classification[16].



The Analysis of lip prints can be done by compartment methods like 1,4,6,8,10 compartment methods. In this study it was done by using a Four compartment method .The lips were divided into four quadrants and allotted the digits 1-4 in a clockwise direction starting from upper right corner of the lip, The upper lip is divided into right and left upper quadrants and the lower lip is divided into right and left lower quadrants . For each quadrant there may be more than one type of lip print. This is the most commonly used on the literature and so followed in this study.



Results

TABLE 1: Distribution of Lip print patterns

	TWIN A	TWIN B
TYPE I		
First Quadrant	05 (20%)	04 (16%)
Second Quadrant	03 (12%)	03 (12%)
Third Quadrant	04 (16%)	06 (25%)
Fourth Quadrant	04 (16%)	01 (04%)
TYPE I’		
First Quadrant	10 (41%)	12 (50%)
Second Quadrant	11 (48%)	12 (50%)
Third Quadrant	09 (37%)	07 (29%)
Fourth Quadrant	12 (50%)	14 (58%)
TYPE II		
First Quadrant	01 (04%)	02 (08%)
Second Quadrant	05 (20%)	03 (12%)
Third Quadrant	06 (25%)	03 (12%)
Fourth Quadrant	03 (12%)	04 (16%)
TYPE III		
First Quadrant	07 (29%)	05 (20%)
Second Quadrant	04 (16%)	05 (20%)
Third Quadrant	05 (20%)	08 (33%)
Fourth Quadrant	05 (20%)	05 (20%)

Cont... **TABLE 1: Distribution of Lip print patterns**

TYPE IV		
First Quadrant	01 (04%)	01 (04%)
Second Quadrant	01 (04%)	01 (04%)
Third Quadrant	-	-
Fourth Quadrant	-	-
TYPE V		
First Quadrant	-	-
Second Quadrant	-	-
Third Quadrant	-	-
Fourth Quadrant	-	-

Table 1 shows the overall distribution of lip print patterns observed in all the four quadrants on the total subjects of the study.

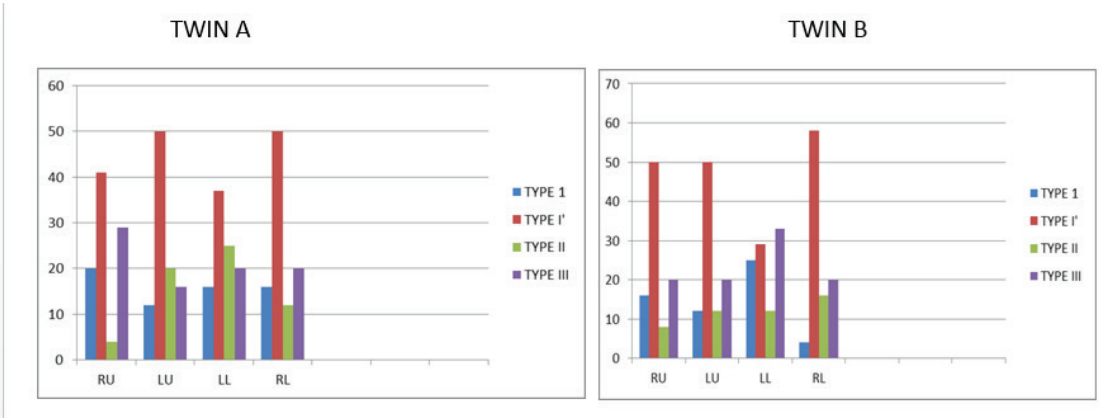


FIGURE 2 & 3 : Common lip print in TWIN A and TWIN B

Figure 2 & 3 shows Type I ' is the predominant lip print pattern noted in the right lower quadrant among both TWIN A and TWIN B with 50% and 58 % respectively.

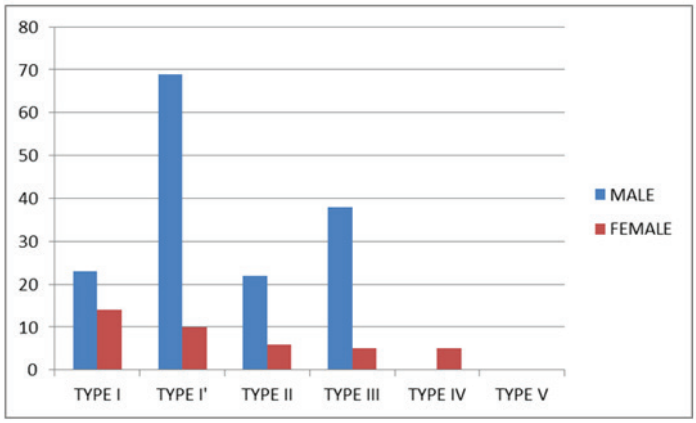


FIGURE 4: COMMON LIP PRINT PATTERN IN MALES AND FEMALES

Figure 4 shows Type I ' is the common pattern observed in males and Type I in females .

TABLE 2 : PERCENTAGE OF RESEMBLNACE AMONG THE TWINS

PERCENTAGE OF RESEMBLANCE	NUMBER OF TWINS (N)
0%	02
50%	14
<50%	06
>50%	02

Table 2 : The results shows that among 24 pairs of twins , 14 pairs have 50% of resemblance , 6 pairs have < 50 % resemblance , 2 pairs have > 50% of resemblance, 2 pairs have no resemblance and are completely different.

Discussion

Cheiloscopy is a simple yet useful technique which aids in identification by thorough and meticulous observation of the lip traces. Many studies state that the lip prints are unique and permanent throughout the life, like fingerprints[12].The imprints that are left over a glass, clothing , body ,crime scene or any object handled by the individual can have direct or latent imprints. Commonly, direct lip prints can be picked up by cellophane tape method, but the untraced lip prints can be lifted by using aluminium and magnetic powder[14]. In criminal cases it is a boon for the forensic expert to present it as evidence in the court . In cases like sexual assaults, thefts, the link between the victim and the criminal can be established whereas in mass disasters and other civil cases identification of the individual can be made[15].

The present study was conducted on 24 pairs of twins out of which 22 pairs were Monozygotic twins and 2 pairs were Dizygotic twins .The commonest type of lip print was Type I ' among the study population and it was observed to be predominant in the right lower quadrant with 50% and 58% in Twin A and Twin B respectively followed by Type III pattern. Type V was not present in any of the subjects. Among the 24 pairs of twins 38 were males and 10 were females, on observation the common pattern noted in males were Type I' and Type I in females. However the study done by Bhawna Thakur et al on 40 pairs of twins showed that Type III was the most common pattern in the left lower lip Quadrant[5].Another study done by Suzuki and Tsuchhashi on 18 pairs of uniovular twins showed Type III was the most common pattern[6] .

Our study also makes us to understand the similarities and differences between the pairs of twins. In 22 pairs of Monozygotic twins 14 pairs of twins showed < 50 % resemblance , 6 pairs showed 50% resemblance, 2 pairs showed >50% resemblance . Among the dizygotic twins, both the pairs were totally different from each other without being alike. The results seems to be concordant with the study conducted on 5 pairs of twins by Venkatesh R et al showed that the lip print patterns were similar but none of them were identical[7].

Conclusion

On analysis, the lip print patterns irrespective of monozygotic or dizygotic twins it shows that they are different from each other and hold its uniqueness in place. Since they are common and better accessible evidence in the crime scene, it can be considered as a higher preferential tool for identification. However a further detailed study with a bigger sample size , study within the family to find the inheritance,

the correlation study of Lip prints with other tools of identification may give an accurate theory of uniqueness about Cheiloscopy.

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