ORIGINAL RESEARCH PAPER

Dental Science

Volume - 7 | Issue - 1 | January - 2017 | ISSN - 2249-555X | IF : 3.919 | IC Value : 79.96

Comparative Analysis of Lip prints, Finger prints and Blood Groups: A Cross-sectional Study.

KEYWORDS: Chieloscopy, Dactyloscopy, Blood Group, Forensic, Identification.

Sonaj Vardhaman
Intern, Department Of Oral Pathology and Microbiology, Sinhgad Dental College and Hospital.

Dr Anirudha Bartake
Reader, Department Of Oral Pathology and Microbiology, Sinhgad Dental College and Hospital.

Dr Sangeeta Palaskar
Professor and Head,Department Of Oral Pathology and Microbiology, Sinhgad Dental College and Hospital.

Dr Vineet Vinay
Senior Lecturer, Department of Public Health Dentistry Sinhgad Dental College and Hospital

Dr Bindya Narang
Reader, Department Of Oral Pathology and Microbiology, Sinhgad Dental College and Hospital.

ABSTRACT *In forensic identification the mouth allows for a myriad of possibilities. Due to distinctive features, dental identification plays a key role to positively identify an individual.Sulci laborium present on the labial mucosa forms a characteristic pattern known as lip prints. Lip prints are important because of their uniqueness.Blood group classification is based on the presence or absence of antigens on the surface of the RBCs.*

OBJECTIVES: *To study and correlatethe various types of lip prints,finger prints and blood groups.*

METHODOLOGY: In this study, lip prints finger prints and blood group were obtained from 200 individuals. The central part of the lip was analysed based on the classification given by Suzuki and Tsuchihashi. Thumb printanalysis was done by Michael and Kucken classification which classifies it into arch, whorl and loop type, blood group was analysed by Landsteiner's classification.

RESULTS: *Type IV (reticular) lip pattern was predominant lip print pattern, loop type was predominant finger print pattern andB+ve blood group was commonly found. Type IV lip pattern and loop finger print correlation, Type IV lip print and B+ve blood group correlation andA+ve blood group and loop finger print correlationwere predominantly found to be significant.*

CONCLUSION: *Correlation of three parameters was not significant but each individually played a vital role in identification.*

INTRODUCTION:

Identification is crucial considering the fact that every individual has a unique set of trait. Personal identification is of paramount importance as it helps in identification of the deceased, in mass disaster or during identification of suspect in a crime scenario. Identification becomes difficult mainly after facial trauma and skeletonization. This is when DNA profiling, osteology and odontology play a mammoth role. Apart from these aids, certain scenarios require supplemental aids, like lip prints, fingerprints, ruggae patterns etc. for identification. In developing countries where refined methods of investigations are not available the study of lip prints and finger prints plays a vital role.

Fingerprint and dental record comparison are most commonly used methods of identification. Since tooth is the hardest structure of the human body which is resistant to extreme physical and chemical agents, hence findings in oral cavity are extremely useful.

The study of wrinkle pattern on the lip is a type of forensic investigation known as cheiloscopy. Sulci laborium present on the labial mucosa forms a characteristic pattern known as lip prints. Lip prints are important because of their uniqueness. They can resist climatic changes and trauma as well.

Fingerprint is unique characteristic of an individual made by curved lines of the skin at the end of the finger and is genotypically determined which remain unchanged from birth to death. The study of fingerprints is known as dermatoglyphics.

Blood groups were discovered way back in 1901 by Karl Landsteiner. Blood groups are classified on the basis of presence or absence of antigens on the surface of the RBCs .The two most important blood groups are ABO (Landsteiner) and the RhD antigen which determines blood type.

MATERIALS AND METHODS:

The present study was conducted amongst the students studying in Sinhgad Dental College and Hospital, Pune, India. The study sample included 200 subjects who were aged between 18-25 years.

Red coloured lip stick, cellophane tape, white A4 sized paper, blue inked stamp pad, and magnifying lens were used.

Exclusion criteria for lip prints: Subjects undergoing orthodontic treatment, congenital lip abnormalities, inflammation of or trauma to lips.

Exclusion criteria for finger prints: Subjects with syndromes and permanent scars on their fingers or thumbs, with any hand deformities caused by injuries were excluded.

Blood group of each individual was documented, following which the lip and finger prints were recorded. The glued portion of the cellophane tape was used to obtain the impression of the lip onto which lipstick was applied. This record was immediately transferred onto paper by gently sticking the cellophane tape. For analysis, each lip print was topographically divided into six areas, and only the central portion of the lower lip was considered. For recording finger prints, imprint of the left thumb was taken. These prints were examined by using magnifying glass, classified and analysed. Lip prints were classified, based on classification given by Suzuki and Tsuchihashi and finger prints were classified, based on Michael's and Kucken's classification. The results were statistically analysed by using Chi–square test.

Figure 1: Suzuki and Tsuchihashi Classification of lip prints.

Volume - 7 | Issue - 1 | January - 2017 | ISSN - 2249-555X | IF : 3.919 | IC Value : 79.96

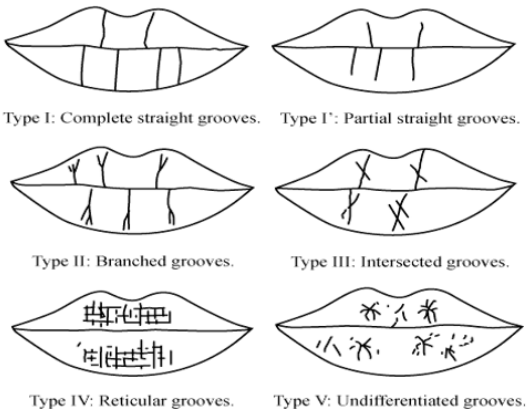
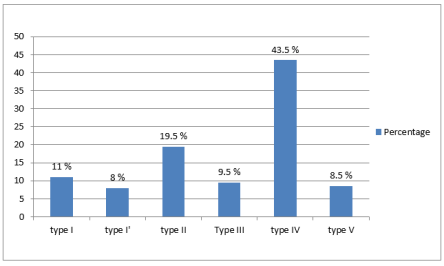


Figure 2: Michael and Kucken Classification of finger print.

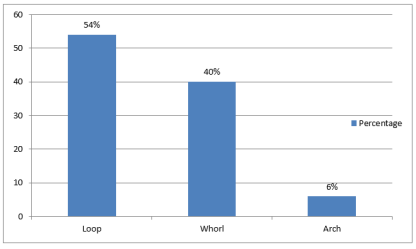
RESULTS:
Within individual groups:
In the study conducted the most prevalent lip print found was Type IV (43.5%) followed by Type II and Type I patterns[Graph 1]. Loop thumb print pattern was predominant (54%) [Graph 2] while B+ve blood group accounted for 32% followed by A+ve and AB +ve[Graph 3].

Inter group comparison:
Type IV and loop correlation [Table 1], Type IV and B+ve correlation [Table 2],A+ve and loop correlationwere common parameters seen.

Graph 1: Lip Prints distribution in the sample. (Suzuki and Tsuchihashi Classification)



Graph 2: Finger Print distribution in the sample(Michael and Kucken)



Graph 3: Blood Group distribution in the sample.

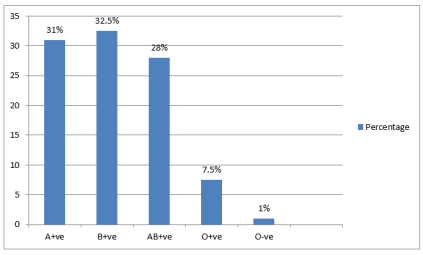


Table 1: Correlation between lip print and finger prints.

		Finger print			Total
		Loop	**Whorl**	**Arch**	
Lip print	type I	10	10	2	22
	type I'	11	5	0	16
	type II	25	12	2	39
	type III	11	7	1	19
	type IV	43	37	7	87
	type V	8	9	0	17
Total		108	80	12	200

Table 2: Correlation between lip print and blood group

		Blood Group					Total
		A+	B+	C+	O+	O-	
Lip print	type I	6	7	7	2	0	22
	type I'	6	3	6	1	0	16
	type II	17	10	11	0	1	39
	type III	6	6	5	2	0	19
	type IV	20	31	25	10	1	87
	type V	7	8	2	0	0	17
Total		62	65	56	15	2	200

Table 3: Correlation between finger print and blood group.

		Blood Group					Total
		A+	B+	AB+	O+	A-	
Finger print	Loop	38	31	28	9	2	108
	Whorl	21	29	25	5	0	80
	Arch	3	5	3	1	0	12
Total		62	65	56	15	2	200

DISCUSSION:
Lip prints can be used effectively for personal identification. They play a vital role as evidence and are considered similar to finger prints for personal identification .[1, 2] Lip prints can be found on surfaces such as glass, paper, clothing, cutlery or cigarette butts. Even the invisible lip prints can be used and can be lifted using aluminium and magnetic powder.[3, 4] The edges of the lips have sebaceous glands with sweat glands in between therefore, secretions of oil and moisture enable development of 'latent' or persistent lip prints, analogous to finger prints [5]. Lip prints found at criminal investigation site can help in identifying the individual and solving the cases. Lip print pattern recorded depends on whether the mouth is open or close. In closed mouth position, the lip exhibits well-defined grooves, where as in the open position the grooves are relatively ill defined and difficult to interpret.[6] In the present study the lip prints were recorded in closed lip position.

The analysis of finger prints as a form of identification has been used since time immemorial. No two finger prints even in a given individual have been found to have the same ridge pattern and this remains unchanged throughout life.[7] This uniqueness in its presentation is the very fact that the analysis of finger print offers an excellent means of forensic investigations. Today, automated finger

Volume - 7 | Issue - 1 | January - 2017 | ISSN - 2249-555X | IF : 3.919 | IC Value : 79.96

print identification has been employed among law enforcement agencies throughout the world.[6, 7] Once the finger prints are obtained it is important to classify them. Michael and Kucken classified finger prints into Loop, Arch and Whorl [8].

Suzuki and Tsuchihashi in 1970, devised classification of lip prints as[6]

Type I- clear cut grooves running vertically across the lip.
Type I'-grooves are straight but disappear halfway.
Type II-grooves fork in the course.
Type III-grooves intersect.
Type IV- grooves are reticular.
Type V- grooves don't fall into any type I-IV

Nagasupriya et al [8] classified lip prints as

Type I-both partial and vertical lip pattern
Type II-branched pattern
Type III-grooves that were intersecting or in reticular pattern.

The frequency of loop was predominant in our study followed by whorl and arch types, which was in accordance to the studies conducted by Adamu LH et al4 and Mutalik VS et al.[6]

The study by Shrilekha et al. Showed that Type I was predominant in females and Type I and IV in males1. Ashwini et al concluded that the most predominant pattern in females was Type IV and in males was Type II [5]. Type I was frequently seen in boys and Type II in girls.[8,9,10].In contrast to the above studies our study showed that Type IV was predominant in both males and females followed by Type II and Type I which was similar to the study conducted by Mutalik VS et al.[6] This may be due to observer stupefaction of classification of reticular and intersecting types. [11, 12]

The predominant blood group in males was A+ve and in females was B+ve, while loop pattern was most evident finger print pattern in both males and females. Combination of A+ve and loop pattern remained ubiquitous in our study followed by combination of B+ve and loop pattern ,which was similar to Dennis E et al[2], however it was in contrast to the findings of Bhavana et al[7] in which the combination of B+ve and loop was predominant.

The results of the current study are similar to the study conducted by Shrilekha et al. which correlated lip prints finger prints and blood groups[1] .They concluded that there was no specific correlation amongst the three and each had their own importance.

CONCLUSION:

It is known that lip patterns, finger print patterns and blood groups play an important role in forensic identification. Correlation of these three parameters in our study did not show any significant association. Hence, these combinations cannot only be used in individual identification, but rather can be used to validate facts in crimes where there are few evidences.

REFRENCE:

1. Srilekha N, A A, Srinivas G V, Devi R S. Correlation Among Lip Print Pattern, Finger Print Pattern and Abo Blood Group. JCDR. 2014;8(3):49-51.
2. Dennis E.O.Eboh. Fingerprint patterns in relation to gender and blood group among students of Delta State University, Abraka. N J ECA 2013; 12(2): 82 – 6.
3. Karim B, Gupta B. Cheiloscopy and blood groups: Aid in forensic identification The Saudi Dent Journal 2014; 26: 176–180.
4. Adamu L. H., Taura M. G., Hamman W.O.,. Ojo S. A Dahiru , A.U., Sadeeq A. A et al. Relationship of thumb prints and lip prints among Nigerians IOSR-JDMS 2013; 9(2): 12-7.
5. Ashwinirani SR, Suragimath G, Sande AR, Kulkarni P, Nimbal A, Shankar T et al. Comparison of Lip Print Patterns in Two Indian Subpopulations and Its Correlation in ABO Blood Groups : JCDR. 2014; 8(10):ZC40 – ZC43.
6. Mutalik V, Menon A , Jayalaxmi N, Kamath A , Raghu AR. Utility of cheiloscopy, rugoscopy, and dactyloscopy for human identification in a defined cohort. JFDS 2013; 5(1):2-6.
7. Bhavana D, Ruchi J, Prakash T, Kalyan JL. Study of fingerprint patterns in relationship with blood group and gender- a statistical review. Res J Forensic Sci. 2013; 1(1): 12–7.
8. Nagasupriya A, Dhanapal R, Reena K, Saraswathi TR, Ramachandran CR. Patterns - "A crime solver". J Forensic Dent Sci. 2011; 3(1): 3–7
9. Patel S, Paul I, Madhusudan AS, Ramesh G, Sowmya GV. A study of lip prints in relation to gender, family and blood group. IJOMP. 2010;1(1):4-7.
10. Prabhu RV, Dinkar AD, Prabhu VD, Rao PK. Cheiloscopy: Revisited. J Forensic Dent Sci 2012;4:47-52.
11. Dineshshankar J, Ganapathi N, Yoithapprabhunath TR, Maheswaran T, Kumar MS, Aravindhan R. Lip prints: Role in forensic odontology. J Pharm BioallSci 2013;5:95-7.
12. Sharma P, Saxena S, Rathod V. Comparative reliability of cheiloscopy and palatoscopy in human identification. Indian J Dent Res 2009;20:453-7.