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Distinctiveness of Cheiloscopy in relation to Blood Groups: A short study

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ABSTRACT
Everyone has characteristics that set them apart from others. Lip prints are one such characteristic which stay consistent throughout one's life. This article is presenting a study to correspond different patterns of lip prints of a representative sample of younger people and to establish it's relation with particular blood groups. This rapidly emerging branch of forensic odontology can be used as an adjuvant in investigation of criminals which has immense significance in giving more accuracy. To analyse distinctiveness of the lip print patterns of students in association to ABO blood grouping and Rh blood groups.
KEYWORDS: *Cheiloscopy, blood group, Forensic Odontology, Personal identification*

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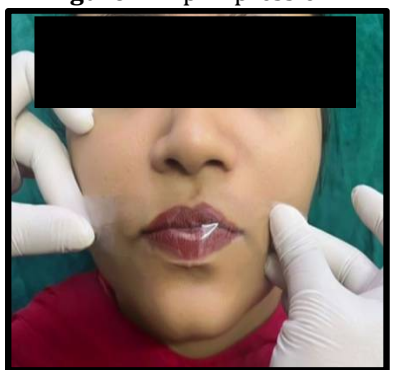
INTRODUCTION

Forensic Odontology is one of the rapidly emerging branches specialised for criminal investigations, recognition of unknown person and also in identifying missing person in various disaster conditions [1]. Most important tool needed for such investigation are biological evidences which sometime get deteriorated and degraded particularly when they are not collected, dispatched or stored appropriately. In such cases, cheiloscopy is a vital technique which is comprised of personal identification established on the anatomical and morphological feature of lips [2]. Furthermore, the lip form certain patterns as it has many elevations and depressions which is the unique characteristic mark and remain uniform over the course of life. The lips exhibit fleshy folds and several ridges like character and grooves which are clinically revealed [3].

MATERIAL AND METHOD

In our study, lip prints of 50 BDS students were visualised in the Department of Oral and Maxillofacial Pathology and Oral Microbiology of Santosh Dental College, Ghaziabad, Uttar Pradesh. A total of 50 healthy students, in the age group of 18- 25 years belonging to Northern Indian race were randomly analysed. A consent was received preliminary of taking their lip prints and all participants were uprised about the study's purpose and objective. Lips of students with typical transitional zones were investigated for the study. Students with surgical scars, abnormality, trauma, inflammation or any active lesions of the lip were eliminated from the study. The essential material for recording lip prints included a pair of scissors, cotton, magnifying lens, lipstick with darker tones, plain white paper, cellophane tapes, a lead pencil, glass slides, blood lancets and anti-A and anti-B sera for categorizing blood groups (FIG 1-2).

Figure 1. Application of Lipstick **Figure 2.** Lip Impression.

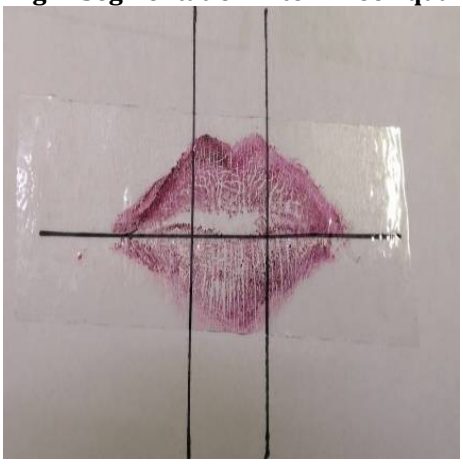



Firstly, the lips of the students were cleaned entirely with moisturized cotton and then lipstick was applicated in a single motion evenly on the lips. It is to note that the marking should start at the midline and move outward laterally. Moreover, both the lips were covered so that it masks the entire vermillion border and the students were briefed to maintain a relaxed lip position while having their lips recorded. Recording was done with the glued part of the cellophane tape over the lips. Finally, the imprint on cellophane was carefully removed and pasted on the plain white paper for further visualization by magnifying glass. Blood group of the students was tested by taking a sample of blood on a glass slide and adding anti-A and anti-B sera. Each lip was segmented into three equal parts starting from right upper to right lower portion and analysed for the type of lip print. Only the centre area of lip was taken for classification as the lines and grooves are clearly appreciated in that region. Suzuki and Tsuchihashi classification of lip prints was given in 1970 (table 1) [4].

Table 1: Classification of Lip Prints

	Type	Pattern
(a)	Type I	Many clear-cut grooves flowing vertically over the lip
(b)	Type II	Many partial length grooves across the lip
(c)	Type III	Many branched grooves over the lip
(d)	Type IV	Many intersected grooves over the lip
(e)	Type V	Reticular pattern over the lip
(f)	Type VI	Other patterns over the lip

Fig 3. Lip Print On Cellophane Tape Along **Fig 4. Segmentation Into Three Equal parts**



RESULT AND DISCUSSION

On analysis of lip prints pattern among the central compartment of lip, the most common lip print pattern presented in this study was type II (Many partial length groove across the lip) with 28 percentage of the total students. Whereas, the second most common lip print pattern presented was type III(many

branched groove over the lip**)** (21 percentage) followed by type I (Many clear-cut groove flowing vertically over the lip**)** (20 percentage), type IV**(**many intersected groove over the lip**)** (16 percentage), type V**(**many reticular pattern over the lip**)** (11 percentage) and type VI(other patterns over the lip) (4 percentage) (table 2).

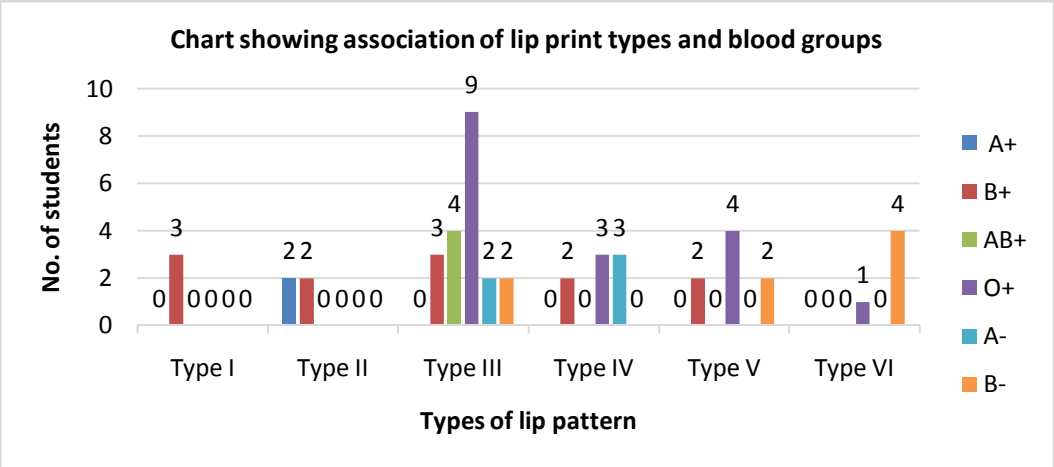
Table 2. Correlation between lip print pattern & blood group

	Types of lip pattern					
Blood Group	Type I (Many clear-cut grooves flowing vertically over the lip)	Type II (Many partial length grooves across the lip)	Type III (Many branched grooves over the lip)	Type IV (Many intersected grooves over the lip)	Type V (Reticular pattern over the lip)	Type VI (Other patterns over the lip)
A+	0	2	0	0	0	0
B+	3	2	3	2	2	0
AB+	0	0	4	0	0	0
O+	2	0	9	3	4	1
A-	0	0	2	3	0	0
B-	0	0	2	0	2	4

When the distinctness of lip print patterns was correlated with specific antigen–antibody reactions in the blood of the students, the following results were noted. Among 19 students of blood group O+ve the most dominant lip prints pattern was type III **(**Many branched groove over the lip**)** followed by type V**(**many reticular pattern over the lip**)** lip print, type IV**(**many intersected groove over the lip**)** lip print, type I**(**clear-cut groove running vertically across the lip**)** lip print and type VI(Other patterns over the lip) lip print pattern.

Among other 12 students of blood group B+ the most dominant lip prints pattern was type III and type I lip prints pattern followed by type II, type IV and type V lip print pattern. The rest 8 students of blood group B-ve the dominant lip prints pattern was type VI and least was observed in type III and type V lip prints pattern. Remaining 5 students of blood group A-ve showed lip print pattern type IV followed by type III. Lastly, the 4 students of blood group AB+ the commonest lip print was type III and with 2 students of blood group A+ was type II (fig 5).

Fig 7. Distribution of lip print with blood group



In forensic odontological investigations the valuable weapon for personal identification are the anatomy of the lips and the pattern generated when they are impressed onto a range of surfaces. Clothing, glass, cutlery or cigarette butts are the surfaces on which these lip print pattern can be analysed. Invisible lip

prints can also be utilised and lifted with magnetic powder and aluminium [5]. Cheiloscopy is an emerging field available to the forensic expert for identification. Cheiloscopy was first put forwarded as a device for identification by Edmond Locard who was one of France's famous criminologists [6].

The current investigation was conducted on 50 people to assess the connection of lip print patterns with ABO blood group. As a result, Type III (Many branched groove over the lip) pattern was frequently presented among both male and female students. The same record was obtained to study done by Vahanwalla and Parekh in their study [7-9]. But was contradictory with the study done by Srilekha et al. who showed that Type I**(**many clear-cut groove flowing vertically over the lip**)** was predominant among individual followed by Types I and IV (many intersected groove over the lip pattern) [10-12]. Various studies in India have revealed population domination. There hasn't been much research correlating lip print patterns and blood groups, however Suzuki and Tsuchihashi [4] claimed that there is some association between lip print pattern types to blood group heredity. In this study, it was observed that the most predominant blood group in students was O +ve where Type III (many branched groove over the lip) was the most prominent lip pattern. This was also in accordance with the study demonstrated by Sandip K Raloti [13]. The second common blood group was B+ve predominant with type III lip print pattern. This record was in accordance with the study performed by Verma *et al*. who obtained B +ve blood group as a principal one [14-15].

CONCLUSION

The present study revealed significant association between the lip print patterns and specific blood group of the students. Thus, suggesting that such association with blood group behold the potential in recognizing the gender and person identification.

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