

Research Article

A study of lip prints in relation to gender, family and blood group

Shilpa Patel, IshPaul, Madhusudan.A.S., Gayathri Ramesh, Sowmya G.V

Abstract

Background: In forensic identification, the mouth allows for a myriad of possibilities. The use of lip prints is not so popular but exists as a methodology in forensic science. Hence Dental surgeon has to actively play his role in personal identification and criminal investigation, as his evidence would be very much useful in law and justice. **Objective:** The objective of present study was to evaluate in depth the lip print patterns in relation to gender, its consistency for a period of time, to ascertain whether there is any hereditary pattern in lip prints among families with siblings and twins, and thereby, to investigate whether the lip prints are unique to any blood group in the population under investigation. **Materials and Methods:** This study was conducted on 100 students and 10 family with children and twins respectively. The lip-print of each subject was obtained on a microscopic glass slide without applying anything and developed with carbon powder dusting with ostrich brush. Blood group information was noted. **Results:** Our study showed, in boys, the Type I (complete vertical), in girls, Type II (branched) and among both, type II (branched) lip print pattern to be most prominent pattern. The present study showed a good consistency of the lip print pattern when observed for a period of six months consecutively. The study has not found any statistical correlation of lip print with family members or even any correlation between blood group and lip prints. **Conclusion:** Although lip print identification has been utilized in the court of law in isolated cases, more research needs to be conducted in this field, with regard to confirmation of its uniqueness. Hence chelioscopy has to be carried out in depth on larger sample size using newer scientific technologies.

Keywords: Lip;Period;Bloodgroup;Twins;Family

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Lip prints are normal lines, fissures in the form of wrinkles and grooves present in the zone of transition of human lip between the inner labial mucosa and outer skin. The appearances of lip prints, like finger prints, vary from person to person.[1] As dental surgeon has to actively involved in various objectives of forensic dentistry, his role in personal identification and criminal investigation is very much important as his evidence would be very much useful in law and justice.[2]

In some particular circumstances, often related to a criminal investigation, there can be data other than hard tissue related, that are important to the process of human identification as those which result from soft oral and perioral tissue prints for instance, lips, as well as the hard palate, are known to have features that remain constant and can lead to a person's identification.[1] The use of lip prints is not so popular but exists as a methodology in forensic science. Studying in depth and establishing further facts and truth in lip print will certainly help us, as

useful evidence in forensic science.[3] Edmond Locard was one of the France's greatest criminologists who first recommended the use of lip print in personal identification and criminalization.[4]

Hence the objective of present study was to evaluate in depth the lip print patterns in relation to gender, its consistency for a period of time, to ascertain whether there is any hereditary pattern in lip prints among families with siblings and twins, and thereby, to investigate whether the lip prints are unique to any blood group in the population under investigation.

Materials and methods

The materials used in the present study are as follows Microscopic Glass Slides, Fine Carbon Powder (No. 3020), ostrich Brush, Cello Tape, and Magnifying Glass.

Lip prints patterns among boys and girls and its consistency over a period of time

Lip prints of 100 students were recorded, among which, 50 were boys and 50 girls within the age group of 18-24 years from Pacific Dental College and Hospital, Udaipur, after acquiring the consent. Lip prints of these individuals were recorded every month for six months period, in order to check for its consistency. Lips which were free from any disease and the transient zone of lips between mucosa and skin which were absolutely normal were included in the study.

The subjects were made to sit in a relaxed position and after cleaning the lips; lip print was taken on microscopic glass slide in a single motion without applying anything and developed with dusting fine black carbon powder using ostrich brush. Excess of carbon was dusted out and cello tape was applied on the glass slide to preserve the same. Care was taken to avoid any wrinkles and air bubbles. Then the lip prints were studied carefully using a Magnifying Glass in bright light to identify and classify according to Suzuki and Tsuchiashi. [5]

Lip prints were recorded in families with siblings and twins

Lip prints were recorded to ascertain about similarities and dissimilarities among the 10 families with siblings and another 10 families with twin children.

Lip print patterns compared with blood groups

Blood groups of all the subjects in the present study were noted, to know if any particular lip print was unique to a blood group.

Result

Lip prints patterns among boys and girls and its consistency over a period of time

In the present study, it was found that, in boys, Type I (complete vertical-30%) was the most prominent pattern, followed by Type II (branched-26%), Type IV (reticular-16%), Type I' (incomplete vertical-14%), Type III (intersecting-8%) and Type V (irregular-6%). However, in girls, Type II (branched-42%) was the most prominent pattern, followed by Type I' (incomplete vertical-16%), Type I (complete vertical-14%), Type III (intersecting-10%), Type IV (reticular-10%) and Type V (irregular-8%) in decreasing order. Further it was found that in both boys and girls, type II (branched-34%) lip print was the most prominent pattern. The

lip prints of all individuals showed a consistent pattern, without any gross difference, when followed for six month period.

Lip prints in families with siblings and twins

Out of 10 families with siblings, only 2 members of 5 families had same lip print pattern. In the other group of 10 families with twins, only one set of twins had same lip pattern.

Lip print patterns compared with blood groups

In boys with blood group A +ve, the most prominent pattern noted was type II (branched-5) followed by type I (complete vertical-4), type I' (incomplete vertical-2), type III (intersecting-1), type IV (reticular-1) and type V (irregular-1). In blood group B+ve the most prominent pattern noted was type I (complete vertical-4), followed by type II (branched-3), type III (intersecting-3), type I' (incomplete vertical-2), and type IV (reticular-2). In blood group O +ve the most prominent pattern noted was type II (branched-9), followed by type I (complete vertical-5), type I' (incomplete vertical-3), type IV (reticular-2), type V (irregular-2) and type III (intersecting-1).

In girls with blood group A+ve, the most prominent pattern noted was type II (branched-7), followed by type I' (incomplete vertical-4), type IV (reticular-2), type III (intersecting-1) and type V (irregular-1). In blood group B+ve, the most prominent pattern noted was type I (complete vertical-2), followed by type I' (incomplete vertical-2), type II (branched-1), type III (intersecting-1), type IV (reticular-1) and type V (irregular-1). In blood group O +ve most prominent pattern noted was type II (branched-7), followed by type I' (incomplete vertical-6), type I (complete vertical-5), type III (intersecting-4), type V (irregular-3) and type IV (reticular-2).

In both boys and girls, it was noted that in blood group A+ve, type II (branched-12) was the most prominent lip pattern followed by type I' (incomplete vertical-6), type I (complete vertical-4), type IV (reticular-3), type III (intersecting-2) and type V (irregular-2). In blood group B+ve, it was noted that type I (complete vertical-6) was the most prominent lip pattern followed by type I' (incomplete vertical-4), type II (branched-4), type III (intersecting-4), type IV (reticular-3) and type V (irregular-1). In blood group O+ve, it was noted that type II (branched-16) was the

the most prominent lip pattern followed by type I (complete vertical-10), type I' (incomplete vertical-9), type III (intersecting-5), type V (irregular-5) and then by type IV (reticular-4).

In the present study, it was noted that out of 10 families with siblings only 4 families with one parent and one child with same blood group showed same lip print and out of 10 families with twin children, none showed any correlation between any particular lip patterns.

Discussion

The study of lip prints is called cheiloscopy. It is a method of identification of a person based on the characteristic arrangement of lines appearing on the red part of the lips. It is safe, however, to assume that cheiloscopy, in its present stage of development, has surpassed the limits of a method and has become a means of criminalistics identification.[6] Lip prints are unique and do not change during the life of a person.[7] However, major trauma to the lips may lead to scarring, pathosis and the surgical treatment rendered to correct the pathosis may affect the size and shape of the lip, thereby, altering the pattern and morphology of grooves.[8] It has also been suggested that variations in patterns among males and females could help in sex determination.[9] Lipstick smears can lead to indirect proof of a relationship or contact between a victim and a suspect or a suspect and a crime scene.[10] Hence In addition to fingerprints, lip prints can be of forensic interest.

Hence this study was carried out to evaluate the common lip-patterns and their variations in the study population, and to evaluate the differences between the sexes and families. The lips which were studied were only those which had no inflammatory disease, trauma, malformation, deformity or scars. However, these abnormalities themselves are identification marks.

In the present study the most prominent lip pattern seen in boys was type I (complete vertical), in girls and among both boys and girls it was type II (branched). Similar to a study by Uma Maheshwari [11], in both boys and girls type II (branched) was prominent. In a study done by Gondivkar et al. [12] in boys, type III (intersecting) lip pattern was predominant, whereas type II pattern was commonly found in girls and in both sex

also. In contrast to the present study, Tsuchiashi [13] have shown in boys and also in girls type III (intersecting) was the most prominent pattern.

Lip prints of 100 students were taken every month, consecutively for six month period. The lip pattern showed consistency without any gross changes. Similar result was seen in a study done by Uma Maheshwari [11] for a period of one year.

In the present study, out of 10 families with siblings, only 2 members of 4 families had same lip pattern. The lip prints of parents and children and those of siblings have shown some similarities in few studies.[14][15] Whereas there was no similarities among families with siblings in Uma Maheshwari's study.[11]

In the present study, lip patterns in families with twins, found no significant correlation, similar to the study done Suzuki and Tsuchihashi [5], Tsuchihashi [13] and also by Uma Maheshwari [11].

In the present study, it was noted that out of 10 families with siblings, only 4 families with one parent and one child with same blood group, showed same lip pattern. However in 10 families with twin children, none showed any correlation between any particular lip patterns with blood groups. There are no studies available on lip print comparison with blood group in English literature search.

The future prospective of this study is that, the lip pattern should be studied in depth with large number of samples in both sexes to establish further facts and truths similar to finger prints, which will help in forensic odontology. Different methods have to be evolved to trace lip prints in skin, clothes and other non-biological suspect's material to aid in criminal investigation. A newer technique (software) has to be developed to assess and accurately measure the lip patterns. This topic needs to be tested more in scientific community, before it is completely accepted in the court of law.

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