ORIGINAL ARTICLE

NEW, EASY AND EFFECTIVE METHOD TO TAKE DERMATOGLYPHIC PRINTS

Roopam K Gupta[1], Aruna K Gupta[2]

[1]Asst. Professor, Anatomy, C. U. Shah Medical College, Surendranagar; [2]Asst. Professor, Ophthalmology, C. U. Shah Medical College, Surendranagar

Correspondence: Dr Roopam Kumar Gupta, Email:maildrgupta@gmail.com

ABSTRACT

Introduction: The most common method used to take dermatoglyphic prints is the 'Ink method'. It has a few drawbacks because it is not subject friendly or user friendly. In spite of this alternative methods have been rarely described. We experimented with different methods and found an innovative, easy, effective and very economical method to obtain the dermatoglyphic prints by using a 'Lip Stick'.

Methodology: The lip Stick method was perfected and steps documented. A100 medical students were adequately trained and divided into smaller groups. They performed the 'Dermatoglyphic Print' obtaining and analysis process, by both the conventional 'Ink method' and by the new 'Lip Stick' method. They then evaluated both the procedures under headings of ease of procedure, clarity, ease of analysis and subject friendliness by questionere method.

Results: The lipstick method was found to be more easy to perform (94%), better in clarity (63%), easier to analyze (55%) and very much subject friendly (100%) when compared to the ink method.

Conclusion: This 'Lip stick' method is easy, subject friendly, user friendly and as efficient for analysis as the conventional method of printer's ink, and very cheap compared to the other hi tech methods. We recommend that this method should be used preferably for dermatoglyphic studies.

Keywords: Dermatoglyphics, Ink method, Lipstick, Finger print

INTRODUCTION

Dermatoglyphics is the study of the skin ridges found on the digits, palms, toes and soles of primates and other mammals. Ridges are genetically determined therefore dermatoglyphics is useful in anthropological, medico legal & genetic studies and is accepted as a simple & inexpensive method for deciding whether a patient has a particular genetic disorder or not. The most common method used to take dermatoglyphic prints is the 'Ink method', first described by Cummins & Midlow (1943)[1]. It has a few drawbacks. In spite of the large amount of research being done alternative methods have been rarely described.[2,3,4.] We present an innovative, easy, effective and very economical method to obtain the dermatoglyphic prints. This method can be called the 'Lipstick' method.

MATERIAL & METHOD

The 'Lipstick' method requires a dark shade of 'Lip stick', a foam rubber pad and a white sheet of paper. The lipstick was applied on the entire palm of the subject including the wrist creases, and digits. Then we placed the sheet of paper on top of the foam rubber pad on a flat, stable surface. The subject's palm was placed on this and gently pressed. The foam pad was used to fill the concavity of the palm when pressure was applied to the back of the hand. Otherwise, blank areas or white spaces would appear in the center of the palm. Then we gently pressed each digit to make sure it also appeared on the palm print. Then we placed our hand on the upper edge of the paper to assist the person in removing his/her hand. The subject did not need to wash his hands as the lipstick's color came off easily by wiping with a soft, damp cloth and left a perfume too!

For digital prints we applied the lipstick evenly on the palmer aspect of the distal part of the digits so that it covered the entire pattern area, then we placed a paper on the edge of a flat surface, and rolled the finger across it. Then we labeled the strip by side (right or left) and by each digit using roman numerals (The thumb as I and the little finger as V).

Another palm print of the same subject was taken using the conventional 'Ink method', as described by American Dermatoglyphics Association's 'self-

instruction manual.[5] The materials required were printers Ink (Kores), an ink pad, ink roller/applicator, foam rubber pad and glossy paper. We applied the black ink on the roller and then used it to cover the entire palm of the subject. The procedure to take palmer print was repeated as described above. For digital prints we had to ink the digits by rolling them across the ink pad one finger at a time in one continuous motion. Once the finger had been inked, the procedure mentioned above was repeated. The subjected washed his hands with soap and water to clean the ink off.

To evaluate both these procedures, we taught a class of 100 medical students about Dermatoglyphics in general, about its importance and the process to analyze them.

Fig 1 Ink Method

Fig 2: Lipstick method

Then we demonstrated both the above methods to obtain the prints. Thereafter they were divided into 10 smaller groups of 10 each, provided with all necessary materials and asked to perform both procedures to obtain the prints and then analyze them by identifying the 'triradii' and calculating the 'atd' angles. Then they evaluated both the procedure by filling a simple question 'ere.

OBSERVATION

A sample print obtained by 'Lipstick method' is shown in Fig No. 1, and Fig No. 2 shows a print obtained by the 'Ink method'. The evaluation result is shown in table No. 1.

Table 1: Comparison of Ink and lipstick method for finger print

Sub Headings for Evaluation	Ink method was better	Lipstick method was better
Ease of procedure of obtaining the print	6	94
Clarity of print obtained or accuracy	37	63
Ease of analyzing the print	45	55
Subject friendliness of procedure	0	100

It was found that in terms of ease of procedure of obtaining the print 94% found the Lipstick method better. 63% evaluated the Lipstick print to be more clear and accurate than the ink print and 55% found the Lipstick print easier to analyze. Everyone (100%) accepted that the Lipstick method was more subject friendly than the Ink method.

DISCUSSION

The most common method used for dermatoglyphic studies is the ink method first described by Cummins & Midlow (1943)[1]. All those who have worked with this method will be aware of the problems faced during this procedure. The subject feels uncomfortable on seeing the paraphernalia of ink pad, roller, and printer's ink. When the black ink is applied on his palms he feels dirty and becomes uncooperative. The researcher himself invariably smudges the ink on his own hands, clothes and on the white sheet of paper being used to obtain the print. He has to explain to the subject that the ink will easily come off on washing but the subject often struggles to get it off from his hand creases. These problems get magnified when working on children, or in hospitals where white bed sheets may get spoilt. This method also needs an assistant always for help.

Other methods have been tried which include a 'Scotch-tape India-ink' method[2] which is an inkless method using sensitizing fluid, adhesive tape, powder, and carbon paper. Recent "hi-tech" methods are generally computer based and begin by scanning prints with a video camera followed by digitizing the print features which are then subjected to analysis. Okajima (1975)[4] developed a method to study ridges on the dermal surface instead of the epidermal surface using chemical treatment and staining with toluidine blue that can be done even in fetuses from the 14th gestational week. Misumi et al (1984)[3] used scanning electron microscope. Others have used Rubber and Plaster of Paris casts also. These methods are costly or cumbersome.

The lipstick method described here is easy, harmless, cheap, subject and user friendly and a single person can do the procedure alone too. The chemical composition of lipstick varies greatly from brand to brand. A typical lipstick has the following composition: dye, 5%; titanium dioxide 10%; oil 40%; wax 20%; emollient 25%, with traces of other components to impart a pleasant odor, a preservative to kill microbes, vitamin E, sunscreens and sometimes even a flavoring agent. Commonly used dyes are 4', 5'-dibromo-fluorescein and 2', 4', 5', 7'-tetrabromo-fluorescein, which is also known as eosin. Forensic science also recognizes 'Cheiloscopy', which is the study of lip prints.

CONCLUSION

This 'Lip stick' method is easy, subject friendly, user friendly and as efficient for analysis as the conventional method of printer's ink, and very cheap compared to the other hi tech methods. The study of Dermatoglyphics will surely benefit from this method. We recommend that this method should be used preferably for dermatoglyphic studies.

REFERENCES

1. Cummins, H., & Midlow, C. (1943). Finger prints, palms and soles: An introduction to dermatoglyphics. Philadelphia: The Blakiston Company. Philadelphia.
2. Cotterman C. W., A scotch-tape India-ink method for recording dermatoglyphics, Am J Hum Genet. 1951 December; 3(4): 376–379.
3. Misumi Y, Akiyoshi T. Scanning electron microscopic structure of the finger print as related to the dermal surface. Anat Rec. 1984 Jan;208(1):49-55.
4. Okajima M, Development of dermal ridges in the fetus. J Med Genet. 1975 Sep;12(3):243-50.
5. Reed Terry, Robert Meier; A SELF-INSTRUCTION MANUAL; Department of Medical Genetics, Indiana University School of Medicine, Indianapolis, USA, and Department of Anthropology, Indiana University, Bloomington, USA; For American Dermatoglyphics Association. 1990.