

TAKING THE FINGER IMPRESSIONS OF LIVING AND DEAD PERSON: AN ANALYSIS OF DIFFERENT METHODS

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ABSTRACT

Fingerprints have been the gold standard for personal identification within the forensic community for more than one hundred years, development of new visualization techniques to obtain images of latent fingermarks for identification purposes is continuing. Fingerprints were found in ancient Babylonian, Greek, Chinese and Roman civilization. Fingerprints are considered as the oldest friction ridge skin impressions found to date. Fingerprints fall into three categories: latent, known, and plastic impressions. A latent fingerprint is the two-dimensional reproduction of the friction ridges of the finger on an object by means of perspiration, oils, or other contaminants that coat the surface of the ridges when a finger touches an item. These types of prints generally must be made visible through the use of forensic technology such as alternate light sources, chemical techniques, or fingerprint powders. In some instances, latent prints can be visualized without the use of any fingerprint processing techniques and are called patent prints.

KEY WORDS: Finger Print, Ridge, Impression, Ink, Roller,

No: of References: 08

INTRODUCTION

Identification or identity helps us to determine the individuality of person, living or dead (A Aggrawal A. 2016). The skin is both the largest organ and the first line of protection in the human body. Completely covering the body from head to toe, the skin is primarily consistent in nature everywhere except for the areas covering the palmar surfaces of the fingers and hands and the plantar surfaces of the toes and feet. The skin on these areas is referred to as friction ridge skin. Obtaining legible recordings of these areas of skin is crucial for subsequent comparisons to latent impressions recovered from crime scenes, for comparison against previous records, or for input into automated fingerprint identification systems (AFIS). Dactylography is a progressing science and a new method for recording, lifting and developing of prints under different field conditions appearing regularly (Vij Krishan 2014). A fingerprint in its narrow sense is an impression left by the friction ridges of a human finger (Ross A, Dass S, Jain A K A 2005). The fingerprint system is based on the principle that the skin of the balls of the fingers and thumbs is covered with ridges and grooves; the pattern of which varies between individuals and makes absolute identification possible (Nandy A. 2014).

Fingerprints and finger marks combine to provide the most powerful means of personal identification available to police and courts. How this became such a powerful tool arises from the realization that the patterns of ridge skin

and their details are unique, immutable, universal, easy to classify, and leave marks on any object handled with bare hands. The understanding of the value of fingerprints led to research in detection techniques and to operational and strategic uses for fingerprints. Fingerprints form definite patterns that appear to have a general resemblance in shape and design (Herschel W J 1916). There are several methods now being used in the fingerprinting of deceased persons. Examples are the folded card method or the use of special equipment such as the post mortem spoon. In the more difficult cases where the body has partially decomposed or mummified, special preparation may be required before suitable inked impressions are obtainable (United States Department of Justice, Federal Bureau of Investigation, 1963).

The epidermal skin of the palmar surfaces of the hands and the plantar surfaces of the feet bear intricate patterns, formed by fine friction ridges. Each ridge bears a row of sweat pores. When perspiration flows out of the pores, it courses over the ridges. As a result of this, when a digit touches a smooth surface, a perspiration impression of the ridges is left on that surface. This is called a latent impression. Although frequently invisible, the design can be made to appear quite distinct through the proper use of fingerprint powders, chemical solutions, and vapors.

OBJECTIVES OF THE STUDY

1. To find out whether a person has previous criminal record.

2. To compare with a questioned print on document used as signature or unidentified mark left at the scene of crime.
3. For production in the court when required.
4. For filling in criminal record of persons convicted of offences specified by the state or Federal Government from time to time.
5. For any other purpose circumstance demands.
6. For filling in civilian record (if any) for future identification.

DIFFERENT METHODS OF TAKING FINGER PRINT IMPRESSION OF LIVING PERSON

There are four methods of taking the Finger Prints of the living person

1. Smoke Printing
2. Photographs
3. Cast Method
4. Ink Process

1. Smoke Printing: In this method a smooth plate is taken, it may be such as saucer or a tin plate. The saucer is held reverse on the flame. Soot will be collected inside portion of the saucer. While collecting the soot uniformity should be maintained i.e evenness of the soot is achieved. If we fail to attain the evenness of the soot we will not able to get the proper finger impressions. After collecting the soot uniformly on the saucer, the finger is rolled on the sooty portion of the saucer, then in order to get the impression the sooty finger is rolled on the paper. **Advantages:** It is a

simple and cheap method of taking finger prints. **Disadvantages:** There are many disadvantages in this method. (1) The prints cannot be retained for longer time, because the prints are obtained with soot. The soot will not remain permanently on the paper. If we tap below the paper the soot will removed and the prints will be spoiled. (2) While collecting the soot it is very difficult to maintain evenness. This results in improper impress. Due to the above disadvantages this method is not popularly use.

2. Photograph Method: It is also a popular method for taking the finger impressions of living persons. In this method the finger itself is directly photographed by a special camera. **Advantages:** For comparison in the court by juries and judge it is required. **Disadvantages:** The materials are costliest they are not easily available.

3. Cast Method: Actually it is not taking the finger impressions, but lifting of the finger impressions left on the plastic surfaces. Some times at the scene of crime we come across the chance prints on plastic materials. These are very difficult neither to photograph nor to develop. In such cases we have to lift these prints with rubber lattice or the plaster of Paris solution. If we use plaster of Paris solution no reinforcement is necessary. In the foot print we use the reinforcement here the print is very small so we should not use reinforcement. For the frame we have to use matchstick container.

4. Ink Process: This is the most commonly used method for taking the impressions of living as well as dead because it is very

simple and easy method. The materials required for this method are easily available. **Articles Required:** the articles required for this method is as follows, slab, roller, ink, Finger Print slip, soap water, Benzene or ether solution and etc.

Slab: a piece of quarter inch thick plate provides the most satisfactory surface. Usually the slab whether glass or polished metal plate mounted on wooden block of size "6X3" is required. Now a days highly polished Bakelite or plastic or celluloid thick sheets are also used by many for the purpose. The edge of the plate or slab should be smooth and the top surface free from scratches and flows.

Roller: The roller should have a smooth surface. It is generally made up of rubber. There are even wooden as well as metal rollers. The roller may be of one or two in diameter perfectly not less than four long. The handle of roller should have a supporting peg to suspend the rubber roller in air when not use.

Ink: there are varieties of inks used for this purpose pen ink, pad ink and printer ink is generally used. If we use fountain pen ink, it dries too quickly and runs in to the furrows and results in smudged prints. If we use stamp pad ink, it dries slowly and smears easily and runs in to furrows. So here also we will not get the proper impressions.

Printer Ink: usually black printing ink is most commonly used for taking prints. It has a smooth texture and is free from lumps. The ink is of consistency suitable for rolling in to a thin film and it is quickly drying when transferred to paper yet it does not dry too

fast. It is usable for several hours after a film has been spread or rolled. It will dry hard over an extended period. Even this has also a disadvantage this is used for forging the finger prints.

Paper: usually a thin smooth paper is used. The paper should be generally of white colour. It may be of any size.

Precautions: The following precautions are to be taken in taking the finger impressions of a person.

1. The slab and the roller must be free from dust.
2. The slab and the roller should be cleaned by soap water or benzene and ether they should be cleaned from day to day, and it is important that the ink of the previous day should be removed by the use of benzene or oil before new ink is applied.
3. Subject's hands are cleaned with soap water or benzene ether and hot water to avoid spotty prints.
4. Only very small quantity of ink should be used.
5. While pressing the fingers excessive pressure should be avoided.
6. The same portion of the slab should not be used for inking when it is taken once. The same portion of the slab may be used after it is rerolled with ink.
7. Care should be taken to see that too much ink is not used.
8. The slab should be elevated to a sufficient height to allow the subject's fore arm to assume a horizontal position when the fingers

are being inked. It may be placed on the edge of the counter or table, so that operate has a greater assurance of avoiding accidental strain or pressure on the finger.

9. While rolling the fingers on the slab the tip of the finger to be printed is placed on the plate with the right edge of the nail down word i.e. perpendicular to the slab then it is rolled slowly with a light pressure to the left edge of the nail i.e. up to 180 degree angle. The finger is then rolled back again.
10. Before taking the impressions trail prints should be taken on a rough paper to see whether the ink is sufficient or not. If it is more it should be removed by a piece of paper. While rolling uniformity should be maintained.
11. Usually the right hand impressions should be taken first.
12. While taking the impressions the left hand thumb and right hand thumb should be rolled towards the body and the rest of the fingers of both hands should be rolled away from the body.
13. After taking the rolled impressions of the subject we should ask him to wash his hands again, and then the plain impressions of the subject should be taken below the rolled impression, just to see whether we have taken his rolled impression properly or not.
14. While taking the plain impressions all fingers of both hands should be rolled together at the same time.

15. After taking the rolled and plain impressions particulars of the subject should be written on the slip. Patterns should be identified and classification should be done to know the individuality of the subject.

TAKING THE FINGER PRINT IMPRESSION OF THE DEAD BODIES

Where the identity of a dead body or of a Person killed in an accident or who has died under suspicious circumstances or in the act of committing crime has not been fully ascertained by ordinary investigation, the finger prints of the deceased are taken and sent to the finger print bureau to trace their identity. If the person has a previous convict, then the impressions taken by us are of some use and we can prove the identity of that person otherwise it would be very difficult to prove the identity of the dead body. Then to prove the identity we should follow the other methods such as enquiry and etc.

Anyhow here we are interested to take the finger impressions of the dead body under the above mentioned circumstances. Sometimes it is very easy to take the finger prints of the dead body just like the living persons. But sometimes we have to face many difficulties in taking the prints of corpse.

It depends on the time of Death: If death is caused in shorter time then it is easy to take prints otherwise it goes difficult. The dead bodies are classified in to three categories as follows:

1. Those who have died presently and the rigor mortis have not set in.
2. The dead bodies where rigor mortis has set in.
3. The dead bodies where decomposition has taken place.

Usually the rigor mortis occurs from three hours after death and will be remained up to 24 hours after death. Depending up on the type of the dead body we have to use the different methods of taking finger impressions.

Now let us study how to take the finger impression of the dead body where rigor mortis has not set in rigor mortis is the stiffening of the body after the death. The method of taking the impressions is quite simple just like as that of living person. Where there is no rigor mortis in the dead body we can easily make the fingers of the same. The procedure of taking the impressions is little different comparing to living person. Here instead of making use of the slab the inked roller is rolled over the finger uniformly and in order to get the impressions a piece of white paper is attached to the shoe horn and prints taken on that paper. The paper is removed from the shoe horn and is pasted on the finger print slip at the particular box. When the rigor mortis is just started to take the finger impressions just we have to make the movement of wrist and the fingers and the above method is adopted.

The second one the dead bodies where the rigor mortis has set in. Here the rigor mortis is completely occurred. It should be removed for taking the finger impressions. There are many methods of removing the

rigor mortis. We have to immerse the hand of the dead body up to the wrist in the water. If the water is very hot we have to immerse it for one minute. If the water is not very hot normally it is immersed for two three minutes and it is taken out and dried with towel. Now the wrist is quiet movable. We can take the finger impressions. Sometimes even after immersing the wrists the fingers are not straighten, then we have to use force for straightening the fingers. If the rigor mortis is in higher stage, even after immersing the hand in the hot water and after using force we fail to achieve the straightening of the fingers in that case the doctor should be asked to make the deep cuts on each fingers in the joints. Then the above method is used to take finger impressions.

The dead bodies where decomposition has taken place. In this case it is very difficult to take the finger impressions. Usually the I O comes across such cases so here the numbers of methods have been adopted to take the finger impressions.

Plastic regeneration Method

In these method two things one used to take the finger impressions of the decomposed body. (i) Glycerinated Gelatin (ii) Air

In the decomposed bodies on the fingers there is shrinking of the tissues on the bulb portion of the fingers. In order to remove these shrinkages we have to make use of glycerinated gelatin or air.

(i) Glycerinated Gelatin: These contains of this Glycerinated Gelatin is one part of Glycerin and one part of Gelatin. The

mixture of these two is heated and it is injected in between the nail and the skin for each finger. The Glycerinated Gelatin enters inside portions of the bulb of the finger and shrinking is removed then we can use ink and take the finger impressions slowly on a piece of paper which is attached to the shoe horn. Especially in decomposed bodies can should be taken while applying the ink and rolling the fingers.

(ii) By Using Air: Just like Glycerinated Gelatin air is also used for removing the shrinkness on the bulb of the finger. Usually one to one and half cc of air is injected for finger soon after taking the needle out we have to massage the skin by massaging the air or the Glycerinated Gelatin will not come out from the skin. Then by applying the ink we have to take finger impressions slowly.

Sodium Hydroxide (NaOH) Solution

Method: Depending up on the nature of decomposition of the dead body we have to use any method for taking the impressions. In this method 1.3% of diluted NaOH is taken in a flask. The doctor is asked to cut the first phalange of each finger. Each finger is separately immersed in diluted NaOH solution. Totally we have to take 10 flasks. The label should be pasted for each flask to know the exact finger to which it belongs. After lapse of half an hour we have to see whether the shrinking is disappeared. If it is not disappeared we have to immerse the finger another half an hour within an hour shrinking is almost disappeared. Then we can ink the finger and take the fingerprints.

If we immerse the fingers longer period in the NaOH solution (i.e. more than one hour) there is possibility of softening the ridges and slightly the upper lair of the bulb starts tearing. If we think that it is so soft just to make it harden we have to immerse it in 3% of mild solution of formaldehyde for few minutes. Then the fingers are taken out and dried with the featherless towel very carefully and by applying ink the prints are taken.

Xylene Solution: If we fail to get the proper impressions in the second method then we have to adopt this method. Here the upper lair of the skin is removed by using xylene solution and that is immersed in formaldehyde solution for few minutes then it is taken out. The lair is kept on the operator's concerned finger by applying the ink we can take the finger impression on the paper which is pasted on the shoe horn.

Formaldehyde Solution: If the ridges are too soft even in the above method we fail to get the impressions. Then the upper lair of the skin is immersed in higher percentage of formaldehyde solution (i.e 9%) for few minutes. It is taken out and the prints are taken according to the above method.

Radiography Method: This is the last method of taking the impression of decomposed body. When the skin is too soft and the finger is completely decomposed, we can make use of this method. Radiography means the photography by means of X-ray. This is the most costliest method. Radiography at present is not used in India. This method of

taking the finger impressions is rarely used in the western countries like USA.

CONCLUSION

Fingerprint identification is the oldest forensic discipline known to man. The positive identification of individuals has always been a probleming vital importance in the maintenance of law and order. In the past means of identifying an individual were of the crudest sort, but at present tremendous strider have been made and today the personal identification has science in itself. Finger Prints are most important for personal identification, because they are conclusive.

REFERENCES

A Aggrawal A. (2016). Identification. In forensic medicine and toxicology. 1st ed. Sirmour: Avichal Publications. 2016. P. 43-4.

Chatterji S. K. Finger palm and sole prints.

Herschel WJ (1916). The origin of fingerprints. London: Oxford University Press.

Nandy A. (2014). Identification of an individual. In: Principle of forensic medicine including toxicology. Kolkata: Central Book Agency, 2014: 89–188. ISBN-978-81-7381-064-0.

Ross A, Dass S, Jain AKA (2005). Deformable model for fingerprint matching. Journal of Pattern Recognition 2005; 38(1): 95–103.

Soderman. Modern criminal Investigation.

United States Department of Justice, Federal Bureau of Investigation, (1963). THE SCIENCE OF FINGER PRINTS 131-159.

Vij Krishan (2014). Identification. In: Textbook of forensic medicine & toxicology, 6th edn. New Delhi: Reed Elsevier Pvt. Ltd., 2014: 46–89. ISBN-978-81-312-3785-4.