

## To Study Materials used in making Bite Mark Cast

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### ABSTRACT

Bite mark evidence have high evidential value as fingerprint because of their uniqueness. Analysis of bite mark found on crime scene can lead to suspect as well as victim. Bite mark of human have and uniqueness due to the arrangement and specific characteristic of the teeth. Bite mark analysis mostly done in cases such as rape, murder, kidnapping for the analysis of bite mark. Forensic odonatologist, forensic dentist are called for the analysis of bite marks. There are many analysis techniques of bite mark. The aim of this paper is to give a brief overview about the impression technique used to analysis and comparison of bite mark found on crime scene.

**Keywords:** Bite mark; Forensic Odonatologist; Dentist; Impression

### INTRODUCTION

Bite mark is very important evidence in forensic science because of its uniqueness. Analysis of bite mark may lead investigator to suspect as well as to victims. Analysis of bite mark with their impression is becoming more popular among the dentist. There are many materials that are being useful for taking impression of bite mark. [1-5].

- Alginate
- Vinyl polysiloxane
- Zinc oxide eugenol plaster
- Agar
- Plaster of Paris
- Polysulphide
- Polyether
- Silicon
- Dental stone

### ALGINATE

Alginate for impression of elastic material obtained from soluble salt of alginate acid and from marine algae. Alginate is derived from the seaweed. Alginate is mostly used as food supplement and to make dental casts. Alginate is one of the safest ways that you can make molds and casting of hands, feet, faces teeth even human and animal bodies. Alginate is an elastic, irreversible, hydrochloride impression material frequently used in dental

material. Alginate impression is simple, cost effective and indispensable part of dental practice. Alginate impression is made by placing an appropriate material in a stock on custom dental impression tray which is designed to roughly fit over the dental arches [6-10].

### Vinyl Polysiloxane

Vinyl polysiloxane used to make accurate dental impression. It has excellent reproducibility. It is useful for dentist to make perfect impression for fabricating crowns, bridges, inlays, on lays, and veneers. It is available in putty that makes it easier to use. Vinyl polysiloxane has pseudo plastic properties which are than the use of alginate. It gives the detailed cast and dimensional stability impression casts [11-15].

### Zinc Oxide Eugenol Plaster

Zinc oxide eugenol plasters also known as impression paste. It is used to take impression of complete denture. It requires special trays and in that 1 mm of spacing is requires allowing for enough thickness of the material. Zinc oxide is acts as a base paste and eugnol acts as catalyst paste. These two pastes should be in equal amount and mixed together with spatula for the accurate impression. Zinc oxide eugenol gives mucostatic impression and requires human skills for the better production of cast

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## Agar

Agar is material which provides high accuracy. It is used to fix crowns, bridges and to duplicate dental models by dental technician. By using agar we can take impression directly by placing it in mouth or teeth. Agar is hydrocolloids so we can alter its physical state by changing temperature which allows reusing material multiple times. Agar material comes in form of tubes and cartridges. Water bath, rim lock trays with coiled edges requires for tracking agar impression. The hardware is costly so modern dentistry used it less frequently [16-20].

## Plaster of Paris

Plaster of Paris is a traditionally used as casting material. It is composed of  $\beta$ - calcium sulphate hemihydrate. It came in powder as well as liquid forms. Plaster of Paris gives detailed reproduction. Plaster of Paris impression requires human skills to get good precision in reproduction. It has 2-3 minutes of working time. If there is deformation in cast occurs then no recovery is available. For removing deformation one has to break the casting and then glued back together [21-25].

## Polysulphide

Polysulphide are less frequently used to take impression because of their unpleasant smell and taste. It has long setting time. It requires excellent moisture control properties. Polysulphide impressions required human skills to make accurate casts and models. Polysulphide are first synthetic elastomeric impression material known as mercatan and Thiokol. It has 4-7 minutes of working time [26-30].

## Polyether

Polyether impression materials have been used in dentistry for more than 40 years. Polyether is the hydrophobic elastomers. It is most commonly used material to make dental casts. The ratio of mixing polyether base to accelerator ratio to 1:4. Polyether is hydrophilic elastomeric impression material. Impression made by polyether has high dimensional stability and good accuracy. Polyether reacts in only one phase so one can get monophasic impression. Polyether casts have moisture control quality [31].

## Silicon

Silicon is very elastic material. Many dentists are using silicon as their impression tool for much work. It is used in cases such as root canal injury, teeth transplant as well as in replacement of full denture surgery. With its elastic properties allows us to use it easily and remove easily after solidification in mouth cavity. Use of silicon in dentistry includes Reproductions of fractured teeth, through impression taking procedures; it also serves as a recording material for occlusal relationships due to its precision and dimensional stability. Finally, it plays an important role in the total impressions of jaws, with or without teeth, or partial impressions for some parts of the arches in preparations for inscriptions, crowns and bridges. Silicon molds have high dimensional stability. It is material available with best available quality. It has pleasant smell and high resistance to deformation.

## Dental Stone

Gypsum products are used in dentistry for the preparation of study models for oral and maxillofacial structures. The gypsum product exhibits an even higher compressive strength than the type IV dental stone. Higher expansion is required in the stone die to aid in compensating for the alloy solidification shrinkage. One should avoid the use of type V stones for producing dies for inlays and onlays since the expansion may lead to an unacceptably tight fit [32-33].

## CONCLUSION

The importance of bite marks providing

- valuable information in nailing a rape accused is
- based on the fact that the majority of rapists
- Leave bite marks on their victims.

With advancement of technology new techniques are invented to do analysis of bite marks. This review paper gives the information about the impression materials used in making casting of bite mark. This information is useful for the Odonatologist, dentist as well as forensic scientist in choosing materials to make casts of bite mark found on the crime scene.

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