

Artificial Teeth Used Of Biomaterials

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ABSTRACT — The biomaterials are used in medical devices; the progress made in biomaterials and their clinical applications is well known. In the last five decades, a great advance have been made in the field of biomaterials, including ceramics glasses, polymers, metal alloys, metals like nickel and chromium. The biomaterials are use the made of artificial teeth, First type is artificial teeth made by in Ceramic Furnace, 2nd type is artificial implant. The material used for making artificial teeth is bioceramic contains Zinc phosphate cement. Metals like nickel and chromium are also used. For making an artificial teeth we require a metal base, metal & ceramics first prepare its base, base which is made up of pop. Then apply the wax then put the initial temperature 890°C of the furnace, then increase the temp 950°C. Artificial teeth or denture are the replacement for missing teeth & its surrounding tissues which are removable. The artificial tooth does not have any negative effect on a person.

Keywords — Artificial teeth, Implant, Bioceramic, Zinc phosphate.

1. INTRODUCTION —

The use of biomaterials has been continuously rising in the global because of the developments in medical fields. Biomaterials are special materials that have been used for over 50 years in several medical applications. The development of biomaterials is not a new area of science, having existed for around half a century. In practical sense, biomaterials are Synthetic polymers, metals, ceramics and natural macromolecules, i.e. biopolymers, which are manufactured or processed to be suitable for use in or as a medical device that comes into intimate contact with proteins, cells, tissues, organs and organ systems.

Ceramics and glasses are used as components of hip implants, dental implants, Middle ear implants, and heart valves. Overall, however, these biomaterials have been used less extensively than either metals or polymers. It is a provocative field of science, having experienced steady and strong growth over its history, with many companies investing large amounts of money into the development of new products. Biomaterial science encompasses elements of medicine, biology, chemistry, tissue engineering, Photonics, laser tissue interaction with cells, Neuron sciences, nanotechnology and materials science. During the last two decades, significant advances have been made in the development of biocompatible and biodegradable materials for medical applications. The need for biomaterials seems from an inability to treat many diseases, injuries and conditions with other therapies or procedures, like replacement of body part that has lost function and improve function. In the past, there was no targeted development of biomaterials based on scientific criteria. Instead, devices consisting of materials that had been designed, synthesized and fabricated for various industrial needs (for example, the textile, aerospace and defense industries) were tested in a trial-and-error fashion in the bodies of animals and humans. In fact, the range of applications continued to grow. In

addition to traditional medical devices, diagnostic products, pharmaceutical preparations and health care disposables. The list of biomaterial applications includes smart delivery systems for drugs, tissue cultures, engineered tissues and hybrid organs. During the last decades, man-made materials and devices have been developed to the point at which they can be used to replace parts of living systems in the human body. These special materials, which are able to function in intimate contact with living tissue, with minimal adverse reaction or rejection by the body are called biomaterials. The main issue in the applications of biomaterials is that they must be biocompatible with the body and mechanically durable, all of which must be proofed before placing into the body.

2. PROCEDURE –

TYPE I

1. The material used for making artificial teeth is Bioceramic. Bioceramic contains Zinc phosphate cement. Metals like nickel and chromium are also used.
2. For making an artificial teeth we require a metal base, metal and ceramics. The instrument which is used for making artificial teeth is called ceramic furnace.
3. First take the metal or ceramic and prepare its base .Then put it into a ceramic furnace.
4. Before putting it into furnace die preparation is very important that is base which is made up of POP.
5. After this apply the wax pattern up to 5 minutes to 10 minutes. Then do the sprue attachment and investing up to 30 minutes.
6. First put the initial temperature 890°C of the furnace. After 20 minutes gradually. Increase the temperature up to 950°C which is a maximum temperature of the furnace
7. After this process do the casting and sprue cutting.
8. Take out the artificial teeth and finish it by a metal polish with cutter or diamond.



Fig1. Ceramic Furnace

2.1 Ceramic Furnace - A furnace assembly for use in firing or fusing ceramic dental products is disclosed. The furnace includes an electrically heated muffle which may be operated at a desired vacuum condition during a firing or fusing cycle of operation. The furnace is heated at a controlled incremental rate of temperature rise from a predetermined minimum to a predetermined maximum temperature over a predetermined time period.

TYPE II

1. For making total dental artificial implant DPI R-R cold cure material is used .
2. The material is made up of Acrylic which is Denture base polymer.
3. DPI is also known as heat cure material .First boil it into the boiler for 30 minutes.
4. After boiling it cool the material up to 45 minutes.
5. Use solvent as a water only .After it do the bench fittings for a dental implants
6. The maximum temperature of boiling should be 99°C or 100°C.
7. After bench fitting prepare the artificial teeth implant and make sure all the teeth should lie in proper orders.



Fig 1.2. Acrylizer



Fig 1.3. Waxes



Fig 1.4. Metal base

3. RESULT AND CONCLUSIONS:

In bioceramics study, we used dental teeth. Process of preparation of artificial teeth was studied in detailed. We found that it requires a special furnace i.e. programmed furnace and the temperature required for making artificial teeth is about 950°C.

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