TERMINOLOGY AND BASIC CONCEPT OF DENTAL IMPLANT

"An artificial dental root that is surgically inserted into the jaw bone & that can be used by the dentist as platform for prosthesis"

HISTORY OF DENTAL IMPLANT

- 1950s P.I.Branemark & associates
- 1965 first patient
- 1976 Schroder et al.
- 1978 Schulte(German)
- 1981 Albrektsson

OSSEOINTEGRATION

- "A direct structural & functional connection between bone and the surface of a load-carrying implant" (Branemark 1960)
- Fibro-osseous integration

soft tissue (fibers) interposed between the implant surface & bone

- Biointegration

implant is covered with bioactive material like hydroxyapatite

RATIONALE FOR IMPLANT THERAPY

- Tooth loss related to age
- Anatomic consequences
- Poor performance of RPD
- Predictable long term results of implant-supported prosthesis
- Eliminating the need to grind healthy tooth

CLASSIFICATION OF DENTAL IMPLANT

- **Based on type of Anchorage**

-submucosal
-subperiosteal
-transosteal
-endoosteal

- **Based on shape & form**

Root form-solid cylinderical/tapered
-pin type
-screw type
-basket type
-hollow cylinder
Blade form-conventional blade design
-vented blade design

- **Based on the surface texture**

-surface with pure titanium
-acid-etched surface
-porous beaded surface
-hydroxyapatite coated

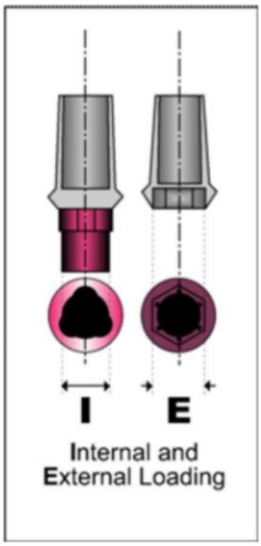
TEETH vs. IMPLANTS

- Lack of periodontal ligament
- Implant cannot intrude/migrate
- Proprioception
- Overload/parafunctional habits cause microstrain/microfracture in bone (bone loss).

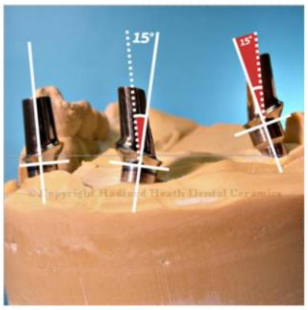
ABUTMENT

An abutment provides support for the crown (or several crowns i.e. a bridge). It is also the interface between the crown and the implant.

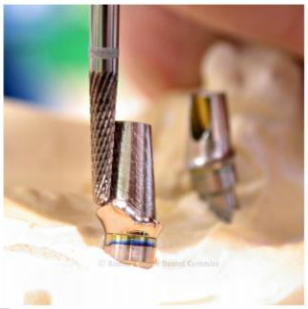
Nobel Biocare Replace Select Abutments



Older style abutments use external loading with the newer styles tending towards the stronger internal loading fitment. Numerous designs are available from many companies.



Abutments come preformed at set angulations from manufacturers in different platform sizes (interface diameter) and materials, or they may be custom cast by specialist manufacturers e.g. Nobel Biocare (offsite).



They are shaped (milled) by the technician using special tools to provide a bespoke fit for the crown. The prepared abutment is eventually screwed (with a torque wrench) to the implant using its locators to guide it into position.

Materials Used:

Titanium.

Implant or Fixture (Oxford dictionary definition):

An insert (tissue, a substance, a device, etc.) into the body.

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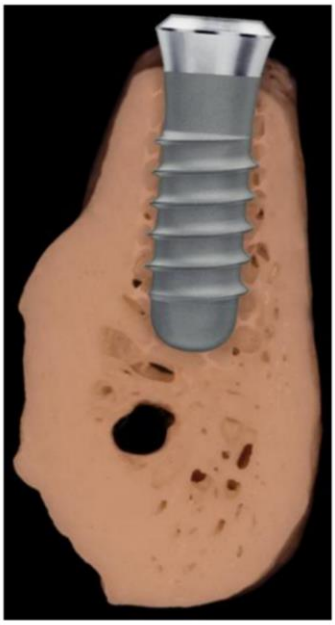
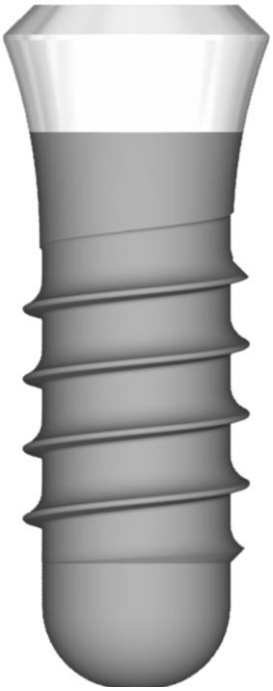


An implant provides the anchor or foundation for a restoration. It is screwed into the bone of the jaw providing a fixed platform on which an abutment can be screwed.

Bone tissue can grow around the implant regenerating and strengthening the jaw reducing the bone loss which occurs when natural teeth are lost.



Impression Coping:

Used by the dentist to replicate the position of the implant in the patient's mouth. The dentist screws the impression coping to the real implant and then, using a specific impression technique, takes an impression of the dentition. The impression technique can be "open" or "closed":

Materials Used:

Titanium, plastic, and anodized aluminium

Open tray technique allows the dentist to remove the impression complete with impression coping(s) from the patient's mouth by allowing external access to the copings retaining screw(s) i.e. the impression coping(s) remain fixed in the impression material. The dentist is then required to add the analogue(s) prior to dispatching to the lab.

Closed tray technique requires that the dentist first removes the impression the patient's mouth then unscrews the impression coping(s) to remove them from the implant. The impression coping(s) are then placed back into position by the dentist in the impression material and the analogues are added prior to despatch.

Analogue or Implant Replica:

Materials Used:

Stainless steel (sometimes brass)

Analogues are used by laboratory technicians to replicate implants and their position in a patient's mouth.

A model of the patient's dentition is cast using an impression. The analogue, screwed onto the impression coping, is set into the plaster model during casting.

Retentive Anchors:

Retentive anchors come in various types of design: Ball Abutment (with retaining clip), Magnetic Abutment (with retaining magnet) and Tower Abutment ("Locator®" which comes with a retaining clip).

All come in two main parts: The shaped abutment part and the 'female' which clips over it.

Once the anchor abutments are screwed into the implants, they provide support for a full or a partial denture (which are clipped on). This provides a very stable platform and prevents unwanted movement of the prosthesis.