Implant Parts
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**Introduction**

The question “What is a dental implant?” is often asked by all those new to the subject. Well, there is a plethora of information available on the internet from the various manufacturers of implants which should be researched if you plan to work with them or opt to have them by way of dental treatment. But with so many manufacturers and parts, what if you want a more general overview of what implants are and how they are made? Well we hope to address these questions in this simple guide.

**Basic Parts**

The basic parts of a dental implant

![Diagram of dental implant parts](image)
Crown

**Oxford dictionary definition:**
1 *The part of a tooth projecting from the gum.*
2 *An artificial replacement or covering for this.*

Crowns are the top part of a restoration and are the part that we see in the mouth. They replicate the original teeth to provide a biting surface and aesthetic appearance. They are hand made by the technician. The supporting substructure for the crown may be hand made or machined (onsite or offsite). The completed crown is either cemented or screwed onto an abutment.

![Nobel Biocare Procera Crowns](image)

**Material Used:** Porcelains (metal supported or metal free) or metal (normally gold)

**Considerations:** Bite, wear, material choice (due to greater forces applied) and aesthetics.
Abutment

**Oxford dictionary definition:**
1 The lateral supporting structure of a bridge, arch, etc.
2 The point of junction between such a support and the thing supported.

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.

Rotation (twist) is controlled by lugs shaped on the abutments stem. These lugs restrict the abutments rotational placement to set incremental steps. Different manufactures use different systems with more or less adjustments.

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

Nobel Biocare’s internal and external loading designs
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.

**Considerations:** Shape, angle, length, and platform size.
Implant or Fixture

Oxford dictionary definition:
1 An insert (tissue, a substance, a device, etc.) into the body.

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.

Straumann implants

Implants come in many different lengths, shapes (e.g. tapered), and widths (or platform size). Each manufacturer has their own implant designs which have unique features.

These unique features require both dentist and technician to adhere strictly to the individual manufacturer’s procedures and guidelines when placing and constructing implant borne prosthetics. Manufacturers provide certified training courses where this information is obtained.

Materials Used: Titanium.

Considerations: Mostly medical including bone suitability and spacing issues. A consultation with a dental professional is required.
Impression Coping

Impression copings are 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”:

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.

Materials Used: Titanium, plastic, and anodized aluminium

Considerations: Correct placement (to prevent impression material creeping between surfaces and to ensure correct location for abutment). Ensure all parts are dispatched (impression, coping(s), screws, and analogues).
Analogue or Implant Replica

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.

They provide an exact fixed reference platform (a replica of the position of the implant) from which the technician can place and shape the abutment and build the crown or bridge.

Materials Used: Stainless steel (sometimes brass)

Considerations: Ensuring all parts are dispatched (impression, coping(s), screws, and analogues).
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 (known as a Matrix).

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.
Two ball abutments supporting a full denture (female matrices visible in the denture)

Straumann Locator® and matrix

3i implant with Locator® abutment
In background denture with fitted matrix cups
Materials Used: Titanium and gold (with plastic matrices or magnetic material)

Considerations: Mostly medical including bone suitability and spacing issues (vertical height). A consultation with a dental professional is required.
Bar Retainers

Constructed by laboratory technicians, bar retainers mount directly onto implants (screwed). A clip mechanism then secures a denture to the screw retained bar. There are two well known types, Dolder® and Hader®.

These bars provide a strong support option for retaining dentures. They may be mounted on several different manufacturers implant systems.
A Straumann SynOcta mounted Dolder® bar

3i implant supported Hader® bar – In background denture with fitted retaining clips

**Materials Used:** Titanium or gold (clips are plastic or brass)

**Considerations:** Mostly medical including bone suitability and spacing issues (vertical height). A consultation with a dental professional is required.
References

Biomet 3i
Nobel Biocare
Straumann

http://www.3implant.com
http://www.nobelbiocare.com
http://www.straumann.com

All images used in this document are courtesy of the respective manufacturers listed by them.