Ambridge Ceramics

Introduction to implant components

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What is a dental implant?

Dental Implant - A dental implant is an artificial tooth root replacement which is used in dentistry to support restorations that resemble a tooth or group of teeth. There are several types of dental implants available on the market today but the most widely accepted and successful implants used today are osseointegrated

Osseointegrated implants are based on a discovery by Swedish Professor Per-Ingvar Brånemark while he was using titanium viewing tubes in living rabbits to inspect their circulatory system. Once the rabbits had been euthanized the team found they could not easily reclaim these titanium tubes from the femur of the rabbits, it was a discovery that would revolutionize dentistry.

The discovery was that titanium can be successfully fused into bone when osteoblasts (cells from which bone develops) grow on and into the rough surface of the implanted titanium. This forms a structural and functional connection between the living bone and the implant.

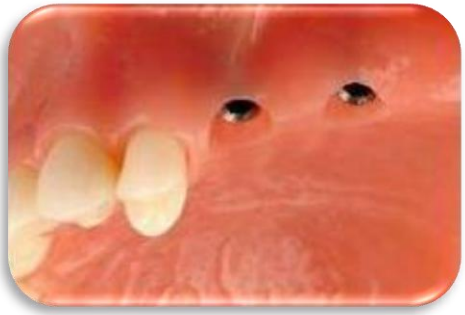
These offer a false root upon which surgeons can make various prosthetic restorations.

Implant healing abutments

Healing Abutments– The healing abutment is a titanium cap which covers the top of the implant and is shaped to adapt the tissue while it heals and the implant osseointegrates

Healing abutments in place – The healing abutment is placed after exposing the top of the dental implant. The healing abutment serves as a temporary replacement tooth root during the healing period which helps develop the gum ready to accept an implant abutment.

Healing abutments removed – The tissue heals and is developed around the healing abutment. As you can see the tissue has been developed by the healing abutments so even when they are removed you can see how the tissue has been developed ready for the implant restoration.



Implant Pickup copings

Closed tray pickup coping – This is a one piece impression coping that is placed on the implant fixture and screwed securely into place, it has an index that will be used to locate it back into the impression later. Once this is done an impression is taken of the mouth in the traditional crown and bridge manner. Once set the impression is removed from the mouth but the pickup copings will remain in the mouth attached to the fixture, this is unscrewed and transferred back into the set impression using the index mentioned earlier (on this example it's the flat surface with 3.5/4.0 etched on it)

Open tray pickup coping – This is two piece pickup coping comprising of the pickup cylinder and a removable long depth guide pin which is screwed onto the implant fixture. Once this has been done either a special tray with a hole where the screw will protrude through or a stock tray that has been modified will be used to take the impression. Once the impression has set the surgeon will unscrew the cylinder from the fixture using the end of the screw that protrudes through the impression. Once the screw has been removed the impression will be removed from the patients mouth and the pickup coping remains retained within the impression material.

Stock components for implant fixtures

Stock abutments- These are the standard mass production cylinders that the implant manufacturers provide for either the surgeon or laboratory to modify into the required prep shape for the tooth they will be replacing. These will usually provide the foundation for cement retained cases. They usually are available straight and pre angled

Attachments– There are a variety of attachments which are screwed directly into the implant fixture. These come with a component which is then either processed into a new prosthesis or cold cured into an existing prosthesis to provide extra stability. The most effective of these currently used is the Zest locator attachment

Multi unit abutments– These are screwed directly into the implant fixtures and are usually conical in shape. They have no location index to the surface which will carry the restoration and because of this are only used in multiple unit screw retained cases.

Custom components for implant fixtures

Custom abutments– These used to be made in the laboratory by casting gold to a pre machined cylinder but now they are usually milled from a solid block of titanium or zirconia which are more biocompatible. The benefits of custom abutments is that regardless of the implant angulation or internal index the technician will be able to provide a solution that offers better retention for the final crowns while ensuring a better emergence profile for the soft tissue. Once the abutment has been made then a cement retained crown will be used to restore the case.

Custom screw retained cases– Like the technique above these can either be cast onto pre machine cylinders or milled from zirconia or titanium. Once the framework is ready then porcelain will be applied to the framework. Unlike custom abutments they are produced with a nucleus which will support the final restoration. Once fitted the access holes for the screws that you can see in the picture will be filled with composite.

Overview of restored implant