

Dental Implants

INFORMATION SHEET



WHAT ARE DENTAL IMPLANTS?

Dental implants are used to replace missing teeth. They act like the root of a natural tooth and are made of titanium because this material is accepted by the body.

Each implant is placed into a socket that is carefully drilled in the bone and then used to support a crown, bridge or denture. The main aim during implant placement is to achieve immediate close contact with the surrounding bone. This creates an initial stability that is steadily enhanced by further growth of bone into the implant surface. The word osseointegration is used to describe the healing of titanium implants in bone such that a close union is maintained in order to keep the implant of use to support replacement teeth.



SUITABILITY FOR IMPLANTS

Dental implant treatment is more successful if the general health is good and the patient does not smoke. Patients who smoke should be aware that they will have a significantly increased implant failure rate and should therefore seek smoking cessation therapy via their GP. Smoking may contraindicate implant treatment particularly when bone grafting is required as part of the treatment.

The patients' dental health should be good and the oral hygiene should be excellent. Although it is tempting to focus on the more glamorous aspects of teeth supported by implants, basic dental health, which includes the treatment of gum disease and repair of decay, is important for the long-term success of treatment.



BONE PRESERVATION WITH DENTAL IMPLANTS

Implants have two functions; one is to replace missing teeth, and the other, to preserve bone. Once the implants are in place and supporting teeth, everyday functional forces stimulate the surrounding bone that responds by becoming stronger and denser.



HOW MANY IMPLANTS ARE NEEDED?

To replace a single missing tooth, one implant is needed. Larger spaces created by two, three or more missing teeth do not necessarily need one implant per tooth; however the exact number of implants will depend upon the quality and volume of the bone at each potential implant site.

A minimum of 6 implants may be required to support a complete arch of 12 replacement teeth in an upper jaw where the patient has lost all the natural teeth. Fewer implants may be required in the lower jaw, as the bone towards the front of the mouth is often stronger and denser than the bone of the upper jaw. The replacement teeth are described as fixed if they are made of crowns and bridges and cannot be removed by the patient.

Implants can also be used to support dentures, described as overdentures. These are a removable option as they are to be removed by the patient for daily cleaning. Typically, this option requires fewer implants and offers considerable improvement in retention over conventional dentures. They can also offer a better aesthetic result if there has been a lot of bone and gum shrinkage as this can be artificially replaced in a way that is not possible with a fixed bridge option.

Dental implants have to obey simple engineering principals, in that they must be placed in a strong foundation and in sufficient number to prevent overloading. In addition, each implant must be accessible for daily cleaning so that the biology of the mouth can be used to maintain healthy surrounding bone and gum.



CONSULTATION AND PLANNING APPOINTMENTS

The consultation appointment is to determine whether implant treatment is feasible and the most appropriate option for tooth replacement.

X-rays need to be taken to judge the height of bone available for implant placement. Sometimes a special scan x-ray or CT needs to be arranged to show the jawbone in three-dimensions.

Impressions of the mouth may be needed so that a template can be made to show exactly where the implants should be placed.



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Impressions of the mouth may be needed so that a template can be made to show exactly where the implants should be placed, and this may be arranged with a specialist in restorative dentistry.



BONE GRAFT SURGERY

A considerable amount of bone that once surrounded the remaining root portion may disappear when a tooth is lost or extracted. This loss can be particularly rapid during the first few months and is described as bone resorption. Sometimes, the simplest measure to minimize bone loss after an extraction is to place the implant immediately or within the first few weeks.

Many denture wearing patients report that the dentures become progressively looser and do not fit as well as they once did. Initially the increased rate of bone loss following extractions is responsible for the observed deterioration of denture fit. Later, the direct effect of chewing forces causes slow but gradual resorption of the underlying bone. The longer dentures have been worn; the less bone will be available for dental implants.

Sometimes the bone of the jaw can be built up before dental implants can be placed. This may be undertaken with a bone graft operation. There are many ways in which bone can be added, however one simple concept is to take a piece of bone from somewhere else and secure it as a graft to a deficient area. The new piece of bone will slowly join to the underlying region and when healed and mature, an implant can be placed in a favourable position three to four months later. It is possible to increase the height of bone in the upper jaw above the back teeth by placing the graft bone in the lower part of the sinus. This operation is called a sinus augmentation or sinus lift.

Bone may be taken from another site in the mouth or sometimes from the hip bone. Bone grafting from a site within the mouth is undertaken under general anaesthesia or intravenous sedation as a day case procedure. A hip graft operation is undertaken under general anaesthesia and requires an overnight stay.



IMPLANT PLACEMENT SURGERY

The operation to place implants may take about 45 minutes depending on the number of implants and is usually carried out with local anaesthesia alone or intravenous sedation. The implants are placed beneath the gum and are therefore not visible. Dissolving stitches are used. The implants take about four months in the lower jaw and six months in the upper jaw to heal completely. Sufficient bone must be present to permit implant placement, and this is estimated from the clinical examination and x-rays but occasionally it is found to be inadequate during the operation and the implant cannot be placed.

Sometimes the implant can be stabilised using a bone substitute (see 'Increasing Bone with Bio-Oss®/Bio-Gide®' information sheet).

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There is a nerve in the lower jaw that emerges onto the skin of the face in the region where your premolar teeth are or used to be. This is why a normal dental local anaesthetic produces a numb lip even when the needle is placed right at the back of the mouth. If this nerve is disturbed during the placement of dental implants, it can lead to temporary or even permanent numbness of the lower lip and chin on the affected side. This is a rare but important complication.



IMPLANT EXPOSURE SURGERY AND RESTORATION WITH TEETH

The implants are 'exposed' several months after they were placed so that they are visible in the mouth and ready to be used to support teeth. A small titanium section (healing abutment) is attached to the implant around which the gum tissue matures. This is undertaken around 4 months after implant placement for the lower jaw and around 6 months after placement of upper jaw implants.

Impressions of the mouth are taken so that the construction of the crown, bridge or denture can begin over a series of appointments. This is usually started about one month after the exposure of the implants.



LONG-TERM IMPLANT CARE

When poorly cared for, implants will develop a covering of hard and soft deposits (calculus and plaque) which is very similar to that found on neglected natural teeth. Untreated, this can lead to gum infection, bleeding and general discomfort, just as can occur around natural teeth.

The long-term care of your implants will be undertaken by your general dentist and hygienist. For the first few months the implants are in function we may ask that you are seen more frequently, however, once satisfied that your treatment is performing as planned, ongoing care will be similar to any patient with natural teeth.

For most implant-supported teeth you will be able to clean around each supporting implant by brushing and flossing in just the same way that you would around natural teeth. In some areas special floss, inter-dental toothbrushes and other cleaning aids may be needed to maintain good oral hygiene. Cleaning is not at all difficult, provided that you do not have impaired use of your hands.

Once the implants and surrounding soft tissues are seen to be healthy and the new teeth comfortable and correctly adjusted, it is the quality of your home care and willingness to present for regular maintenance reviews that will have the most influence on how long they will last.



IMPLANT SUCCESS

Implant success is about 95% at 5 years and a little lower if a bone graft is required before implants can be placed. Implants are expected to last on average about 15 to 20 years and treatment should not therefore be thought of as a one-off treatment for life. Failures may not be so easy to deal with and if you embark on this type of treatment then you have to be prepared for this possibility.


Failure may occur as failure to heal after placement, or later failure involving gradual bone loss and leading to loosening of the implant. Commonly the failing implant causes no discomfort. If there are enough other implants remaining then it may not be necessary to replace the one that has been lost or needs to be removed. There may be failure such as fracture of the crown or bridge, which requires replacement, whilst the underlying implant is fine.




TEETH PRESENT DURING TREATMENT

If the teeth being replaced by dental implants are in a clearly visible part of your mouth it is likely that you will want to have some teeth present whilst the treatment is underway. There are a number of ways that this can be done, ranging from simple plastic denture to removable bridges. However, there may be a period of a few days after implant placement or two weeks after a bone graft operation when a denture should not be worn.

 **COULTHARD SULLIVAN**
Dental Practice

 11 Altrincham Road,
Wilmslow, Cheshire.
SK9 5ND.

 01625 527 987
 reception@coulthardsullivan.dental

www.coulthardsullivan.dental