



DERMOT MCNULTY

ADVANCED RESTORATIVE AND IMPLANT DENTISTRY



## Why do people lose teeth?

There are a host of reasons why teeth either need to be removed or simply fall out. These can include tooth decay, advancing gum disease, accidents, inherited conditions or advanced wear and tear due to ageing. Teeth can also be congenitally missing, leaving spaces throughout the mouth or may also be lost as a result of serious infections such as failing root canal treatment.

## Why is it important to replace missing teeth?

When teeth are lost, the bone underneath the gum shrinks due to lack of stimulation from the teeth – just as a muscle withers through lack of use. This shrinkage can lead to a huge change in facial appearance and the face can collapse through this lack of support.

Teeth adjacent to spaces can tilt or drift leading to unevenness in the bite and appearance.

Removable dentures address this by using acrylic teeth to fill the spaces. Unfortunately dentures can simply accelerate this shrinkage process. Similarly smaller spaces within the mouth are affected as well, for example loss of front teeth has a dramatic effect on the appearance of the smile.



## What are dental implants?

Dental implant treatment is the replacement of tooth roots with supportive posts. Usually made from titanium, they can be used to replace single teeth, several teeth or form the basis of a complete reconstruction of a collapsed mouth. Titanium is the most bio-compatible material we know and once placed, fuses to the jaw bone fully. It is because of this unique characteristic, that dental implants can be considered permanent.

## How do they work?

There are a number of ways dental implants can be planned and utilised. Essentially though, they are placed into the jaw bone once occupied by a tooth root, involving a small invasive procedure. There then follows a natural healing process which is exactly the same as when a tooth is extracted. During this time the implant fuses to the bone, a process called osseointegration. At this stage, posts can be connected to the implant now emerging through the gum. It is on these posts that porcelain crowns and bridges are constructed making either single crowns or complete mouth restorations possible.

## Missing teeth? Your options

### Removable Dentures

Although relatively inexpensive, this removable option often requires sticky adhesives and can sometimes fall out! They can also contribute to tooth decay, gum disease and further shrinkage of bone and gum.

### Adhesive Bridges

These use metal wings adhered to the back of teeth adjacent to gaps. Tooth cutting is therefore minimal or not required. Thus they are very conservative but unfortunately they can become loose so are often regarded as a temporary solution.

### Conventional or Porcelain Bonded Bridges

This traditional replacement for missing teeth involves the teeth beside the gap being cut down and then crowns supporting the bridge cemented into place. Unfortunately, during the procedure it is often necessary to cut down healthy tooth structure. In addition the crowns supporting the bridge can become loose and lead to decay. This can be viewed as a considerable disadvantage.

### Dental Implants

Because dental implants support the bone and gum and are not attached to teeth in any way, they are the ideal tooth replacement. They create strong, permanent natural looking teeth. Dental implants can be used to replace:

- single teeth
- many teeth, including full mouth replacement

They can also be used in conjunction with regenerative techniques such as bone grafting.

## Replacement of a Single Tooth

Implants can be placed into the jaw bone in a number of ways. Traditionally the implant is positioned after a tooth has been extracted and the socket fully healed. The implant is left to heal under the gum for a period of three to four months. It is then uncovered, a post attached and the final porcelain crown placed in much the same way as if it were a normal tooth.

This approach although logical involves more time and therefore more appointments. In an ideal situation, a tooth can be removed and replaced with an implant straight away. However, this is only possible where there is an absence of infection, the mouth is generally clean and there is sufficient bone around the tooth root itself. The advantage of an immediate implant is that it is possible in just one visit to remove a tooth, insert an implant and then attach a post and crown.

The decision whether to immediately place or delay insertion of an implant depends on a number of factors and no specific rules apply. Immediate implants have tremendous advantages but must not be used unless the ideal situation presents itself.



Baby tooth.  
Note the uneven height of the gum.



Photo taken one week later showing baby tooth extracted. Implant in position with post and temporary crown.  
Note the normal looking gum.



Post emerging from gum prior to impressions for final porcelain crown.



Final porcelain crown in place.  
Note how the porcelain emerges naturally from the gum.



X-ray of baby tooth prior to replacement.



The implant with post and final crown in place.

## Replacement of Many Teeth

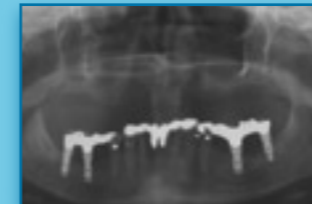
When replacing more than one tooth, the same rules apply as for single teeth. However because the implants can be joined or splinted together with bridges, it is not necessary to replace each tooth with an individual implant. Guidelines for the upper and lower jaws are slightly different.

**Lower** – In the lower jaw, in order to replace all the teeth with a fixed bridge of natural looking teeth, between six and eight implants would be inserted. However, four or even two implants can be used to support a denture which can be fixed or removable. As a general rule, the greater the number of implants placed, the more fixed and natural the teeth will look.

**Upper** – The bone in the upper jaw is less dense and therefore generally more implants are required. In addition the natural teeth are angled outwards and therefore require more support. For a fixed bridge in the upper jaw, between eight and ten implants might be needed. It is unusual to use fewer than four implants to support a denture; these implants can be joined by a bar onto which a denture can be clipped.



Implant supported bridgework on completion.



X-ray showing missing upper teeth.



Lateral x-ray showing lack of bone in upper jaw.



Lateral x-ray showing grafted bone in upper jaw.



X-ray showing upper and lower implants with bridgework.

## Immediate Replacement of Many Teeth

In the same way that a single tooth can be immediately replaced by an implant and crown, the same is true of many or all the teeth in one jaw. With careful planning a patient can have all their failing teeth removed, implants inserted as previously planned and a temporary bridge attached at the same appointment. Therefore not only are diseased and unsightly teeth removed but they can be replaced and a smile and health restored in one visit.

## Bone Grafting

Occasionally because of infections, shrinkage of bone following extractions or simply from the wearing of a denture, there is insufficient volume of bone into which an implant can be placed in the ideal position. In such cases, the options are to either widen the bone using special techniques at the time of implant placement or re build the bone using a bone graft.

For smaller amounts of bone it is possible to take bone from the wisdom tooth area of the lower jaw or from under the lower incisor teeth. This is carried out in much the same way as a tooth extraction under local anaesthetic in the practice.

For larger amounts of bone, for example when there has been complete collapse from gum disease or long term denture wearing, it can be necessary to take the bone from outside the mouth. This would require a general anaesthetic and an overnight stay in hospital. The reason for using bone grafts in many of these situations is so that the natural contours of the original teeth and gums can be reproduced. However if it is felt that bone grafting is inappropriate then the options are to either accept longer teeth or use gum coloured acrylic or porcelain to mimic the missing gum. The ideal option however is natural, healthy, regenerated bone. It is usually necessary to leave bone grafts for up to four months to heal before implants are inserted in the normal way.



Canine to be extracted.



Resorbed Ridge before graft.



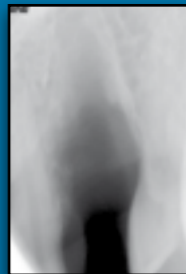
Expanded Ridge.



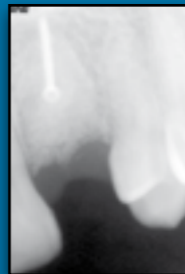
Porcelain crown two years after treatment.



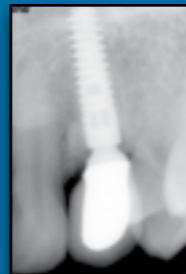
Infected canine tooth.



Defect following extraction.



Grafted bone.



Implant, post and crown two years after treatment.

## Biomaterials

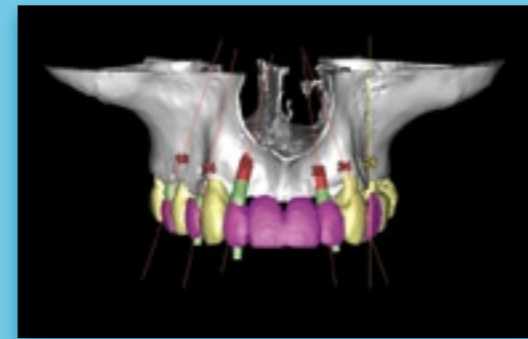
In many cases rather than using natural bone grafts it is possible to use a range of biomaterials to plump out or fill in around an already inserted implant. These materials come from a variety of sources including bovine, human bone and synthetic materials. Careful consideration is given to the use of such materials and discussed on an individual basis, but are a key asset in the treatment of these cases. Their use is termed Guided Bone or Guided Tissue Regeneration.

## Sinus Augmentation

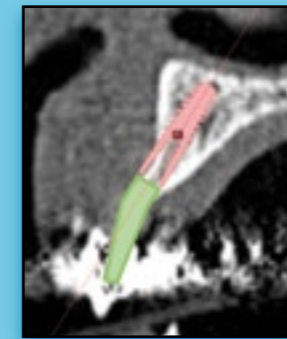
Towards the back of the upper jaws are the sinus spaces which are positioned above the remaining residual jaw bone. Following tooth removal the sinus spaces frequently increase in size and on some occasions in order to place implants in this area it is necessary to re position the sinus lining at a higher level. This is done under local anaesthetic in the surgery and involves a procedure called sinus augmentation. The sinus lining is raised by a bone graft or biomaterial being introduced into the void and allowed to form new bone. The implants can either be placed at the same time as the augmentation or at a suitable time after healing has taken place. This technique is an extremely predictable way of creating new bone.

## Special Tests

It is sometimes necessary to know the precise location and volume of bone nerves and sinus spaces. This is possible with a CT scan. This is carried out at a local hospital. CT scans are an invaluable diagnostic aid, particularly where multiple implants are considered. They are so accurate that it is possible to have 3D guides constructed that can help determine exact implant positioning.



CT Scan with Diagnostic Guide.



Cross section of CT showing proposed implant and abutment (post) position.

# The Process – What actually happens?

## Phase 1

Initial consultation appointment. Discussion of requirements on an individual basis. Usually photographs and x-rays (if required) are taken at this stage. An outline treatment proposal is then formulated and sent to the patient prior to a further discussion appointment ten days to two weeks later.

The treatment proposal is discussed and any concerns or fears are addressed. If the patient is happy to go ahead, models of the teeth are taken. From these models mock ups of the teeth can be made by the laboratory technician to mimic the shape of the new tooth or teeth to be replaced. This diagnostic stage is of great importance in order to achieve a successful final result.

## Phase 2

At this appointment implants can be positioned or if indicated bone grafting can take place. If the implants are to be connected immediately to the crowns and bridges this is also achieved at the same visit.

## Phase 3

The implants are uncovered after a suitable healing period and special posts or abutments connected (if not already attached). The post emerges from the gum and temporary crowns and bridges are secured on top.

## Phase 4

Following healing of the gum, impressions are then taken for the final teeth. This may involve a number of visits for:

1. Impressions
2. Recording of bite and shading of teeth
3. Try in
4. Final fit

## Phase 5

Follow up to discuss any concerns or queries.

These phases are a guideline, each case will be planned individually.



## Dr Dermot McNulty BDS DipImpDent RCS(Eng)

Dermot qualified from Birmingham University in 1982 and has been actively involved in implant dentistry since 1987. He has extensive experience of all the major implant systems.



He was awarded the Diploma in Implantology from the Royal College of Surgeons and is continuing with the MSc in Implant Dentistry at the University of London. In addition he is a lecturer and examiner for the Royal College Implant Diploma courses in London and Leeds.

He is a member of the Association of Dental Implantology and a committee member from 1988 – 1992 and was elected Fellow of the International Congress of Oral Implantologists in 1997. In 1995 he founded the Bath and West Private Practitioners group and was Chairman until 2002. He is also a member of the prestigious British Academy of Aesthetic Dentistry.

In 2003 he established a referral practice in Bath which is dedicated to excellence in restorative and implant dentistry.



Bath Spa Dentistry  
19a James Street West  
Bath  
BA1 2BT

Tel: +44 (0)1225 464346  
Fax: +44 (0)1225 420530

Email: [dermot@bathdentalimplants.co.uk](mailto:dermot@bathdentalimplants.co.uk)  
[www.bathdentalimplants.co.uk](http://www.bathdentalimplants.co.uk)