



## **BONE GRAFTING FOR IMPLANT THERAPY**

### **Why is bone grafting performed?**

Following tooth extraction, there follows a period of healing during which there is loss of bone from around the tooth socket. This takes place over a few months but continues at a slower rate over the years that follow. Therefore if a tooth has been missing for a period of years, it is common to find that there is insufficient bone remaining to support an implant in its correct position.

Bone defects may also occur in the jaws as a result of acute or chronic infection or following the removal of teeth that are impacted and require bone removal for their extraction.

If implant treatment is planned for the replacement of a tooth before it is extracted, then the tooth is removed very gently in what is termed an atraumatic extraction technique thereby preserving as much bone as possible. Then the socket from which the tooth has been removed is generally filled with a grafting material to preserve the bony ridge. This process is called ridge preservation and it results in the maintenance of the bone and may prevent the need for bone grafting at the time of implant placement later after healing of the site has taken place.

Should there be insufficient bone in which to place an implant, it is possible to grow additional bone following bone-grafting procedures. Bone grafting is a common procedure that restores the contour of the jaw-bones and encourages the growth of new bone in a defect where bone has been lost or destroyed.

By replacing lost bone, implants can be placed in the most appropriate position to ensure the crown is correctly located to function against the opposing tooth. If implants were placed where previous bone remained, then the implant may be located both in the wrong position and at an incorrect angulation making restoration difficult or impossible.

### **Different bone grafting techniques**

There are several different bone grafting techniques and augmentation materials that may be used. Grafting materials can be in the form of a block, granules or paste. All are used in entirely different techniques. Dr Colin Priestland will explain to you the technique that is most suitable for your treatment.

### **What grafting materials are used here?**

Generally, Dr Colin Priestland uses bovine (cow-derived) bone matrix that has been de-proteinised, demineralised and sterilised. The products are then mixed with the patient's blood or blood products to allow a mouldable graft to be placed into a bone defect. This material must then be covered with a barrier membrane.

A barrier or occlusive membrane is a material that prevents the defect and graft being invaded by overlying soft tissue cells. By the exclusion of soft tissue, the defect or graft can only be repopulated by cells native to the defect, these being the osteoblasts responsible for the manufacture of bone.

The usual material used as a barrier membrane by Dr Colin Priestland is a porcine (pig-derived) collagen membrane. It is dissolving and disappears in time but prevents soft tissue growing into the graft site during the early stages of healing and thereby favours the formation of new bone at the site.

The materials used in the practice are generally manufactured by Geistlich and include BioOss Collagen Block, BioOss granules, BioGide collagen membrane and Mucograft collagen matrix. Geistlich is a Swiss company that has been involved in the production of grafting materials for many years. They produce a range of bone grafting products that are used in orthopaedic surgery and oral surgery. These grafting products are the only



bone augmentation materials accepted by the International Red Cross and that allow patients who have been treated with them to continue to be blood or organ donors.



There are numerous other grafting products available made by many companies throughout the world, some that are human donor tissue, some animal derived products and others that are entirely synthetic. All products used in this practice are approved by the Therapeutic Goods Administration and are approved for use in Australia. Products used in other countries, but not TGA approved, are not used at our practice.

### **Use of patient's own bone for grafting**

Some bone defects are large and therefore it may be necessary to use a combination of the grafting material supplemented with bone from the patient, this being referred to as a mixed autograft. Bone granules may be obtained from adjacent sites within the mouth or blocks of bone may be harvested from either the chin or the back of the lower jaw. In extensive jaw reconstructions, bone may be harvested from ribs or from the pelvis.

Small bone grafts can be completed in the chair here in the practice but more extensive grafting or multiple grafts are generally performed in the Mater Day Surgery Unit at Hyde Park under a day stay general anaesthetic.

### **Radiological investigation before implant therapy**

If you are to receive implant therapy, then you will have a 3D cone beam CT scan taken to allow accurate assessment of the remaining bone shape and volume. The cone beam scan will also identify the area where bone grafting has been performed and demonstrate that there is now sufficient bone of adequate density to support an implant.

If you are being assessed for an implant prior to any grafting procedure, after a recent dental extraction for example, Dr Colin Priestland will then place an implant in the best position in the site of the missing tooth or teeth, "virtually" on the computer screen and this then allows him to assess if you are going to require bone grafting to achieve the intended outcome.

### **Pre-surgical explanations and informed consent**

You will receive a thorough explanation of the procedure and the planning will help you to understand what is to be done. You will have the opportunity to ask any questions and receive detailed answers. You will receive a leaflet on implants to ensure you have a thorough understanding of the treatment including the risks, benefits and potential complications.

Only after all the planning has been performed and you have had the opportunity to ask questions will you be asked to sign your informed consent for the surgery. You will then be provided with information leaflets on post-operative care at home, medications that you should take after surgery and a prescription for those medications.