

Study Cases: Ride Augmentation Bone by Grafting and PRP / Preparation for dental implants placement /

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Introduction

Dental implantation is a prosthesis process for missing teeth and missing a part of jawbone. This prosthesis method is a modern concept developed since the mid-1960s, but in recent years their use has become much more widespread. This process, as will be explained, has a vital aspect.
Implantation process is tooth jute prosthesis because of the direct reliance of the teeth on the jawbone and this idea had been presented by the world of Dr. MISCH (C.E.MISCH). Dr. Misch has very important principles and rules on dental implantation in the mid-1980s where consider as essential concepts for any other ideas.

Dental implantation was considered a major turning point in dentistry field and oral health. This science ensures the rehabilitation of the jaws functionally and aesthetically. Dental implants have largely surpassed the traditional dental prostheses that seemed unable to provide effective patient services.

Methods of prosthesis

1. Previous prosthesis formula: Is called the removable prosthesis.

Disadvantages of this method:

- Weakness of stability within the mouth - which causes the suffering pain and trauma and these ongoing trauma often leads to severe trauma as results.
  The psychological problems by patient's feeling of aging - and the subsequent risks and painful conflicts of the patient's personality
  Face loss caused by loss of teeth and loss of physical bone of bone (BONE ATROPHY). It is known that the speed of bone absorption (Resorption Bone) increased after extraction. The mobile device does not resemble natural teeth even morphologically.
  The uncompleting of chewing process and its implications for nutritional value and digestion have a dangerous effects on the patient health.
- The mobile prosthesis devices are unable to transfer the forces moving to the jaw bone - natural teeth by the transfer of these forces contribute to the process of bone construction and re-bone formation and maintain the bloody perfusion of the jaws - The removable prosthesis the possibility of good perfusion.
- The denture itself is the center of infection because of the cariosity that affects the acryl and looks under the microscope in the form of pumice.

In the study of the anthrax variant, we see a problem of staphylococcal (STAPHYLOCCAL), which is highly effective in causing joint diseases and inflammation of the heart.

(Block. M. S. 2014.)

2. The second form of prosthesis: Is called fixed prosthesis

   Disadvantages of this method:

- Weaken the adjacent teeth through the process of preparation and remove a wide layer of dental tissues.
- An excessive tautological force that is loaded abnormally to the adjacent teeth - because the bridge undergoes to the tympanic borne forces by the Teeth pillars only and this causes ligaments around the teeth to increase their thickness and in results all of this leads to severe damage to the mandibular bone.
- The bridge itself is a causes putrescence shelter that requires special oral care.

It remains to review the concept of destruction and construction of bone in terms of functionality - bone structure is based on number of factors, including functional.

As osteoblast and osteoporosis are incompatible, chewing leads to active the bone structures (knowing that blankets are severely needed because the bone age of bone cells in the jaws is three years - chewing by natural teeth is the best solution.
The worst is chewing by the dentures - the least bad chewing is by bridges but no comparison between the natural teeth and the bridges.

What is the role of dental implants?

The fact that dental implants are closest to the nature of teeth, despite the existence of important differences such as the absence of periodontal ligament in alveolar implants, is the resource of bone cells and bone marrow. However it was finally proved that the bone surrounding the implant grows similar to that next to natural teeth according to the construction and deconstruction theory.

Return to dental implantation concept (Implantology):

Implantation is an insert of implant (a body very similar to the tooth root, made of biologically neutral titanium) in the jawbone body.
The transplant is followed by a period of time during which bone healing is achieved, ie, bone dys-function, a period of three months for the Mandible and six months for the Maxilla. It should also be noted that the period needed may be prolonged when the need for grafting bone. Dental implants may often require accurate surgical procedures and advanced experience.

For example, Sinus Lifting is performed when bone missing in the upper posterior region and the transfer of the lower nerve (Nerve Transposition) when an severe absorption of bone had been done on the lower jaw.

We also conduct the process of bone splitting to be more in its width, which provides sufficient thickness to receive the implant and it is known that the implant has conditions for bone formation including surrounded thicknesses.
To achieve these conditions, we must use fillers or bone grafts (such as hydroxyapatite, Collagen), as well as self-grafts. Autograft is the most capable of bone restoration. Because the organic reactions to the taste material are immune reactions. In the Autograft do not show any immune response because the immune system recognizes the taste as homogeneous with its genetic structure, which is personal.

(AB. Rahman. Et al 2010.)



Fig1: Implantation with Graft and collagen.

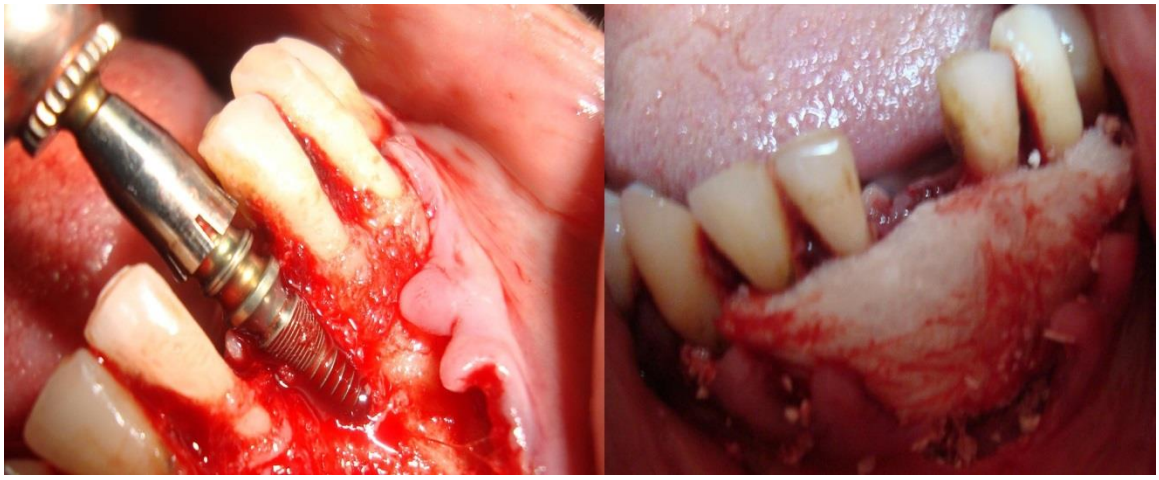


Fig 2 : The same operation .

In contrast, the immune response is induced to destroy the bone-mediated response, Cell-Mediated Response, by T-lymphocytes.
We can take the graft from multiple areas inside or outside the mouth.
From inside the mouth, there are areas ready to give good bone size, such as chin (chin)

or nasal spine or any area that can be taken without affecting the vitality of the area. It is out of the mouth to have multiple areas.

(Jokstad.2008)

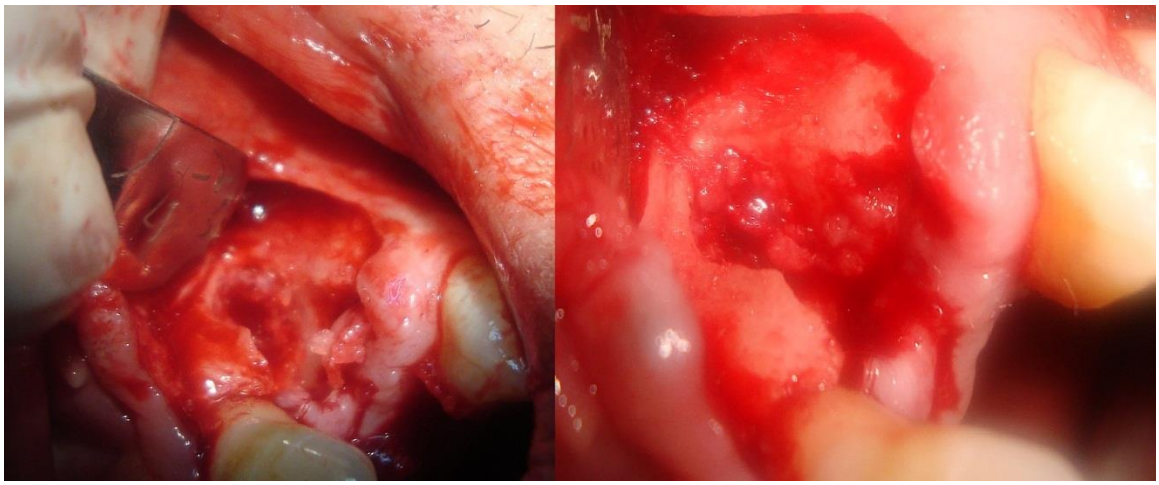


Fig3: Bone destruction.

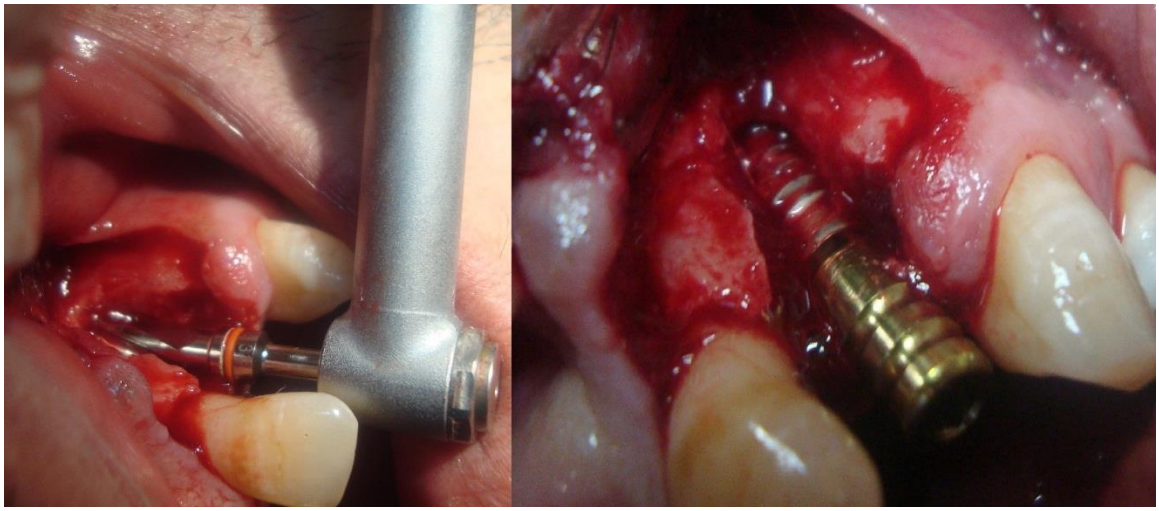


Fig4: Implant inserting (initial stability).

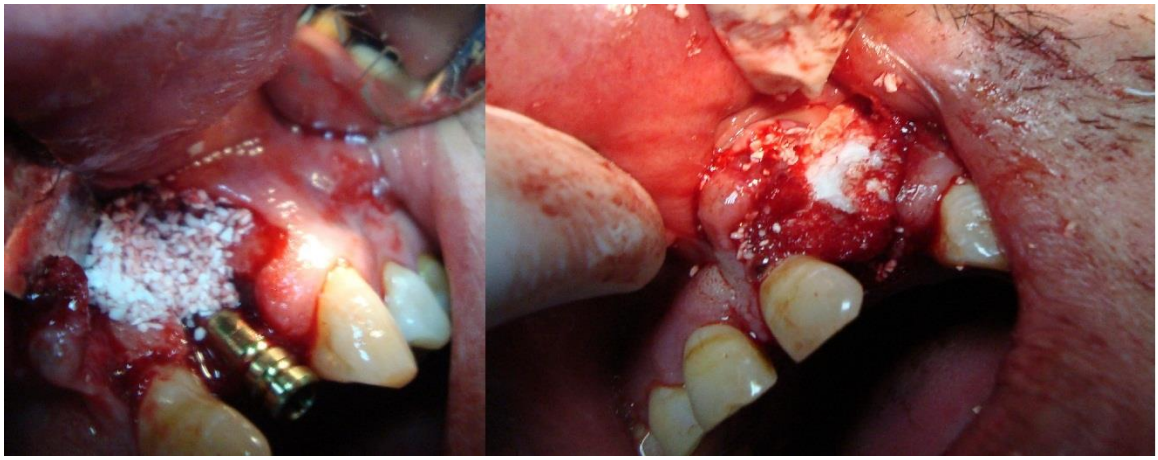


Fig5: Using hydroxyapatite and Collagen to restoration the bone.

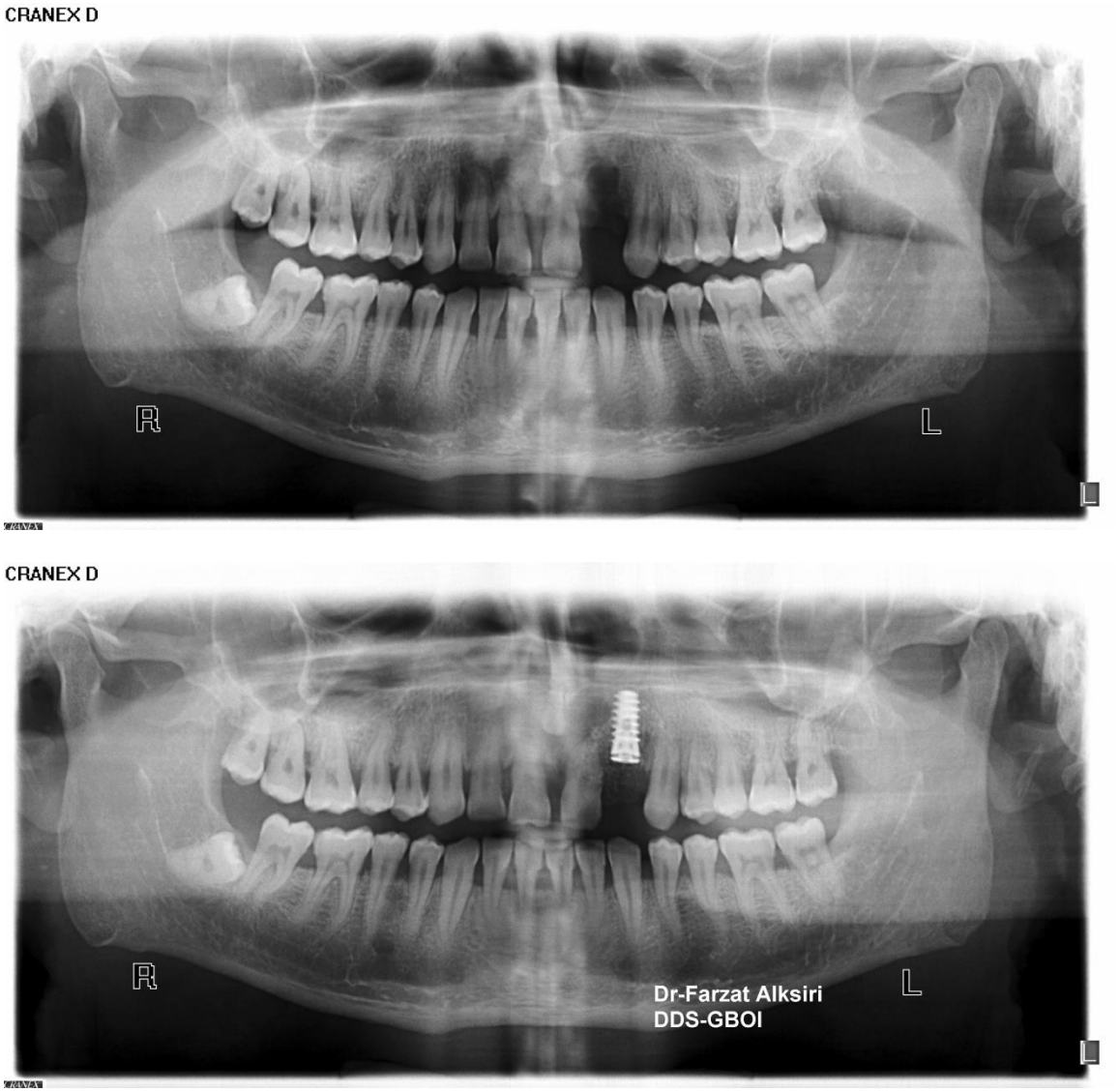


Fig6: Implantation X-Ray.

The shoulder area ---- the pelvic area --- and some use the bones of the skull.
We are likely to mix the multi-origin Autograft -made, and artificial grafts to restore the implant perimeter.

(Jokstad.2008)

No Three Adjacent Posterior Pontics :

In most prosthesis designs . three adjacent posterior pontics are contraidicated on implants just as are contraindicated on natural abutments (Shillinburg et al. 1997).

The adjacent abutments are subjected to considerable additional force when they must support three missing teeth . especially in the posterior regions of the mouth . In addition all pontic spans between abutments flix under load .

The greater the span between abutments the greater the flexibility of the metal in the prosthesis . The greater the load . the greater the flexure . This metal flexure places shear and tensile loads on the abutments shear and tensile loads on the abutments (Bidez and Misch 1999 .: Smyd 1952).The greater the flexure the greater the risk of porcelain flecture uncemented prostheses and abutment screw loosening .

Abiomechanicail-based treatment plant reduces complications after implant loading with the prosthesis

To reduce stress conditions there are key implant positions for a prosthesis replacing missing teeth :

1- Ideally no cantilevers should be designed on the restoration
2- Three adjacent pontics should be eliminated
3- The canineand first molar sites are important positions in a arch .
   Increasing the number of implants is the most efficient method to increase surface area and reduce overall stress .
   Therefore after the key implant positions are selected . additional implants are indicated to reduce the risk of overload from patient force factors or implant site with reduced bone density .
   When in doubt of the number of implants required , a precautionary approach will be to consider an additional implant .
   (Shillinburg 1997)

Platelets Rich Plasma (PRP)

Platelets Rich Plasma (PRP) is a natural blood clot with a high concentration of blood platelets (94%). Red blood cells are 5% Leukocyte 1%, which in turn increases concentrations of growth factors.

It is contains 94% red blood cells, 5% platelets and less than 1% Leukocytes.

Since blood clotting is a nucleus to initiate the occurrence of all the functions of soft tissue healing and tissue regeneration.

Depending on the new ratios in the PRP compound, they increase the effectiveness of regeneration and early recovery of surgery.



Fig7: Sticky bone.

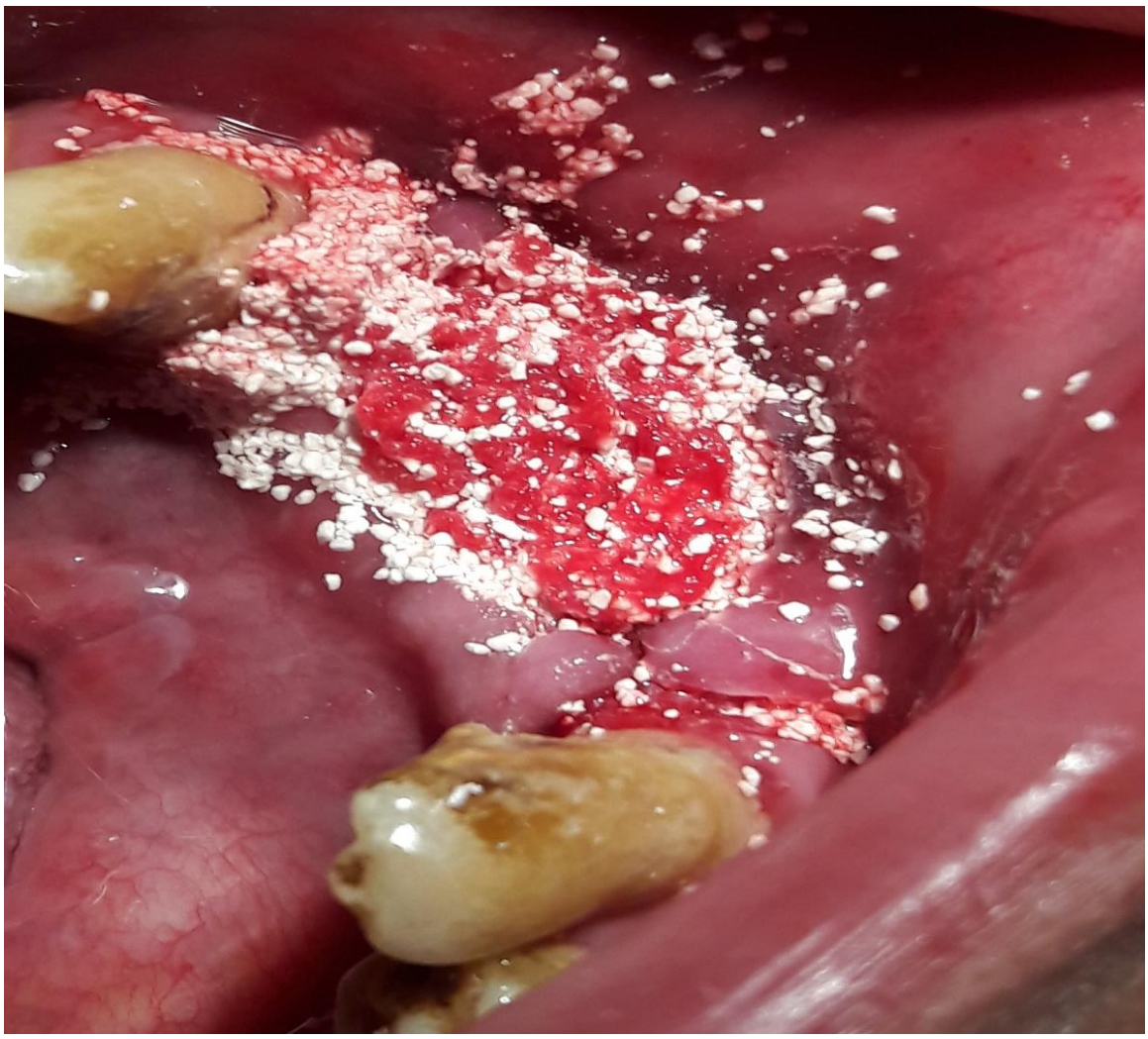


Fig8: Applying sticky bone.

Growth factors derived from Blood platelets.

1. Platelets derived growth factors:

PDGF / PDGEaa /. PDGFbb. PDFab. These growth factors are more present during healing wounds.

2 – Transforming growth factors:

TGFB1. TGFB2. These factors are growth factors derived from Blood platelets. It can role as a stimulant of the cellular response and can form bone or cartilage.

3 - Vascular Endotheial Growth Factors (VEGF)

4. Epithelial Growth Factors (EGF)

It has a limited effect on the basal cells of the skin and the Mucosa.

(Nasiek . 2012)

How does PRP work in soft tissues?

Adental implant is fast becoming the treatment of choice in replacing a missing tooth. However, the success of an implant is dependent, amongst others, on the availability of adequate alveolar bone to house the implant, something which is not always there. With such demand, the need for augmenting the bone has risen and along with that, the enhancement of the bone grafting. Platelet-rich plasma was one such technique introduced twenty years ago as a method to improve the healing of bone grafts.

The rationale for the use of platelet-rich plasma to enhance wound healing is that platelets are a rich source of growth factors. The technique involves drawing out some blood from the patient and centrifuging it so that the different components of blood are separated. The platelet portion is then extracted and mixed with the bone harvested from another site in the same patient. Bone grafts that are mixed with PRP are usually in particulate form and the PRP is in liquid form. After mixing them together, a clotting agent, usually thrombin derived from cows, is added to clump the whole mixture together into a soft putty that can be picked up and molded into shape.

Platelets-rich plasmas (PRP) rely on stimulating cells in soft tissues, including fibroblast cells, to release collagen.

Platelets-rich plasmas (PRP) work in :

- Forming a three-dimensional network and release growth factors from Leucocytes.
- Chemo-attraction of macrophages and resident stem cells
- Stem cell mitosis proliferation
- Differentiation stem cell.

In our surgical field we use PRP in all prosthetic surgeries

1 – Sinus lifting for dental implants.

2 - Mix with grafts in different ways and from my view after many experiences, in order to improve bone Osseo- integration in the new region, the better way is the sticky bone.

3 - After the extraction of the third molar affected areas to improve healing.

4 - Periodontal disease after dredging and grafting of bone.

5 - Preserving the top of the alveolar after extraction. Improve the bone healing after implantation of teeth by diving the implant body in the PRP.

(Nasiek . 2012)

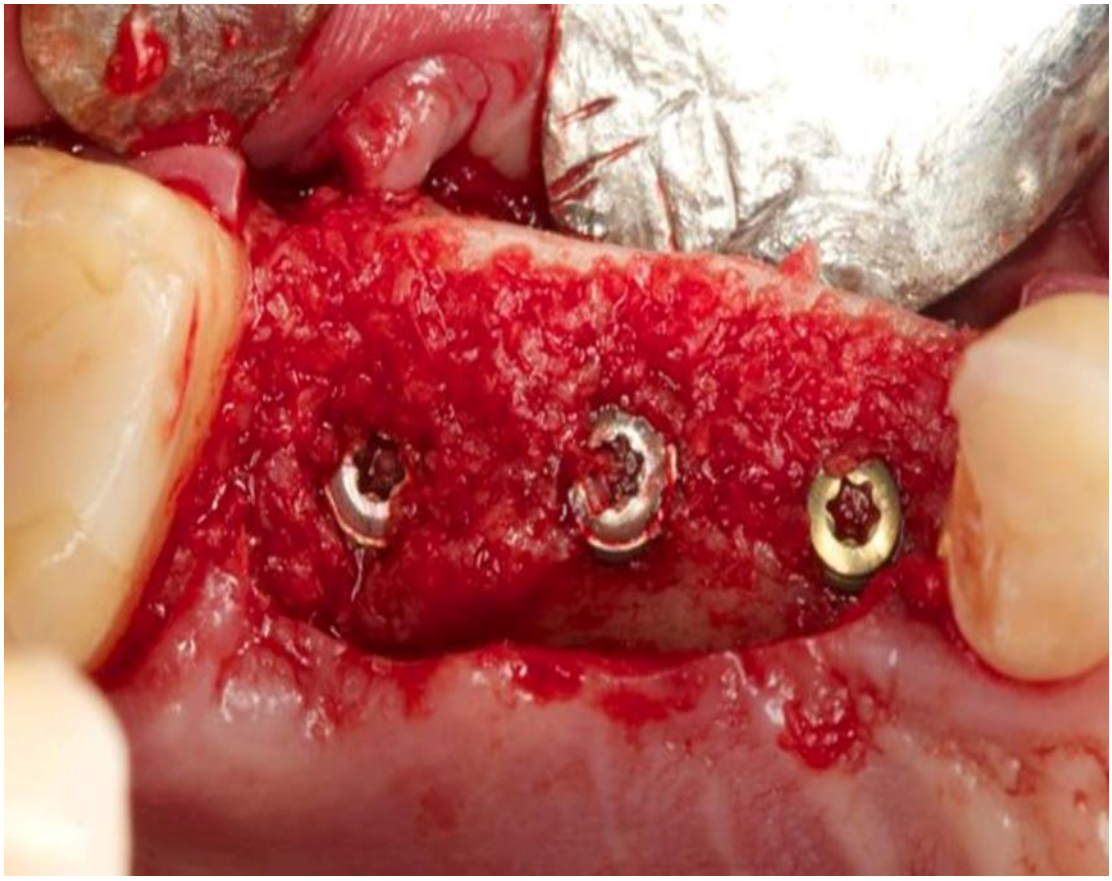


Fig8: Dental implant with graft sticky bone.

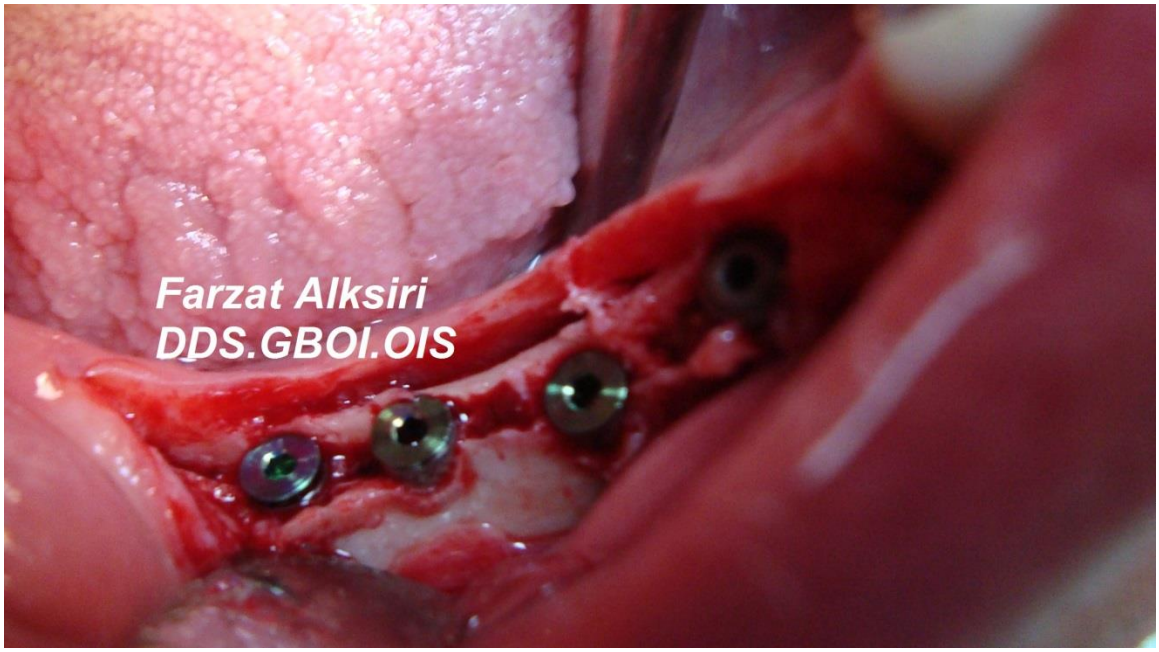


Fig9: Dental Imlants with splitting Bone.



Fig10 : X.Ray 1

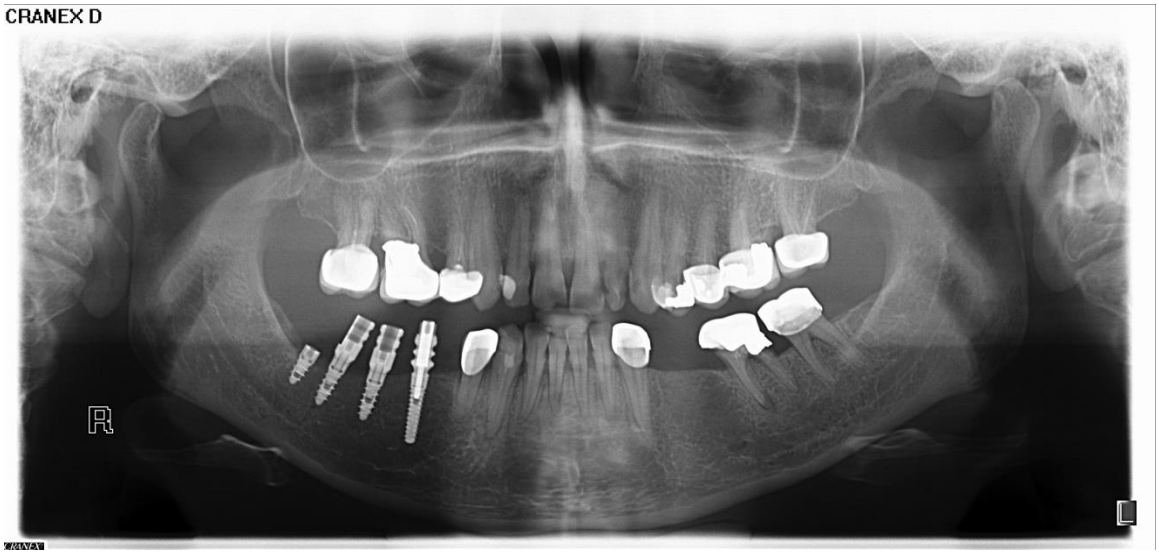


Fig11: X.Ray2

Back To evaluate dental implants:

One year after implantation with a good functional condition; no pain or movement in the implant, in addition to safety of radial means the success of the transplant.

The transplant patient should pay attention to critical health issues:

1 - General disease: On the previous convictions can be any case of transplantation and perhaps the main problem is diabetes and today, despite suffering and difficulty, but when the possibility of controlling diabetes.

We can transplant and transplant patients to be transparent about any health injury and inform the dental specialist about his or her health

2 - The biggest problem is Implantation - from the level of oral care to the *Bruxism*, which can be cause of failure.

Result and Discussion:

Growth factors play a major role to repair or generate damaged tissue. Most of growth factors are in blood plasma and platelet. So Platelet concentrates contains sufficient growth factors such as platelet-derived growth factors (PDGF), transforming growth factor (TGF-β), Insulin-link growth factor (IGF-I), epidermal growth factor (EGF), vascular endothelial growth factor (VEGF), basic fibroblast growth factor (bFGF). PRP has widely been used in the dental field such as sinus augmentation, ridge augmentation, periodontal regeneration and soft tissue healing. However the effect of PRP is controversary. According to one systemic review on the effect of PRP, The beneficial

effects of PRP in the treatment of periodontal defects is evident but evidence for beneficial effects of PRP in sinus elevation appeared to be weak.

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