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***Classification of Dental implants***

We are going to talk about the most widely used dental implants

They are classified according to the form/shape and the position where they are placed :

* Intramucosal implants
* Inserted titanium implants
* subperiosteal
* Trans-osseous implants
* Endosseous implants. The one we currently use.

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**Sub-mucosal implants**

the device was used in the past and was inserted in mucosa and not in bone , in thought that it helped to retain the denture

-made of metal ; like a button/ball.  
-forbidden -by ‘Granstelberg’- due to poor retention and poor survival.

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**Titanium mucosal inserts**

* Almost the same with a slight insertion of the tip of material inside the bone
* Was used to help retain the denture

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**Subperiosteal**

-consists of a metal similar to CO-CR .  
-Overlying the bone   
-Restricted use in the mandible , can’t be used in the upper arch.  
-Low success rate   
-The possible risk of infection spread (infection spreads downward through the rods)

The Dr saw one case using this type of implant and it is still surviving in the patients’ mouth.

the use of 3D (especially by plastic surgeons) has made implants a much easier task than before .   
Before a flap was opened from retromolar to retromolar area and an impression of bone taken, framework was made and then inserted.  
Now 3D has made it applicable to design and work easier.

-Can be used when the mandible is 6 mm short for example

Note :Some systems might use short dental implants .  
Strama/Ipr system introduced the 4 mm implants one year ago with a larger diameter of 4.8mm especially for the posterior mandible where the thickness of bone was minimal or the nerves were close to the implant

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**Transosseuos implants**

- also known as staple implants

Transmandibular and transosseuos implants generally need general anaesthesia and an extra oral approach

-need to consider risks of GA to patients especially compromised ones  
-restricted to use in the mandible only   
-surgical procedure needs an extraoral approach   
-it is a major surgery   
-ends up with an extraoral scar.

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Regarding root form we can classify them according to surgical steps :

* One step surgery . by swiss dentist , ITI system, what the Dr works by
* Two step surgery

- Branemark system ( little bit complicated) , nobelpharma , biocare , ,replace , nobeldirect , nobelperfect . depending on the modification of the component ..( different brand names)

As it advanced it ended up with Replace and Taper . Not similar to the original one - less number of components and cheaper-

ASTRA excellent implant system . very expensive

IMZ ( german) , not available anymore , plastic placed inside ; mimics PDL.Has to be replaced every 8 months

Friodent 1 or 2 Or called friolent 1 or 2 ,friodent 1 . Made of Ceramics, have excellent results, osseointegration was excellent and rapid, its main problem was the fracture between the supra structure crown porcelain and the ceramic fixture)

(Naming system now uses friodent)

Dr was naming different brandnames …   
-Integral used hydroxyapatite

**ROOT FORM OF IMPLANTS**

* Best is the one that is similar to the natural root form   
  -Fredman started this idea and ITR continued

-There are other implant system and coating

- a Calcified type was used but within months it dissolved

Note : PDL resembling one has to be changed every 8 months – results in 1mm apical movement -

**Indications for Dental Implants   
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-Before selecting any candidate for dental implants, patient must be motivated and shows cooperation towards maintaining good oral hygiene.

-Give the patient a chance ; do scaling and polishing for patients with poor oral hygiene and monitor them for 1 month before placing any implant.

-We must consider bone growth for the alveolar ridge . Implants are preferable after the age of 18 years

Female bone grows till the age of 19 while the male bone growth stops at a younger age .

Mandible stops at a younger age than maxilla.

- A Study showed that at age 18 as bone growth continues it will cover the crowns

- 4-5 years ago another study done at the age of 16 showed no bone growth .   
But to stay at the safe side , implants are preferably placed after the age of 19.

***Completely edentulous in the upper arch***

-implant retained over-dentures . By means of ball attachment , bar attachment or magnet .

If we found good quantity and quality of bone in the upper arch , we go for full mouth implants   
in areas and condition of no bone we go for overdenture with ball attachment for example

***Partially edentulous long span***

* In long span we don’t prefer to use a conventional bridge (e.g from molar to canine) so if there is a good quality and quantity of bone we can place 3 implants and connect them either with one or separate parts

In kennedy class 1 or 2 when we have a vital structure to be careful around which is the ID nerve . when posterior teeth are lost before the anteriors , bone resorption tends to be very high .

if you manage to replace co-cr RPD/acrylic with fixed option for example bridges in a bounded saddle , abutments must be sound an healthy with no periodontal problems but implants are preferred since the success rate of bridges is 80 percent lasting for 15 years while success rate of well maintained implants is > 25 years , 92 percent in the mandible and about 80 percent in the maxilla ; better than bridges

***Case of missing lateral***

-We prefer to place an implant than to prepare the adjacent teeth .

***-Patient with compromised denture bearing area***   
  
no retention we go for overdenture

***Patient with gag reflex***

-They cant tolerate by any means partial or complete dentures

***Patients with psychological and emotional problems*** towards dentures reminds them of aging

***Unrealistic prosthodontic expectations*** . they wont be happy with the partial denture so we go for implants

***Parafunctional habits/bruxism***

The force generated could be a factor to increase failure rates of implants , so we try to get rid of or reduce this habit.

***Poor muscular coordination***

Parkinson patients and epileptic patients

***Hypodontia***

When we have missing upper laterals we are mainly concerned about lack of width for placing teeth. If we had space we would place implants especially in young patients

**Contraindications** We can divide them into absolute and relative contraindication  **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

* Intraoral contraindication

-Unfavourable interarch relationship , especially in class 3 and class 2 div 1

-Pathological lesions in the alveolar ridge , such as infected remainig root or cyst . any other pathology such as lichen planus or leukoplakia

-Poor oral hygiene , gingival hyperplasia , calculus , lesions , abscess

-Insufficient bone quality and quantity

>Haematological diseases such as anaemia ; less osteointegration , postoperative infection , delayed healing

>Metabolic bone diseases like osteoporosis , spongy bone , paget disease 49:28

> Patient with psychological problem are absolutely contraindicated, don’t do surgery or implants for them. Most of dental schools have psychiatric clinics where patients are sent before surgery to assess their condition.

* There is no age limit. 19 up to whatever age. the Dr placed an implant a year ago for a 92 year old patient. The a pt had bony exostosis from 7-7 which by no means would be welcoming for a partial denture.

**Radiation**

* In 1998 it was said that it is not an absolute contraindication for implant placement . Wait at least one year before treatment . we treat them with hyperbaric oxygen therapy with precise 100 percent of oxygen for 90 minutes in each session for 20 sessions pre-surgery and 10 sessions post-surgery
* Effects of radiation :
* Xerostomia , mucositis ( inflammation around the tissues not peri-implantitis) , hypo vascularity , fibrosis , hypoxia , osteoradionecrosis in the direction of radiation beam
* No issues with controlled diabetic patients , the problem is with the uncontrolled groups. The reason is delayed healing .
* Osteoporosis , bisphosphonates and pagets’ disease

the problem if the patient does not take bisphoshphonates or if they take it orally . While IV bisphosphonates is a contraindication due to bisphosphonate associated osteonecrosis of the jaw .  
\*absolute contraindication for any surgical procedure\* , if we extracted a pin point of any tooth in these patients- the wound will not heal

Heavy Smokers

* 5 years ago we would tell the patients not to quit but at least try to reduce the amount of cigarretes
* In the last 5 years the whole week minimally before the surgery and during the entire healing time has to be smoking free
* failure rates in smokers increases
* be strict with them

also in absolute contraindication are patients with cardiovascular diseases , congenital heart disease , rheumatic valve defects or artificial valves ,uncontrolled hypertension.  
Recent myocardial infarction , wait 6 months , preferably one year

**Drug/alcohol addicts**

Contraindicated due to the lack of maintaining oral hygiene.  
  
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Good luck