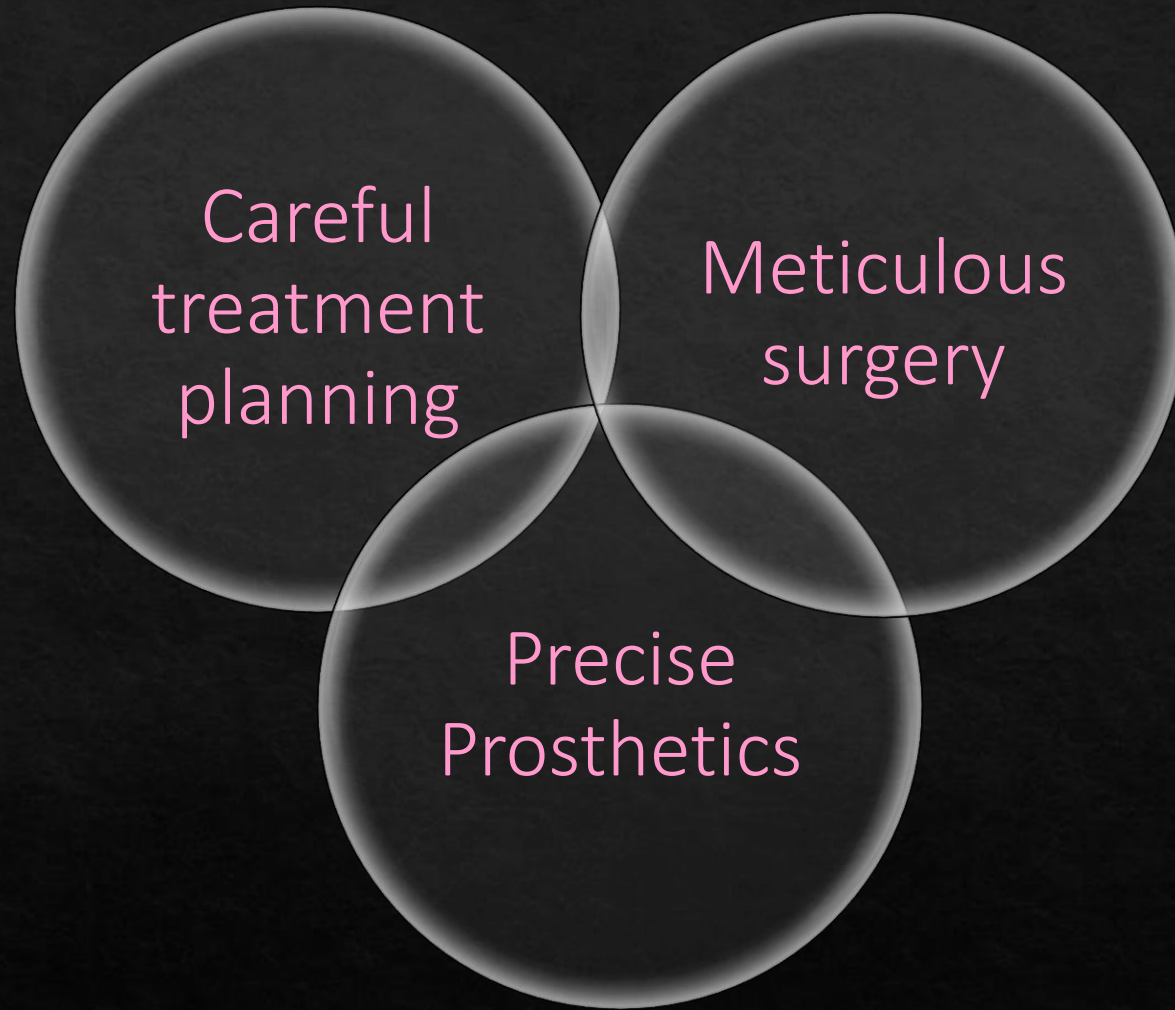


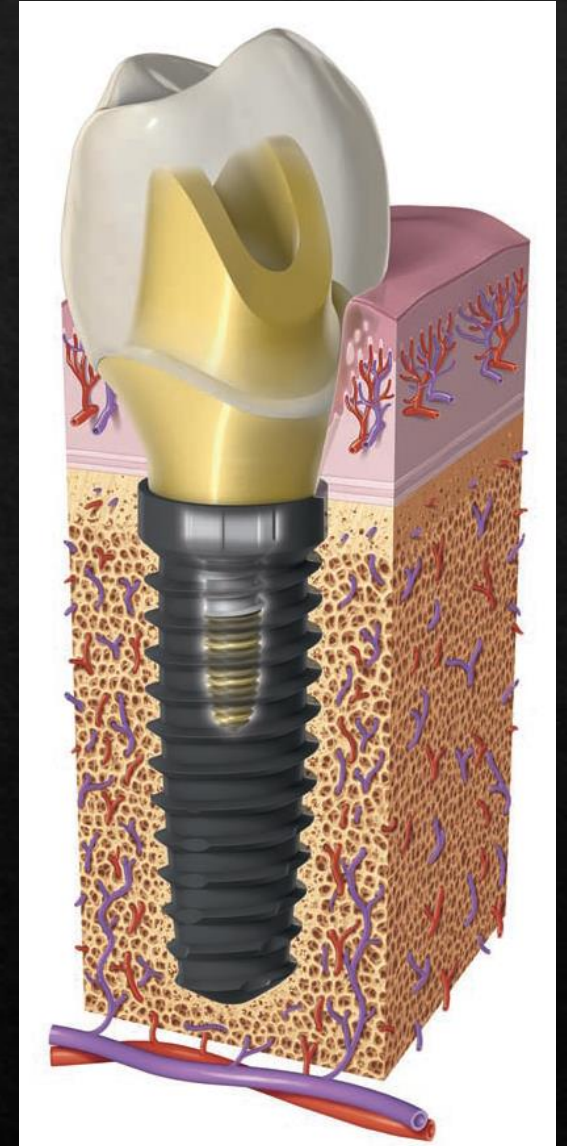
Introduction to Implant Dentistry

Neil Patel

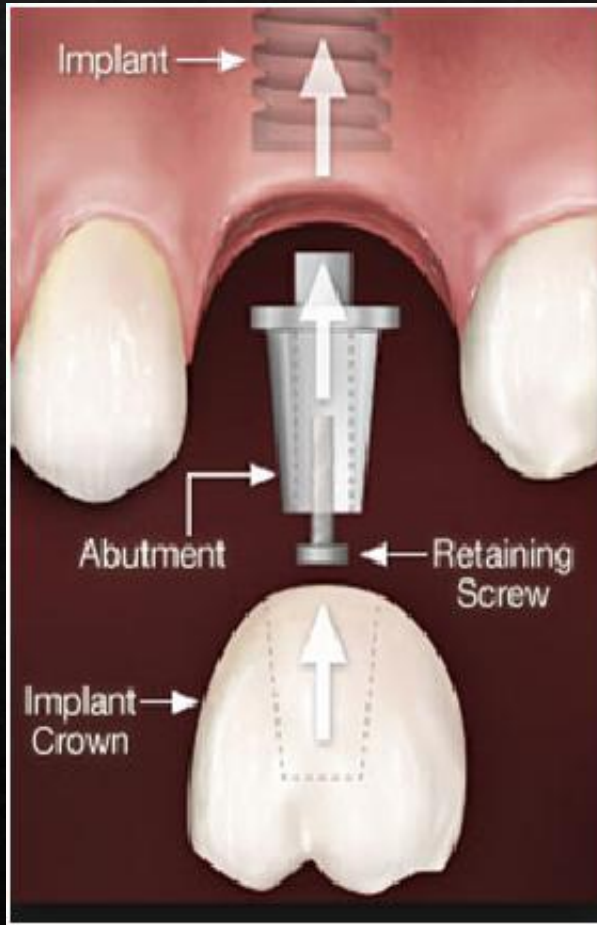
BDS(Hons), MSc (Dist), MFDS RCSEd, MJDF RCSEng, MOral Surg, PGCert, FHEA, MDTFEd



- Osseointegration – functional connection between living bone and surface of implant
- Fixture – endosseous part of dental implant
- Abutment – attached to fixture and supports prosthesis
- Abutment screw – screw used to attached abutment to implant
- Immediate placement – implant placed at time of extraction
- Delayed placement – socket left to heal before implant fixture placed
- Immediate loading – abutment + crown attached to immediately placed implant



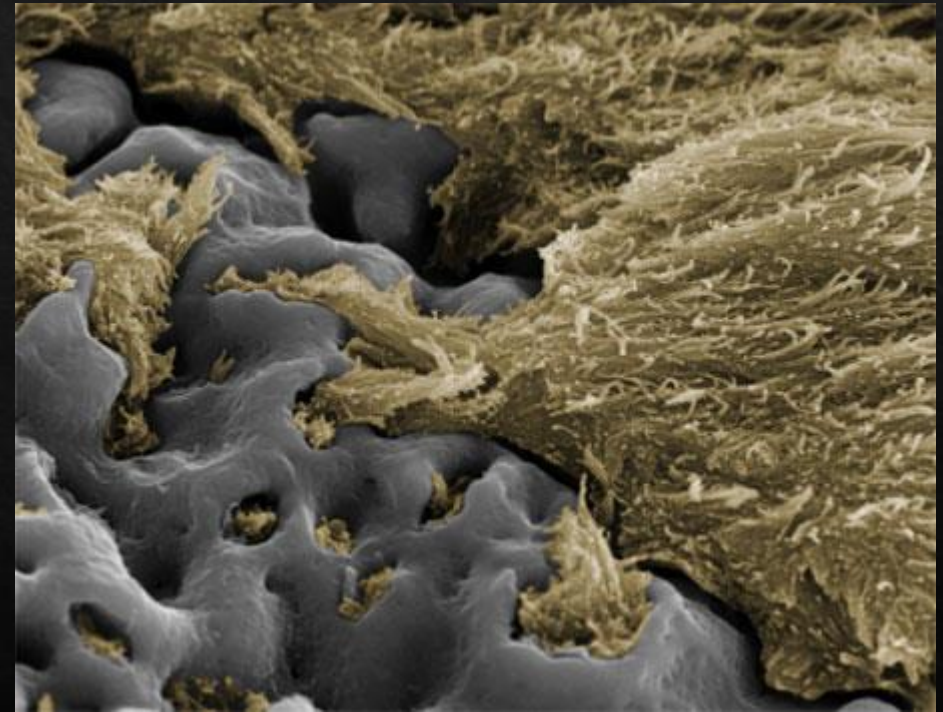
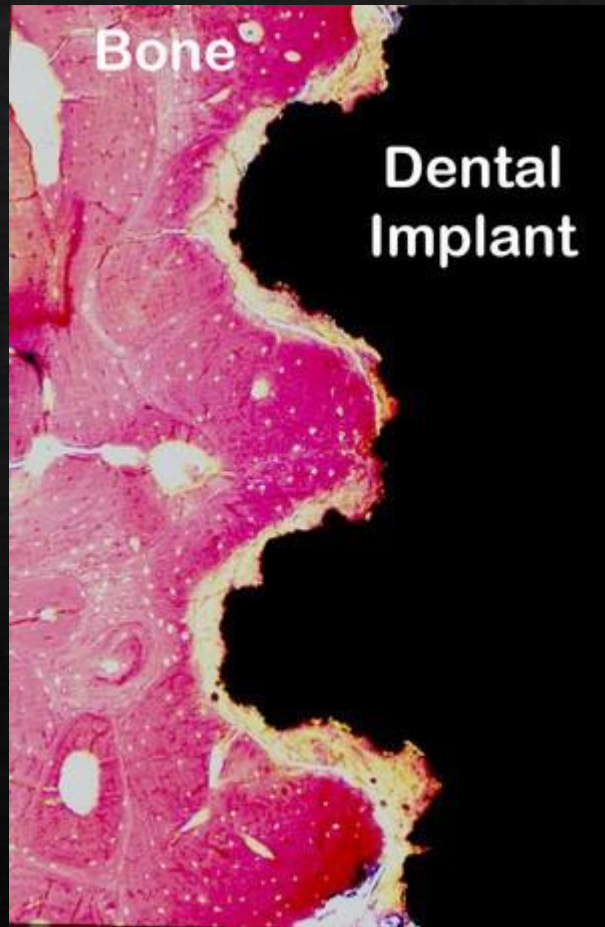
- Cement retained restoration – abutment screwed into fixture. Crown cemented on top
- Screw retained restoration – crown and abutment attached to fixture as single unit with screw



- One stage surgery – Healing abutment in place to stop gingivae from closing over
- Two stage surgery – Cover screw on coronal portion of implant. Gingivae allowed to heal.

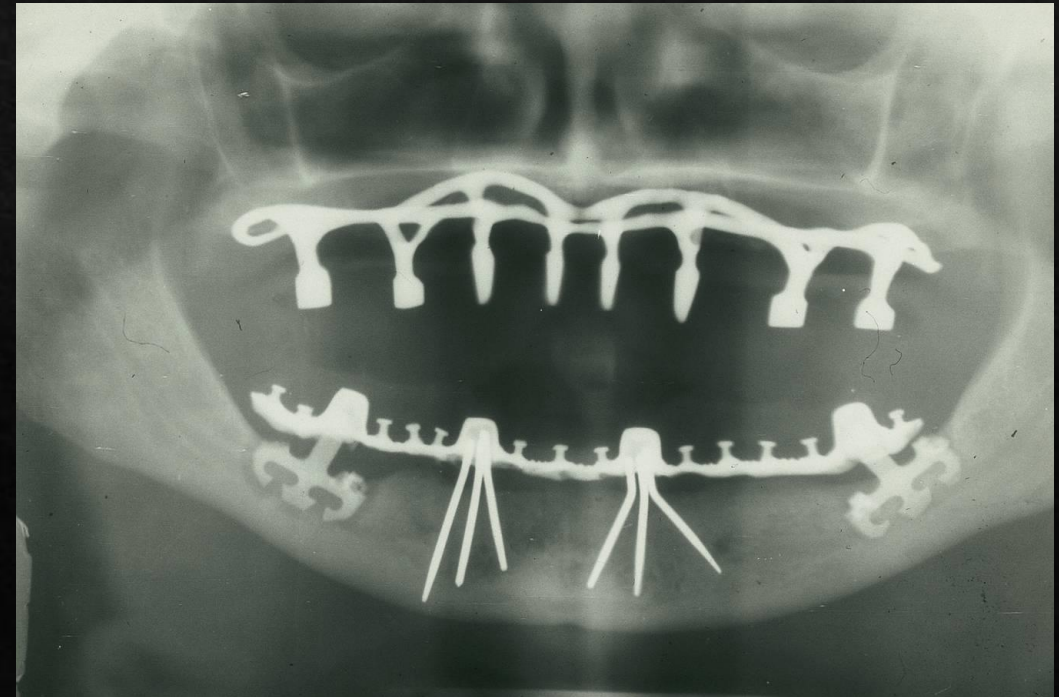


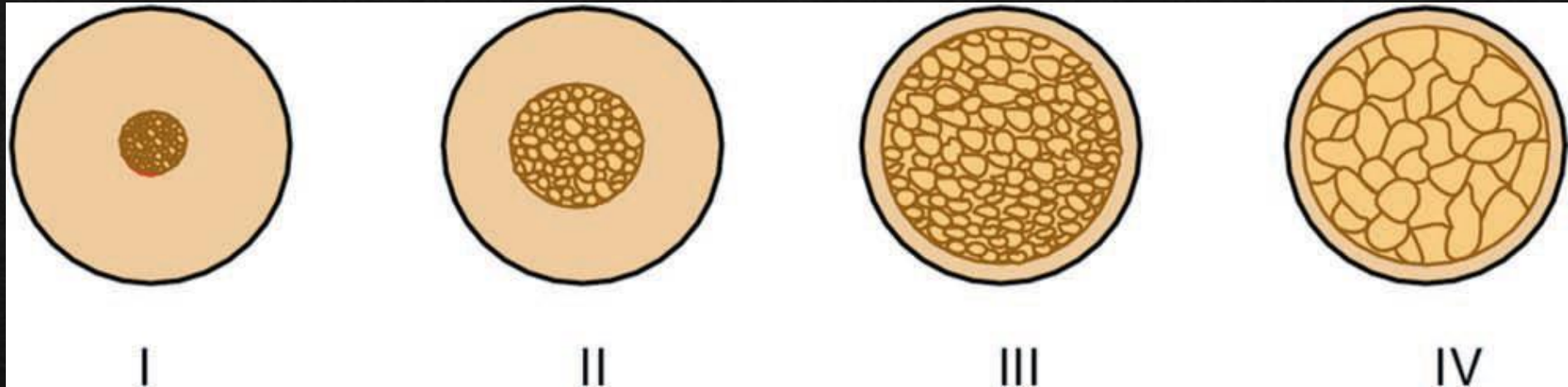
Osseointegration



Osseointegration

- Biocompatibility of dental implant – commercially pure titanium
- Implant design – Length / diameter / shape
- Surface characteristics
- Bone quality – cortical vs trabecular
- Primary stability – healing time
- Patient factors
- Prosthetic factors – occlusal loading





Indications for Implants

- Missing teeth
- Restore aesthetics
- Restore function
- Orthodontic anchorage
- Space maintenance
- Occlusal stability



Advantages of Implants

- Preserve tooth structure
- Preservation of bone
- Fixed restorations
- Increased support
- Resistance to disease
- Good long term success rates
- Cost?



Success criteria

- Albrektsson et al 1986
 - Lack of mobility
 - Less than 1.5mm bone loss in first year
 - No more than 0.2mm annual bone loss thereafter
 - No radiographic evidence of peri-implant radiolucency
 - No pain, suppuration, paraesthesia
-
- Patient satisfaction
 - Aesthetic success
 - Soft tissue evaluation



Type of prosthesis	Estimated survival at 5 years	Estimated survival at 10 years
Implant supported single crowns	95.50%	89.40%
Implant supported fixed dental prostheses	96.80%	86.70%
Conventional fixed dental prostheses	94.40%	89.20%
Cantilever fixed dental prostheses	90.50%	80.30%
Combined implant and tooth-borne fixed dental prostheses	93.40%	77.80%

Case Selection

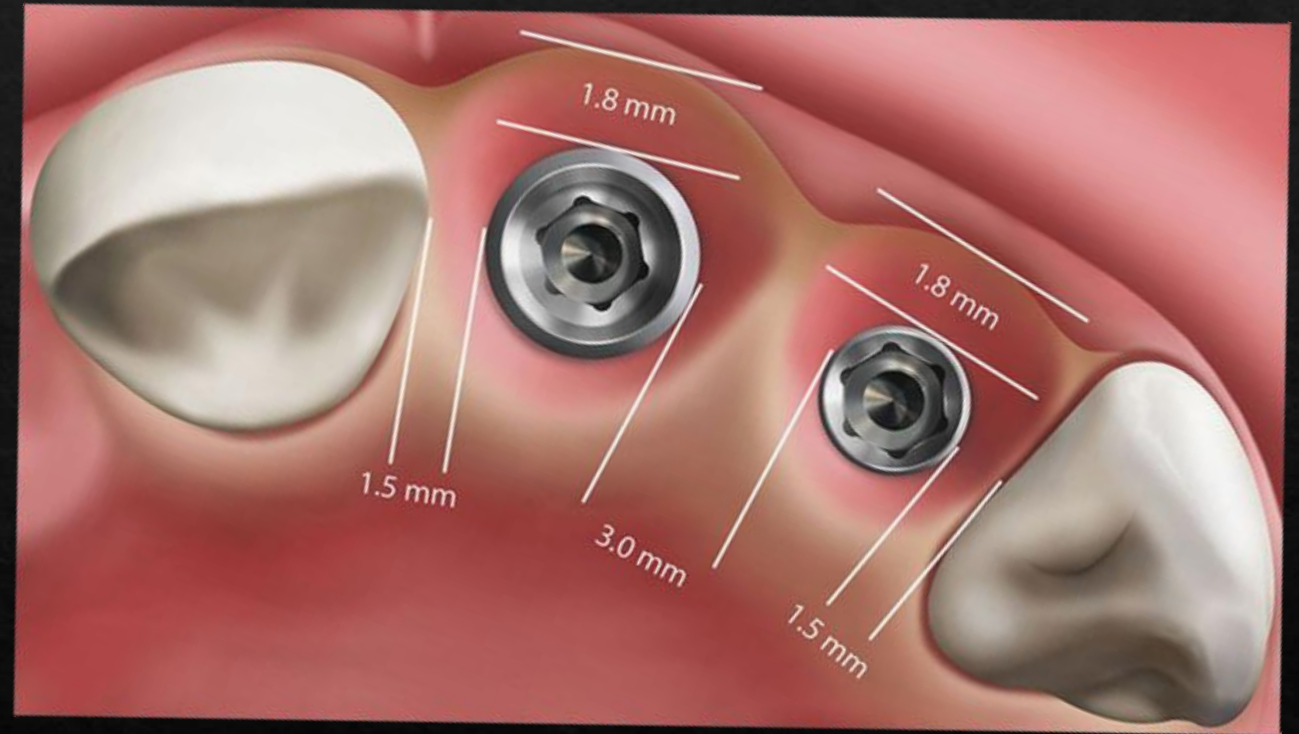
- Presenting complaint
- Medical History
- Age
- Detailed examination
- Social History – smoking, alcohol, anxiety
- Dental History – hygiene, commitment, parafunction
- Financial
- Patient expectations

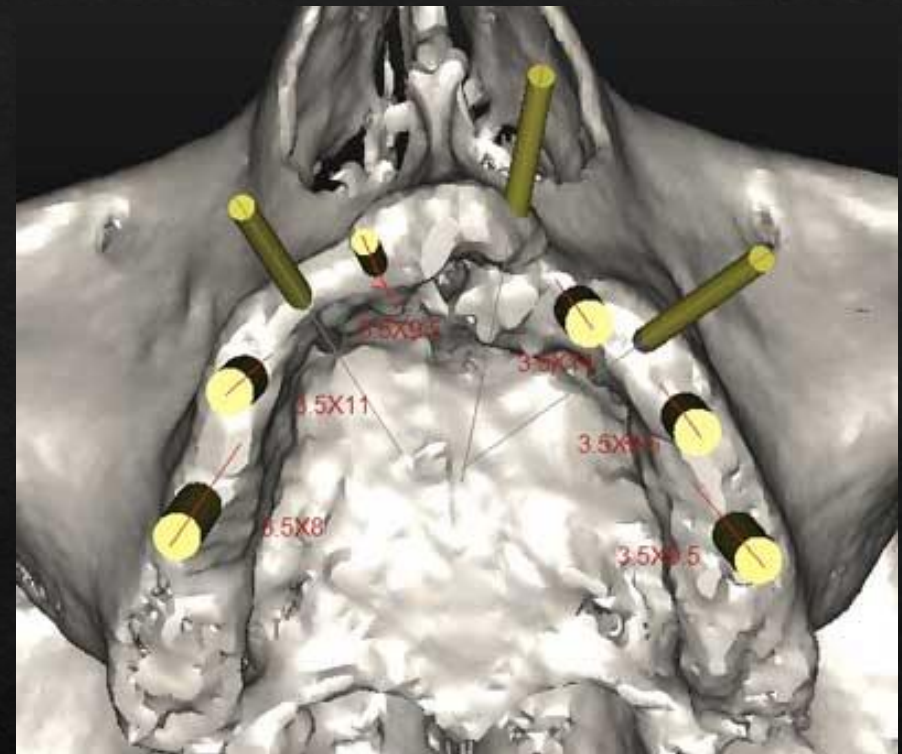
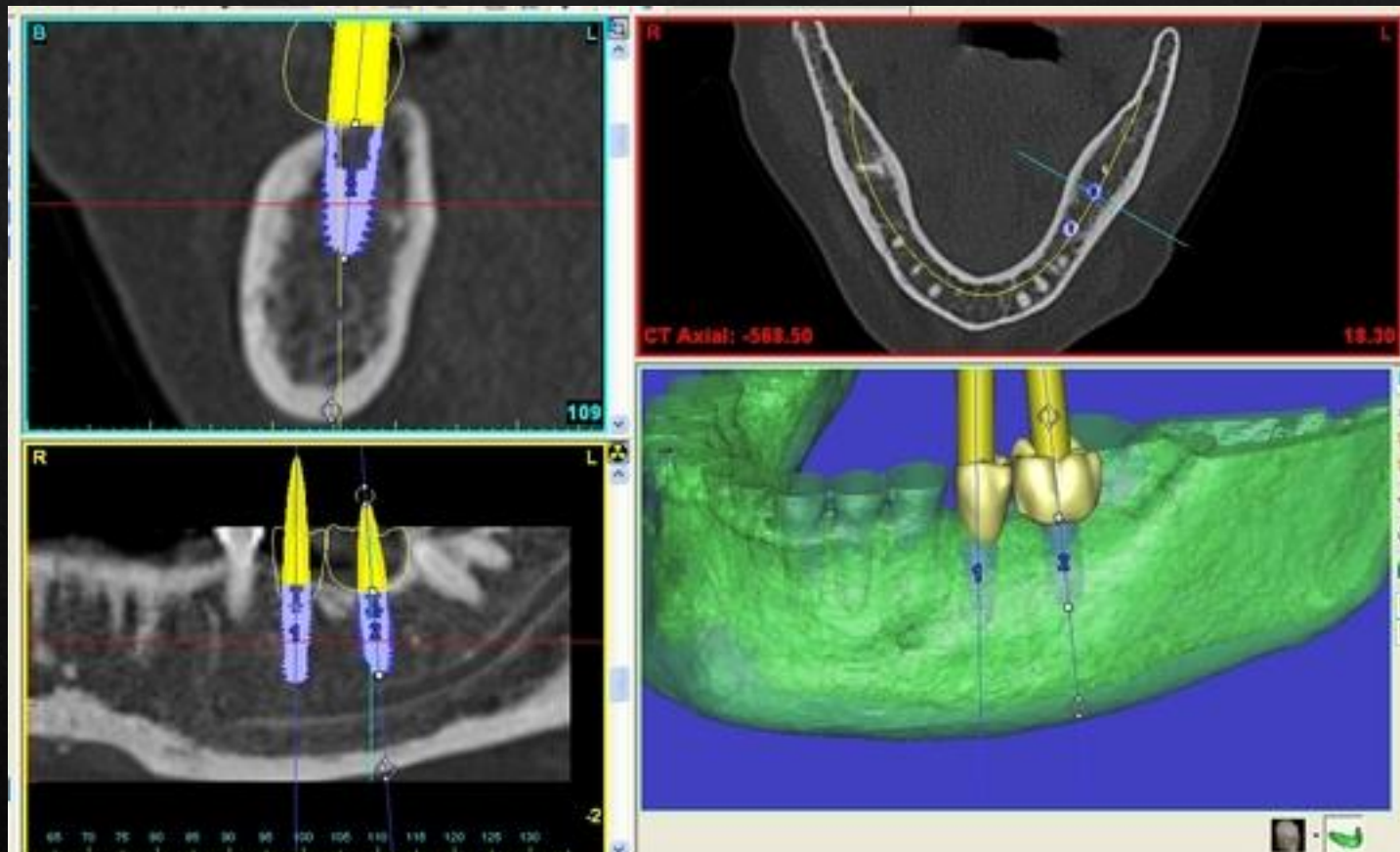
Examination

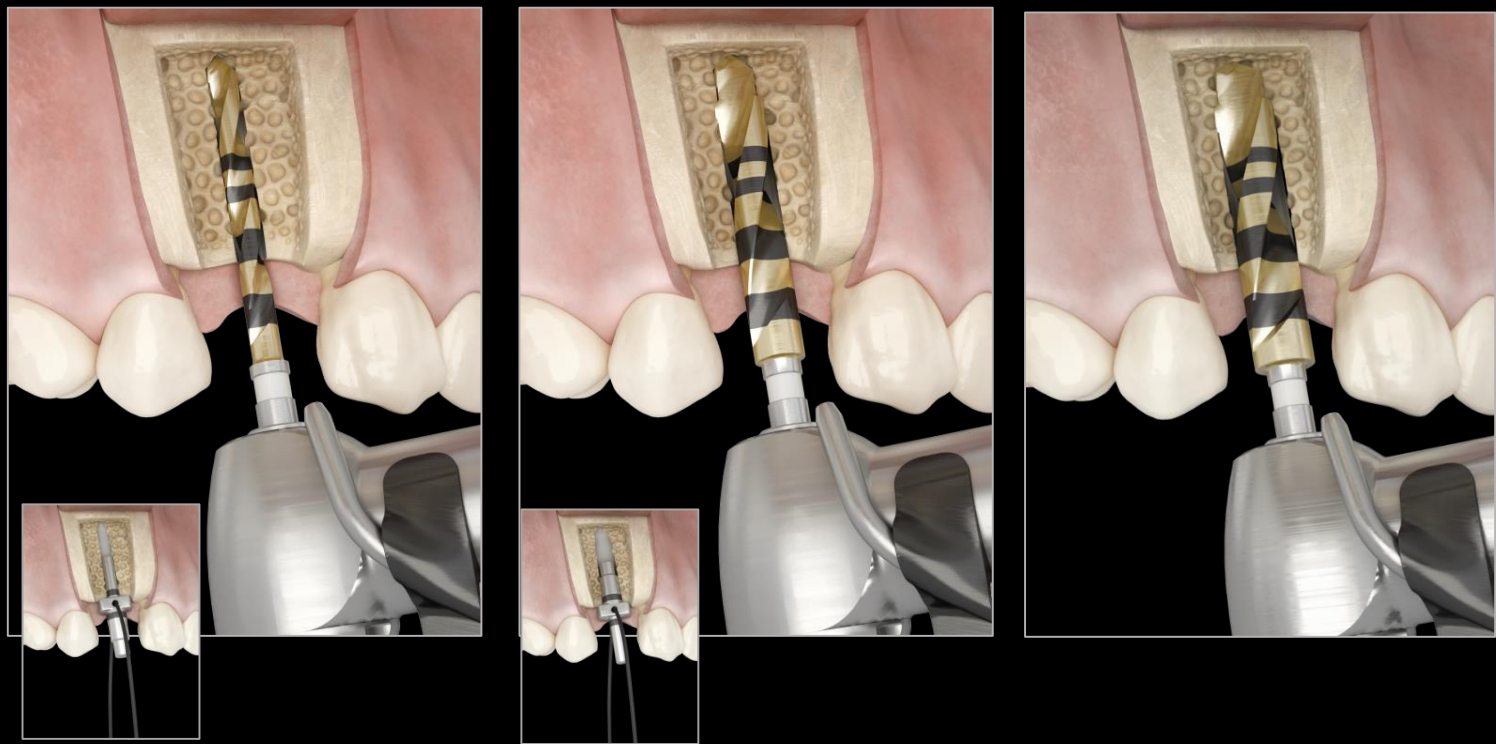
- Medical History – ASA
- Skeletal pattern
- Facial profile – nasolabial angle, soft tissue support
- Masticatory muscles
- TMJ
- Occlusion
- Lip line
- Periodontal tissues – biotype & keratinised tissue
- Soft tissues - pathology, muscle attachments
- Residual ridges – height / width
- Remaining teeth

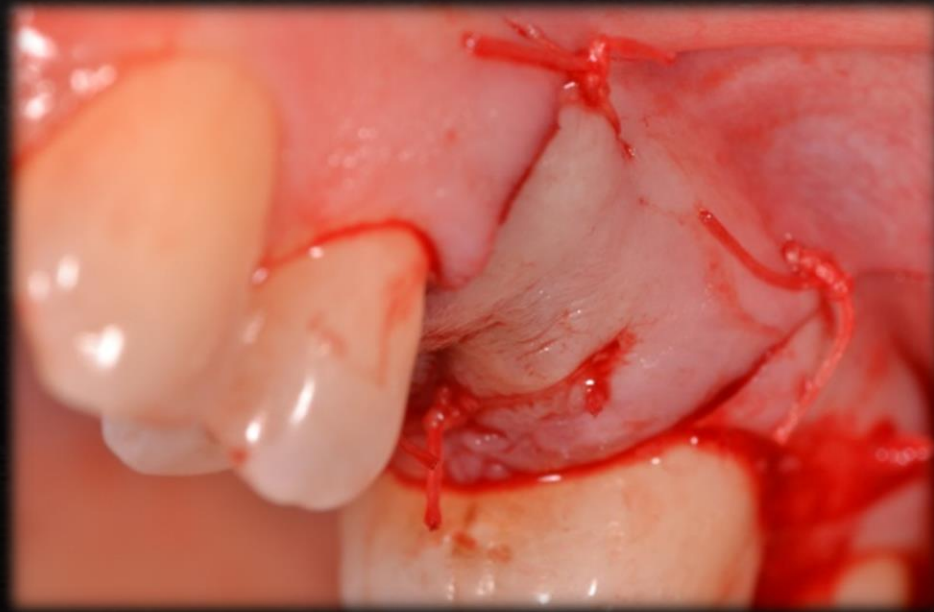
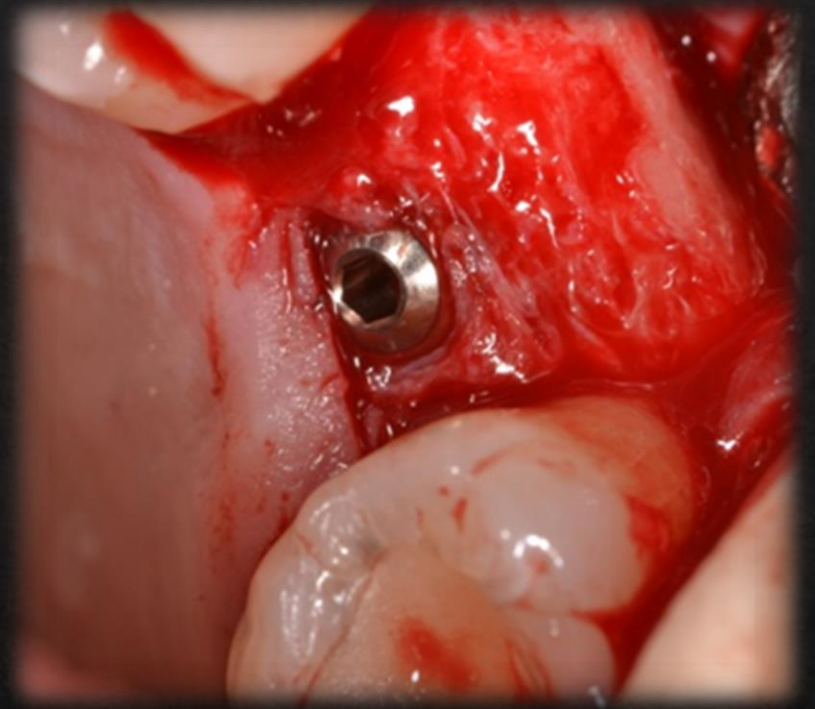
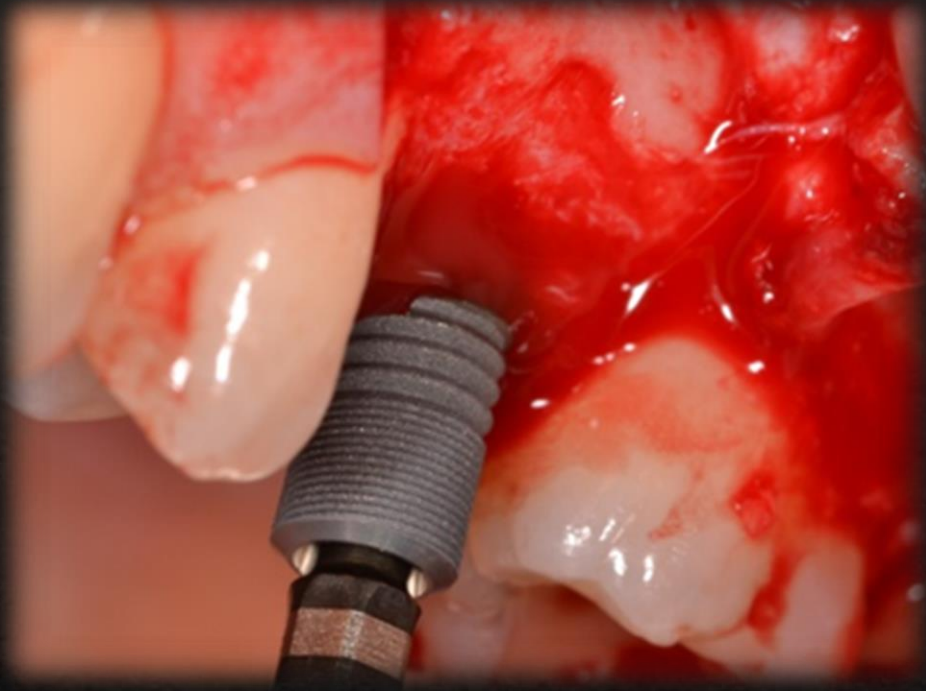
Treatment Planning

- Photographs
- Study casts
- Diagnostic wax up
- Imaging
- SIMPLANT planning
- Treatment plan to patient
- Written consent form
- Patient information

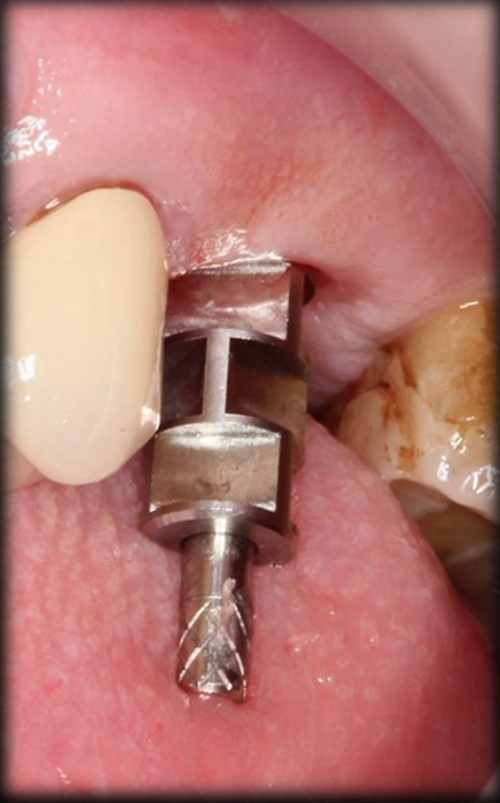








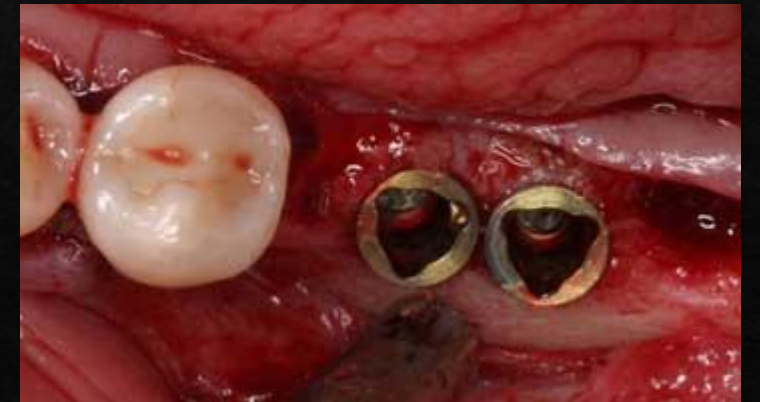
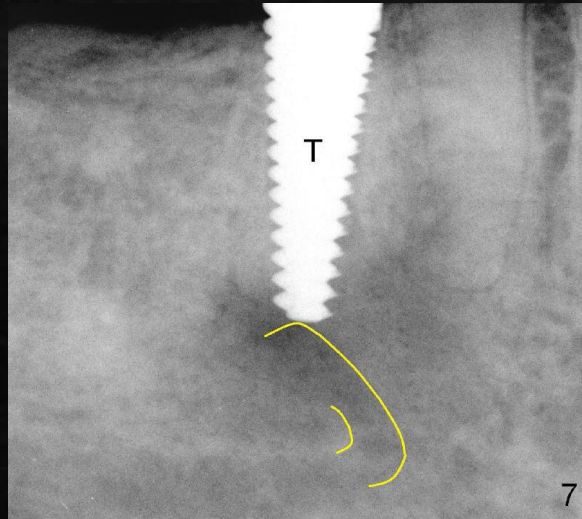
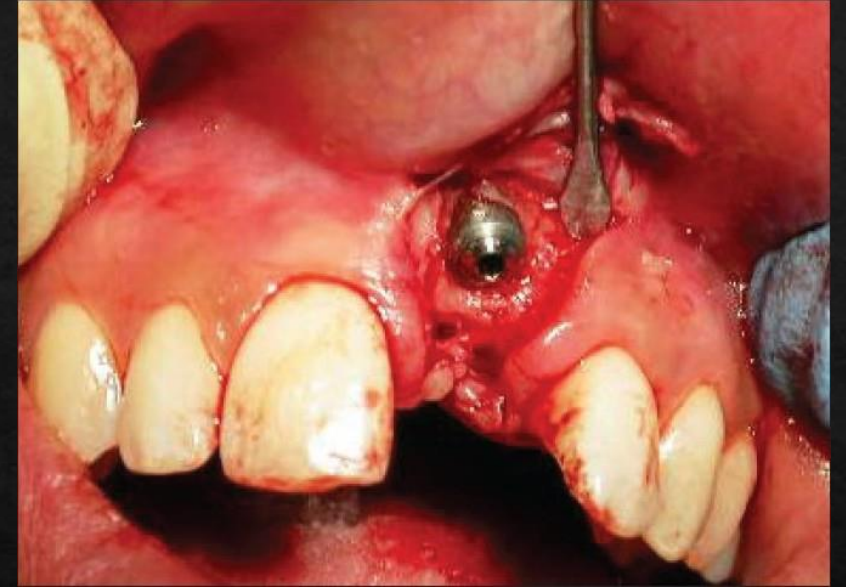
Restorative Phase





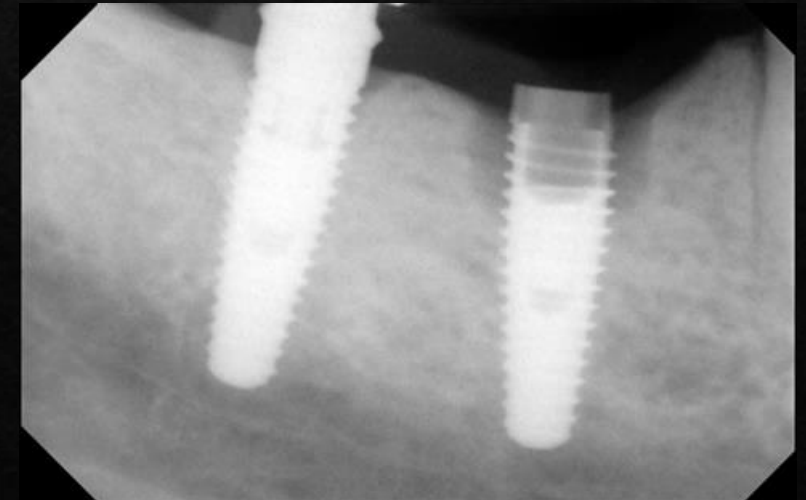
Complications – Surgical

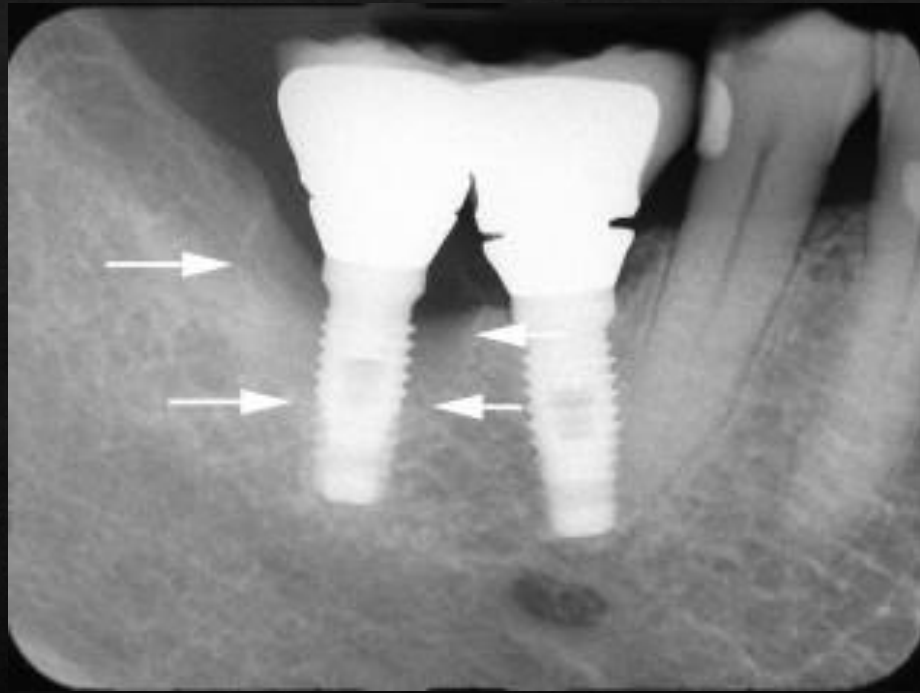
- General surgical complications
- Positioning error
- Invasion of anatomic structures
- Wound breakdown
- Early infection
- Failure to integrate



Complications – Prosthetic

- Poorly seated abutment
- Occlusal overload – bone loss
- Peri-implantitis
- Screw / abutment fractures – mechanical overload
- Restoration complications





Maintaining Dental Implants

Implant Maintenance

Patients should brush their teeth and implants as normal with additional measures extended to implants.

Single tooth implants require flossing at the minimum on a daily basis utilising a crossover floss technique.

Where multiple implants are present patients should be made aware of their location and instructed in techniques to debride the areas under pontics as well as abutments (Fig. 16).

Utilisation of single tufted tooth brushes as well as bristle brushes are invaluable to interproximal cleaning of difficult to reach areas (Figs 17 and 18).

For any given space the largest diameter brush that can passively enter the space should be utilised (Fig. 18).



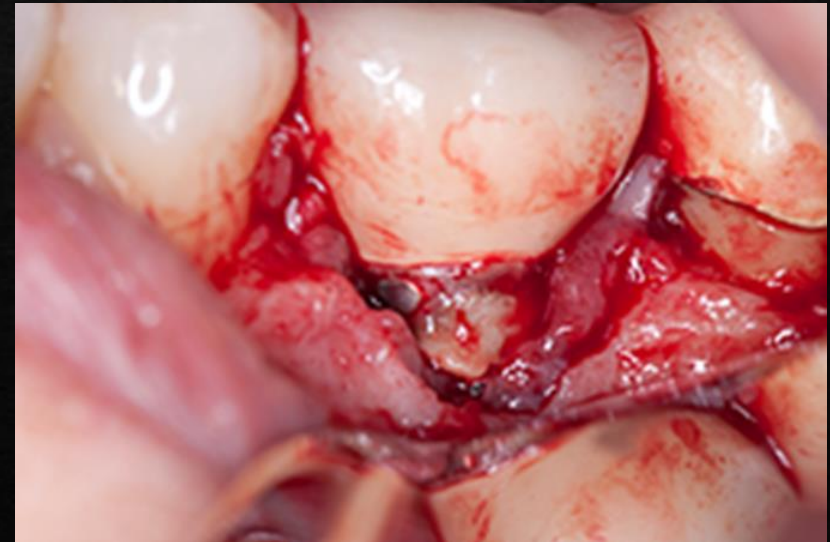
Todescan et al. 2012
Association for Dental Implantology
British Society for Restorative Dentistry

Implant Maintenance

Restoration type	Maintenance interval	Radiography
Single tooth crown	Once a year in absence of risk factors. Patients at risk require 6 monthly contacts at the minimum.	At fit and one year post fit. After this period radiographs to be taken as and when clinical signs and symptoms develop.
Bridge with two implant abutments	Once a year in absence of risk factors. Patients at risk require 6 monthly contacts at the minimum.	At fit and one year post fit. After this period radiographs to be taken as and when clinical signs and symptoms develop.
Bridge with more than two implant abutments	6 months in absence of risk factors. Patients at risk require 3/4 monthly contacts at the minimum. Removal of the restoration on a yearly basis for thorough debridement.	At fit and one year post fit. After this period radiographs to be taken as and when clinical signs and symptoms develop.
Full arch bridgework retained by implants	6 months in absence of risk factors. Patients at risk require 3/4 monthly contacts at the minimum. Removal of the restoration on a yearly basis for thorough debridement.	At fit and one year post fit. After this period radiographs to be taken as and when clinical signs and symptoms develop.
Implant retained dentures	6 months in absence of risk factors. Patients at risk require 3/4 monthly contacts at the minimum.	At fit and one year post fit. After this period radiographs to be taken as and when clinical signs and symptoms develop.

Peri-implantitis

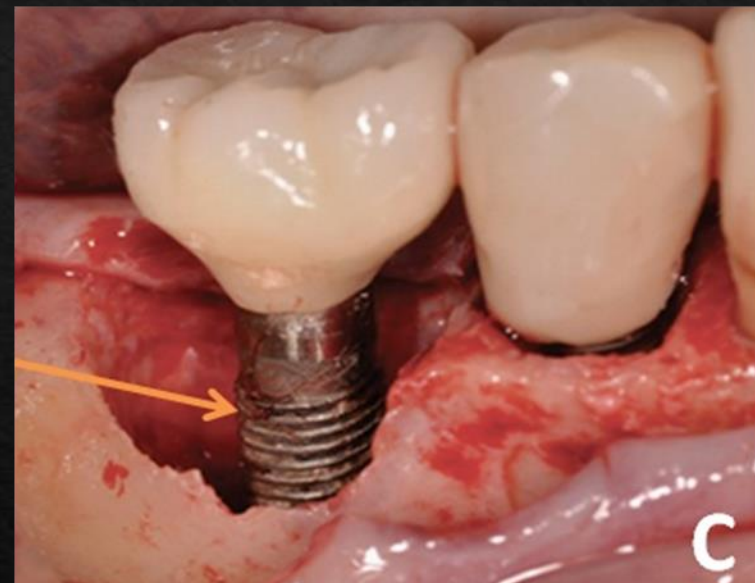
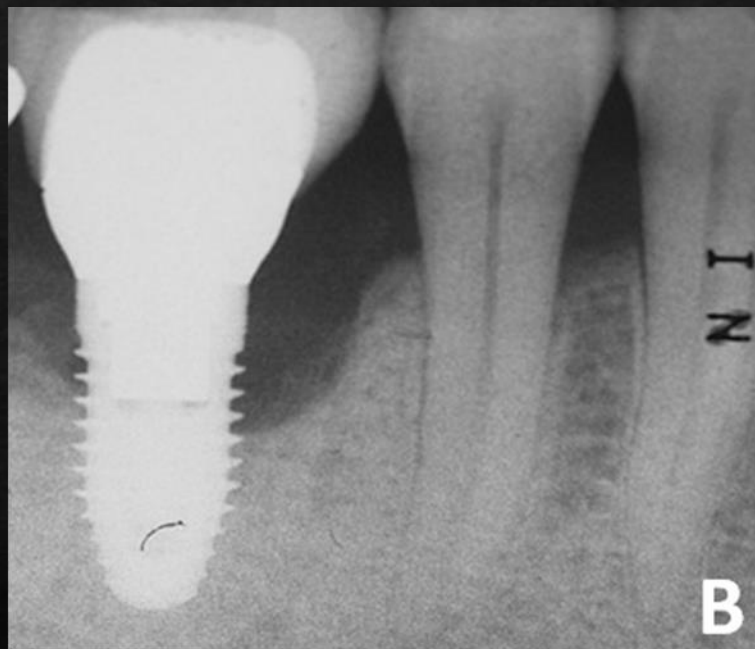
- Progressive crestal bone loss around an implant
- Poorly understood
- Difficult to treat
- Atieh et al reported prevalence of 19%.
- Patient health / Smoking / pre-existing perio disease / foreign body reaction?
- Poor oral hygiene
- Excess cement
- Excess occlusal forces



Peri-implantitis

- Asymptomatic in early stages
- Inflammation of gingival tissues
- Bleeding on probing
- Recession / exposed implant threads
- Suppuration
- Implant mobility
- Radiographs





Peri-implantitis – Risk factors

- Poor positioning of implant
- Non-keratinised tissue
- Previous periodontal disease
- Cement excess
- Surgical trauma
- Implants difficult to clean – too close together
- Smoking
- Poor OH
- Diabetes
- Systemic conditions / immunocompromised patients

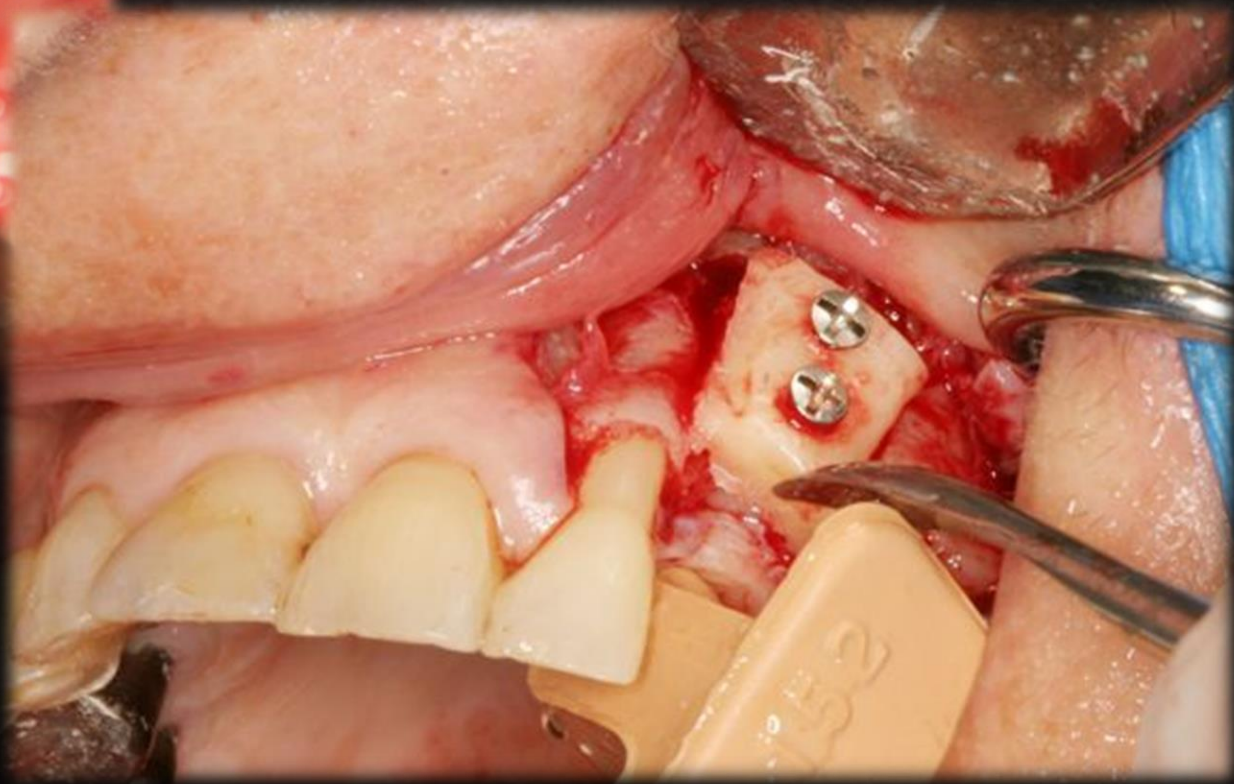
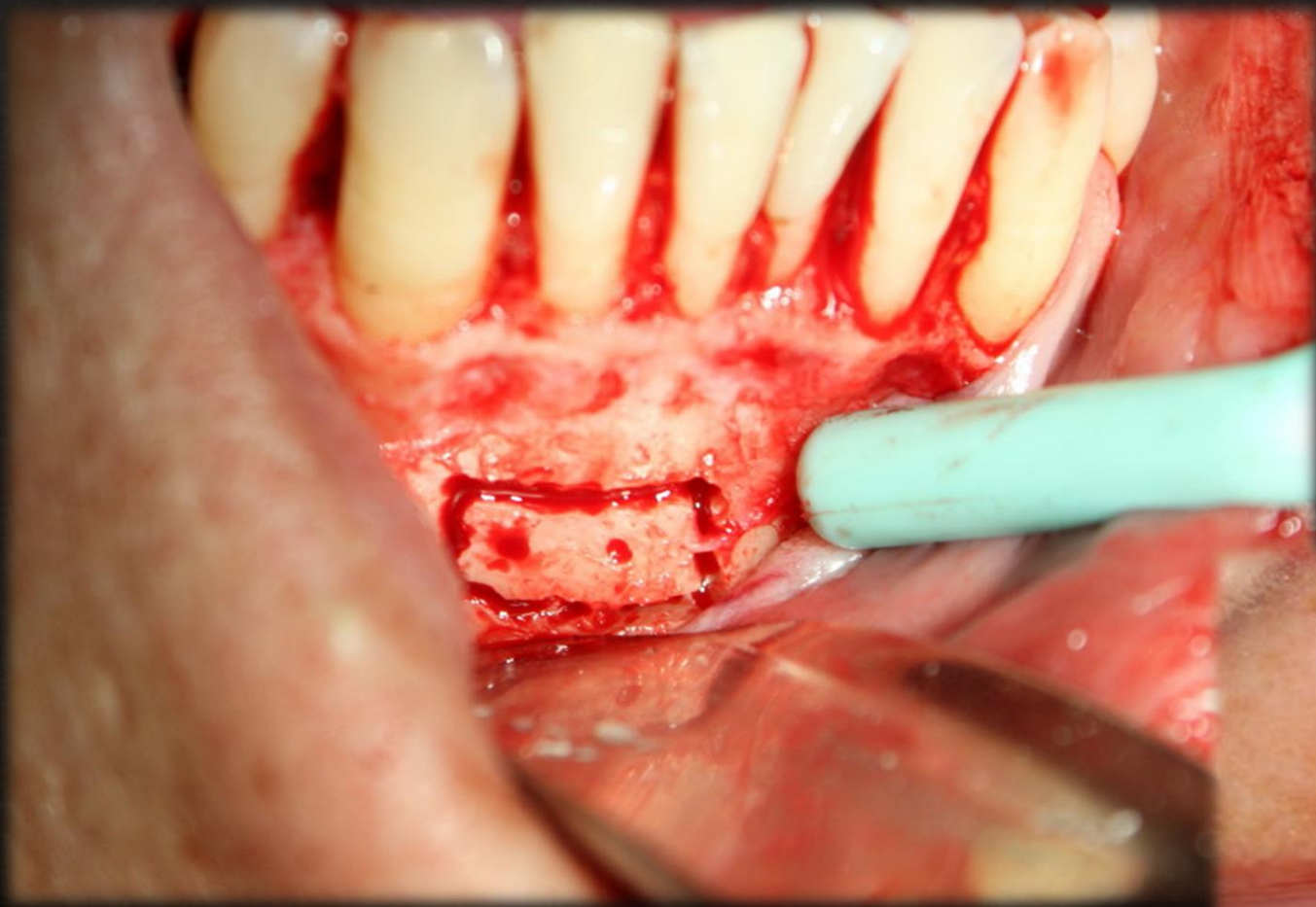


Peri-implantitis – Management

Implant Failure / primary complications	Implant removal
Excess cement / foreign body	Debridement + disinfection
Moderation disease <4mm probing <2mm bone loss	Debridement + disinfection + antibiotics
Advanced disease >5mm probing >2mm bone loss	Surgical debridement + antibiotics

Advanced techniques

- Immediate placement / loading
- Bone grafting – autogenous / xenografts
- Sinus lift procedures
- Zygomatic implants







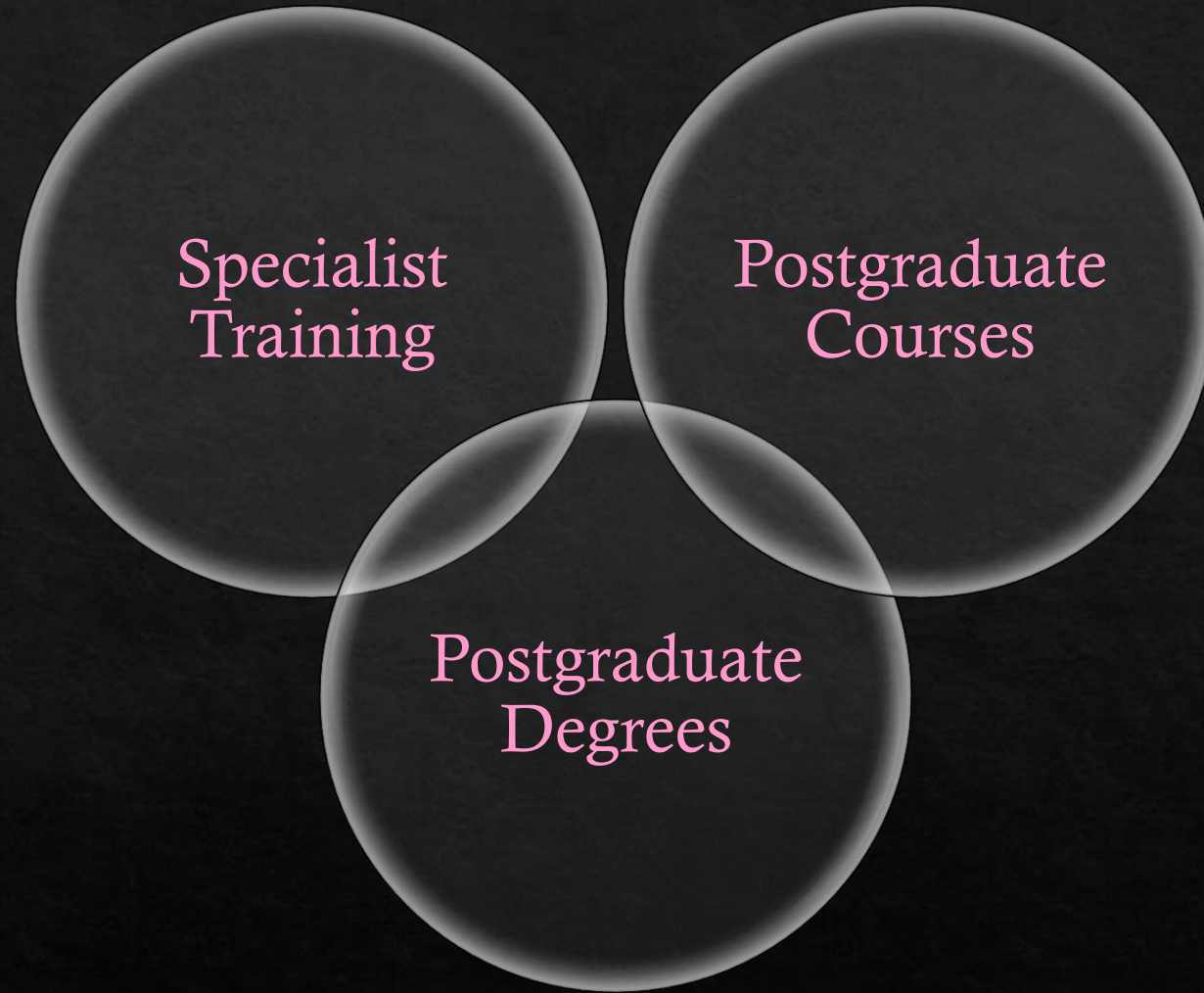
Training in Implant Dentistry

- General Dental Council

“limit their scope of practice to what they are trained and competent to do”

”After first 5 years...not be expected to be competent to practise implant dentistry without undertaking structured postgraduate training and assessment of competence.”

- Training Standards in Implant Dentistry – FGDP



Specialist Training

- Oral Surgery
- Restorative Dentistry
- Paediatric Dentistry
- Prosthodontics
- Periodontics
- Endodontics
- Orthodontics
- Oral Medicine
- Oral Microbiology
- Oral and Maxillofacial Pathology
- Oral and Maxillofacial Radiology
- Dental Public Health

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