Introduction to Implantology

Manoj S Parmar
BDS, MFDS, MJDF, MSc (impl), PGCert(rest), PGCert (MedEd)

Aims
1. Enable you to confidently introduce dental implants to your practice
2. Establish a study-club for your continued learning

Objectives
1. Why implants should form an integral part of your practice
2. Anatomy of an implant and its components

Teeth vs Implants
Implants must not be regarded as replacements for teeth but a means to restore edentulous spaces

Why introduce to your practice?
1. Predictable form of treatment
2. Develop range of services offered to patients
3. Medicolegal obligation
4. Keep treatment in-house
5. Additional income stream
6. Stimulate further learning
7. Increasing patient demand
8. Unlikely that a substitute will developed in next 10 yrs

Concerns
1. Many dentists placing implants
2. Limited experience as dentist
3. Corporate run weekend courses
4. No mentoring
5. Lack of evidence based learning
6. Poor planning
7. Poor basic surgical knowledge
8. Need a toolbox of techniques

Complications

The ideal implantologist...

...needs to be a prosthodontist with the surgical expertise of an oral surgeon and the finesse of a periodontist

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Every cloud......

GDP’s naturally have the skills required to place and restore implants. They just need to be applied in a structured manner.

Restoring implants

The journey starts with the visualisation and simulation of the end result.
Anatomy of an Implant

**Implant Body**
- Numerous manufacturers
- Grade 4 titanium
- Various surface coatings

**Abutment**
- Internal or external hex
- Different types
- Available in varying heights and widths

**Suprastructure**
- Single tooth crown
- Implant supported bridge
- Implant supported overdenture

**Cover Screw, Healing Abutment**

**Cement Retained Restoration, Screw Retained Restoration**

**Direct-Casting**
- Screw Abutment & Cylinder
- Temporary (Ti / Plastic)
- Combi
- Dual Milling
- Angled (15° / 25°)
Objectives

1. Know what factors to consider when deciding to keep or XLA teeth
2. Understand when implant treatment may not appropriate
3. Highlight what information is required from the assessment and why

Periodontitis

1. Survival rates of fixed prosthesis supported by severely reduced but healthy periodontium – systematic review. (Lilac et al, 2007)
   1. 96.4% at 5yrs
   2. 92.9% at 10yrs
2. XLA if >70% bone loss – at pts request

Periodontitis

1. Gingivitis – virtually everyone
2. Perio – 10-15% of population
3. Balance between Biofilm (20%) and Host Response (80%)
4. Aim of Rx - Biofilm & Host response
5. Perio is not CI to implant placement provided that?
   1. Perio is treated
   2. Pt has good plaque control
   3. Maintenance protocol is in place
   4. Surgical and restorative dentistry is of high quality

Periodontitis

1. If there is sufficient bone height and width to place implant even after bone loss – treat perio and monitor
2. If further bone loss would complicate future implant treatment – consider extraction
3. If further bone loss will not alter the treatment for an implant – consider keeping the tooth

Periodontitis

1. Can further bone loss compromise the ability to place an implant in the future?
2. Can further bone loss compromise the aesthetics of an implant restoration in future?
3. Are the teeth functionally acceptable?
4. Can this be resolved?
5. Can the perio be treated?
Endodontics

- A tooth with a good root filling has a similar prognosis to an implant
- Restorative factors will influence the choice
- Implants may have a higher survival than teeth requiring difficult endodontics:
  - Failed RCT
  - Overfilled canals
  - Apical lesions
- Outcome will also be dependent on who does the endo

Post vs Implant

- Complications – 10%
- Post shorter than crown
- < 1-2mm ferrule
- Thin dentine walls
- Occlusion
- Pt preference
- Can always do implant following failure of post/crown
### Failed dentition

- In the presence of extensive failure on teeth, implants may be the only option for fixed restorations
- Assess the adjacent teeth not just the spaces

### Rationale for Implants

1. Preservation of tooth structure
2. Preservation of bone
3. Provision of additional support
4. Resistance to disease

### Age

- Age does not preclude treatment
- MH associated with aging might
- Greater caries risk in aging population
- No caries risk with implants
- Implants should not be placed before 18 yrs of age in males
- 16 yrs of age in females

### Diabetes

- Impaired wound healing
- Not usually a problem in controlled diabetics
- Hb1ac

### Bleeding

1. Dyscrasias
   1. Hemophilia
   2. Von Willebrand's
   3. Liver damage (alcoholics)
2. Warfarin – INR <4
3. Anti-platelet – Aspirin, Clopidogrel, dual therapy can be problem

### Smoking

Affects perio and implants. Note that if perio fails implants can be considered, however, if implant fails perio cannot be considered

- Lots of studies – Bain and Moy (1993) landmark paper
- Failure relative to the amount smoked
- Roughly doubles the rate of failure
**Bisphosphonates**

- Oral
- Prior to taking – teeth or implants
  - Upto 3 poss 5yrs of taking – teeth or implants
  - >5yrs – safer on teeth
- IV
- Prior – teeth or implants
- After - teeth

**Cancer**

- Most people with cancer will not even consider treatment!!
- Defer treatment for at least 6 months after chemo
- > risk of osteoradionecrosis. Wait at least 12 months and even then seek opinion from radiologist and maxfac lead.

**Local factors > failures**

1. Contamination of implant at placement
2. Poor initial stability
3. Placement in previously irradiated bone
4. Placement in area of infection
5. Placement in previously grafted bone
6. Placement with simultaneous grafting
7. Subjected to early loading
8. Overheating of the bone during surgical preparation of site
9. Injury to the adjacent periodontal ligament of a neighbouring tooth

**Clinical Examination**

1. Access
2. Restorative volume available
3. Bone volume available
4. Anatomical hazards
5. Restorations
6. Occlusal factors
7. Periodontal and hygiene
8. Soft tissues and lip line

**2. Restorative volume**

1. Number of missing teeth
2. Space closure as a result of drifting/tilting
3. Overeruption
4. Spacing for multiple units

**3. Bone Volume**

1. Bone resorption – pattern of resorption mandible and maxilla
2. Adequate height:
   - ball bearing 5mm on plain film or OPG
3. Adequate width:
   - ridge mapping – sharpened perio probe, calipers
2. CBCT
4. Angulation in anterior maxilla

**4. Anatomical hazards**

1. Mandible:
   - IDN
2. Mental foramen
3. Mylohoid ridge
4. Floor of mouth

2. Maxilla:
   - Sinus
   - Palatal arteries
### 5. Restorations
1. Do a full chart
2. Diagnosis and prognosis of every tooth
3. Vitality
4. BWs – caries and bone levels
5. PA’s – LEO’s

### 6. Occlusion
1. Is there adequate posterior support?
2. Is there evidence of parafunction?
3. Is there TMJDS?
4. Interferences?
5. Look at articulated casts
6. No negative link between occlusion and implants but needs to be managed carefully. Teeth move, implants do not.

### 7. Perio
1. Need BPE
2. DPC for code 3 and above
3. Must be treated and maintained before implant treatment
4. Smoking and perio – NO IMPLANTS
5. Will proceed to peri-implantitis
6. Will be largest area of litigation in implant dentistry

### 8. Soft Tissue Assessment
1. Pathology
2. Gingival biotype
3. Papillae
4. Keratinised tissue vs non-keratinised
5. Grafting
6. Denture bearing areas – candida

### Radiographs
1. OPG magnify by approx 20%
2. PA’s more accurate
3. Use 5mm ball bearing to calibrate
4. Actual amount of bone = (bone on image x 5mm) / diameter of ball bearing on image
5. CBCT necessary for more detailed info on depth

### Photographs
1. Very useful for treatment planning and communication
2. Useful for record keeping
3. Excellent for reflection and learning
4. Use SLR with macro lens and ring or twin flash
5. Use mobile phone – better than nothing
## Type of case

1. Aesthetic zone  
2. Posterior zone  
3. Edentulous maxilla  
4. Edentulous mandible

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## Aim

To have an improved understanding of the factors involved when planning implant therapy in the anterior maxilla.

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## Objectives for today

1. Assessment of the edentulous site  
2. Surgical considerations for aesthetic outcome  
3. Restorative considerations for aesthetic outcome  
4. Managing patient expectations

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## Assessment

1. Height of lip line  
2. Gingival biotype  
3. Shape of missing and surrounding teeth  
4. Infection at implant site and bone level at adjacent teeth  
5. Restorative status of adjacent teeth  
6. Character of the edentulous space  
7. Width of hard & soft tissues in edentulous space  
8. Height of hard & soft tissue in edentulous space

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## Assessment

- **Low:** Cannot see gingivae. Usually see lower teeth.
- **Medium:** Display most of maxillary teeth. Very little gums.
- **High:** Display maxillary teeth in full, including gingival profile.
1. Height of lip line
2. Gingival biotype
3. Shape of missing and surrounding teeth
4. Infection at implant site and bone level at adjacent teeth
5. Restorative status of adjacent teeth
6. Character of the edentulous space
7. Width of hard & soft tissues in edentulous space
8. Height of hard & soft tissue in edentulous space

Assessment

Thick
Resistant to recession, increased risk of scarring, blunt papillae, can mask underlying metal.

Medium
In-between thick and thin

Thin
Can get excellent results if adjacent teeth have good bone levels, friable tissue, recession prone
1. Height of lip line
2. Gingival biotype
3. Shape of missing and surrounding teeth
4. Infection at implant site and bone level at adjacent teeth
5. Restorative status of adjacent teeth
6. Character of the edentulous space
7. Width of hard & soft tissues in edentulous space
8. Height of hard & soft tissue in edentulous space

• Chronic apical infections
• Acute infections
• Bone loss on adjacent teeth determines papilla height
• Black triangle
Assessment

1. Height of lip line
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3. Shape of missing and surrounding teeth
4. Infection at implant site and bone level at adjacent teeth
5. Restorative status of adjacent teeth
6. Character of the edentulous space
7. Width of hard & soft tissues in edentulous space
8. Height of hard & soft tissue in edentulous space

Assessment

- Healthy adjacent tooth = predictable result

Assessment

- Good aesthetic outcome with single missing teeth
- Multiple adjacent missing teeth pose greater challenge due to lack of interdental bone and therefore papilla
  - Implant-implant
  - Implant-tooth
  - Implant-pontic
  - Pontic-pontic
  - Tooth-tooth
  - Tooth-pontic

Assessment

- Vertical soft tissue limitations:

<table>
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<tr>
<th></th>
<th>Tooth</th>
<th>Pontic</th>
<th>Implant</th>
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<tbody>
<tr>
<td>Height</td>
<td>4.5-5.0</td>
<td>6.5</td>
<td>4.5</td>
</tr>
<tr>
<td>Width</td>
<td>6.5</td>
<td>6.0</td>
<td>5.5</td>
</tr>
<tr>
<td>Implant</td>
<td>4.5</td>
<td>5.5</td>
<td>3.5</td>
</tr>
</tbody>
</table>

Assessment

Implant position and scoring of papilla height

Score: Blue=4, Yellow=3, Orange=2, Red=1

Assessment

Implant position and scoring of papilla height

Score: Blue=4, Yellow=3, Orange=2, Red=1
Assessment

1. Height of lip line
2. Gingival biotype
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6. Character of the edentulous space
7. Width of hard & soft tissues in edentulous space
8. Height of hard & soft tissue in edentulous space

Assessment

- Tissue deficiencies in the horizontal plane can pose aesthetic treatment risk.
- If the defect is restricted to the horizontal dimension and other conditions, such as periodontal and restorative status of adjacent teeth are satisfied, then site enhancement is predictable.

Assessment

- Will get horizontal bone loss following tooth loss
- Atraumatic XLA important – preserve buccal plate
- Chronic infections – fenestrations and dehiscence’s
- Immediate placement does not prevent bone loss
- Thin ridge may lead to deeper placement
- GBR on almost all anterior placements
- CTG may also be required

Assessment

- Loss of vertical height is the greatest challenge
- Cannot PREDICTABLY replace
- High aesthetic risk esp with high lip-line
- May require onlay block graft
- May need pink porcelain or longer crown
- Pt expectations must be managed
- Palatal bone height is the determining factor
Surgical considerations
1. Flap design
2. Implant size
3. Correct 3D positioning
4. Timing
5. GBR

Surgical considerations
3 sided flap
2 sided flap
Curvilinear flap
Surgical considerations

Avoid the use of wide neck implants in the anterior maxilla because the shoulder margin is likely to be located too close to the adjacent teeth or too far buccally.

Surgical considerations

1. Flap design
2. Implant size
3. Correct 3D positioning
4. Timing
5. GBR

The placement of an implant in the correct three-dimensional position is one of the key considerations in achieving an aesthetic outcome.

The three-dimensions are:
1. Mesiodistal
2. Bucco-palatal
3. Coronoapical
Surgical considerations

1. Flap design
2. Implant size
3. Correct 3D positioning
4. Timing
5. GBR

Rationale for immediate placement:
- Reduces treatment time
- Fewer surgical procedures
- No need to raise flap
- Preservation of buccal plate?

But:
- More technically demanding implant placement
- Cannot close the socket thus need temp restoration
- Managing the gap between the implant and bone
- Still get bone loss.
- >2mm gap GBR
Surgical considerations

1. Flap design
2. Implant size
3. Correct 3D positioning
4. Timing
5. GBR

• Resorption will continue over time
• Age of patient
• Ideally need 2mm of buccal bone - rare
• Augment every case?
• Choice of biomaterials
Restorative considerations

1. Interim restorations
2. Provisional implant crown
3. Abutment selection
4. Crown selection
Restorative considerations

1. Interim restorations
2. Provisional implant crown
3. Abutment selection
4. Crown selection
Patient Expectations

1. Recent rise in public awareness of implant therapy
2. Most patients unaware of what the process entails
3. Wealth of info on internet, some of it misleading
4. Same day teeth!
5. Determine pt’s ultimate desires at the consultation
6. Focus on 3 aspects:
   1. Form
   2. Function
   3. Aesthetics

Patient Expectations

FORM
a. can the space be restored at all?
b. are orthodontic or restorative procedures required before implant therapy?
c. use diagnostic wax-ups and photographs to visualize the case
d. this will provide useful info on the amount of hard and soft tissue support

Patient Expectations

FUNCTION
a. occlusal evaluation
b. restorative volume
c. diagnostic wax-up

Patient Expectations

AESTHETICS
a. what are the pt’s expectations?
b. are they realistic?
c. How can you avoid disappointment?

UNDER PROMISE & OVER DELIVER
Aim

Teach the skills required to take an implant level impression and fit a single unit restoration

Objectives

1. Overview of the Dentium system and components
2. Restorative armentarium
3. Impression materials & trays
4. Restoration choice
5. Abutment choice

Restoring implants

Begin with the end in mind

Dentium

1. Korean system
2. Established in 2000
3. Has own R & D center
4. Worldwide distribution
5. Range of implant systems
6. www.dentium.com

SuperLine – key features

1. Tapered implant
2. SLA surface
3. Ideal thread pitch and depth
4. Comprehensive size range
5. Bone level
6. Conical-hex internal connection
7. Same internal connection for all implants

Why I use Superline

1. Easy system to use
2. Tapered implant
3. Great primary stability
4. Same internal connection for all implant sizes
5. Limited stock of prosthetic components required
6. Cost effective
7. Good support network

Internal connection
Emergence profile

The contours of the tooth/crown as they traverse the soft tissue towards the contact point interproximally, facially and palatally.

Restoring a single implant

1. Armentarium
2. Taking impressions – material choice & tray selection
3. Impression coping selection
4. Abutment selection
5. Fitting

Prosthetics Kit
Restoring a single implant

1. Armentarium
2. Taking impressions – material choice & tray selection
3. Impression coping selection
4. Abutment selection
5. Fitting

Tray selection

Impression materials

Impression coping selection

• Open tray technique (pick-up impression coping)
• Closed tray technique (transfer impression coping)
Restoring a single implant

1. Armentarium
2. Taking impressions – material choice & tray selection
3. Impression coping selection
4. Abutment selection
5. Fitting

Considerations in Abutment Selection

1. Aesthetic requirement
2. Implant angulation
3. Implant location
4. Interarch distance
5. Prosthesis type
6. Dentist & Technician preference

Screw vs Cement

Screw Retained Prosthesis
1. Retrievable
2. Can place margin more subgingivally
3. No micro gap between abutment and restoration
4. Can mold soft tissues better
5. Easier to ensure seat of restoration
6. Accurate implant placement
7. Increased cost

Cement retained prosthesis
1. Less demanding of implant placement
2. Margins need to be more supra- gingival
3. No visible access hole
4. More difficult to create emergence profile
5. Risk of peri-cementitis
6. Cheaper than screw retained
Fit appointment

Cement Retained Prosthesis

1. Remove healing abutment
2. Position abutment using jig
3. Ensure hex is engaged
4. Torque into place to 30Ncm wait and then re-torque
5. Try the crown and check fit and occlusion
6. Seal abutment access with cotton or PTFE and composite
7. Cement crown & meticulously remove excess
8. Take PA to check for seat and any remaining excess cement

Fit appointment

Screw Retained Prosthesis

1. Remove healing abutment
2. Position restoration and ensure hex is engaged
3. Take PA to check seat
4. Torque into place to 30Ncm, wait few mins and re-torque
5. Seal abutment access with cotton or PTFE and composite
6. Check static and dynamic occlusion
7. Take PA to check fit

Restoring a single implant

Restoring a single implant - imps

Model with analogue Abutment in-situ Abutment transfer jig Final crown

Abutment in-situ Abutment removed Impression coping Impression with coping

Restoring a single implant - lab

Restoring a single implant - fit

Treatment Planning in the Partially Dentate

Manoj S Parmar
BDS, MFDS, MJDF, MSc (impl), PGCert(rest), PGCert (MedEd)
Aim

To have an appreciation of the factors involved when deciding on the number, size and positions of implants in the partially dentate.

Considerations

1. Available bone
2. Bone quality
3. Soft tissue aesthetics
4. Loading/occlusion
5. Cost

Implant size

1. Tooth size
2. Distance from adjacent tooth/implant
3. Amount of facial bone
4. Amount of interdental bone
5. Loading forces

Horizontal defect around implant of approximately 0.5mm – 1.4mm

Classification of spaces

1. Single tooth space
2. Multiple tooth space
   • short edentulous spaces
   • extended edentulous spaces
1. Edentulous arch

1. Single tooth space
2. Multiple tooth space
1. Edentulous arch

Single tooth space

Key Points:
- Keep distance of 1.5mm between shoulder of implant and adjacent teeth
- Select implant according to M-D and B-L space available
- Width of implant to reflect the size of the tooth it is replacing
Classification of spaces

1. Single tooth space
2. Multiple tooth space
   1. Edentulous arch

Multiple tooth spaces

1. Short span:
   a. 2 adjacent missing teeth
   b. 3 adjacent missing teeth

2. Extended span:
   a. 4 missing teeth
   b. more than 4 missing teeth

Multiple tooth spaces

2 missing teeth

Key points:
• Keep distance of 1.5mm between shoulder of implant and adjacent teeth
• Minimum of 3mm between implants

Multiple tooth spaces

2 missing teeth – options
Multiple tooth spaces

3 missing teeth
Key points:
• Usually only 2 implants required
• F/F configuration ideal
• or cantilever
• or 3 individual or splinted crowns if using short implants (<8mm)

3 missing teeth – options

- Fixed - Fixed
- Cantilever
- 3 Short implants
Multiple tooth spaces

4(+) missing teeth

Key points:
- Not always necessary to replace all the teeth
- 2 implants enough in anterior sextant
- 2-3 implants in the posterior sextant
- Start with pre-determined prosthetic plan

4 Missing – Anterior

- In centrals position
- In laterals position
- Every other tooth with one cantilever
- One implant for each tooth

4 Missing – Anterior

- In centrals position
- In laterals position
- Every other tooth with one cantilever
- One implant for each tooth

4 Missing – Anterior

- In centrals position
- In laterals position
- Every other tooth with one cantilever
- One implant for each tooth
Multiple tooth spaces

4 Missing – Anterior
- In centrals position
- In laterals position
- Every other tooth with one cantilever
- One implant for each tooth

4 Missing – Posterior
- Decide on how many teeth need replacing
  1. Premolar only

Decide on how many teeth need replacing
  2. First molar

3. Second molar

Example configurations
Maxilla
- 2 implants in first premolar and first molar region avoiding the sinus
Multiple tooth spaces

4 Missing – Posterior
Example configurations

Maxilla
3 implants in first premolar, second premolar and second molar region with sinus augmentation

Mandible
2 implants in first premolar and second molar sites

Classification of spaces
1. Single tooth space
2. Multiple tooth space
1. Edentulous arch

Edentulous ridge
Aim

Identify treatment options for the edentulous arches and discuss how to select the most appropriate solution for your patient.

Considerations

1. The changing anatomy of the maxilla and mandible post extraction
2. Problems encountered when treating the edentulous arches
3. Treatment goals
4. Identification of treatment options
5. Principles of treatment planning
6. Treatment sequence
7. Costs

Anatomical changes in edentulous jaws

- Maxillae resorb superiorly, posteriorly and medially
- Mandibles resorb inferiorly, anteriorly and laterally
- Net effect is that you end up with a class 3 relationship between the jaws

Anatomical changes in edentulous jaws

Problems in the maxilla

Bone quality

<table>
<thead>
<tr>
<th>Bone Density</th>
<th>Description</th>
<th>Tactile Analogue</th>
<th>Typical Anatomic Location</th>
<th>Hounsfield Units</th>
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<tr>
<td>0.5</td>
<td>Spongy</td>
<td>Toothpick</td>
<td>Jaws</td>
<td>0-100</td>
</tr>
<tr>
<td>0.25</td>
<td>Compact</td>
<td>Nailhead</td>
<td>Jaws</td>
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<td>密緻骨</td>
<td>Pinhead</td>
<td>Jaws</td>
<td>500-750</td>
</tr>
</tbody>
</table>

Bone quantity

Shape

Upper jaws
Problems in the maxilla

Maxillary Sinus

Problems in the mandible

Bone quality

Problems in the mandible

Bone quantity

Problems in the mandible

IDN

Problems in the mandible

Jaw fracture

Problems in the mandible

Mental foramen and anterior loop

Problems in the mandible

Mylohyoid ridge
**Treatment goals**

1. **Improved function** – chewing
2. **Aesthetics** – Smile line, lip contours, pink & white
3. **Speech** – Palatal contour and position of teeth
4. **Self Confidence** – Retention and stability

**Prosthetic Decisions**

<table>
<thead>
<tr>
<th>Category</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mode of retention</td>
<td>Screw, cement, or combination</td>
</tr>
<tr>
<td>Prosthetic material blend</td>
<td>Metal, zirconium, porcelain, acrylic resin, composite resin</td>
</tr>
<tr>
<td>Framework design</td>
<td>Single, fragmented, or combination</td>
</tr>
<tr>
<td>Use of gingiva-colored prosthetic material</td>
<td>Denture-base acrylic resin, gingival porcelain, gingival composite resin, or none</td>
</tr>
</tbody>
</table>

**Treatment options - overview**

1. **Removable solutions:**
   a. Conventional F/F
   b. Implant retained O/D
   c. Mini implants
2. **Fixed solutions:**
   a. Ceramo-metal bridge(s)
   b. Hybrid bridge
   c. All-on-4
   d. Zygomatic implants

**Treatment options - mandible**

For mandible: McGill Consensus Statement 2000 states “the mandibular two-implant overdenture was the first choice minimally invasive treatment choice for edentulous patient.”

**Treatment options - maxilla**

- Maxilla much more complex and decision making can be quite confusing.
- Decisions include:
  - Fixed vs Removable
  - Correct number and positions of implants
  - One unit bridge vs segmented bridge
  - Materials

**Overdentures**

- Not a fall-back solution
- Indicated when substantial resorption has occurred
- More flexible implant placement
- Easier to clean
- Most affordable
- Easiest to repair or renew
- But still a removable prosthesis

**Overdentures**

- 2 implants in mandible: inter-foramina
- 4 implants maxilla: anterior to sinus
- Good AP spread – minimise cantilevering forces
- Minimise divergence to avoid the need to use bars
- Locators/Kerrators provide excellent retention and serviceability
- Angled versions available to correct minor discrepancies in angulation
**Overdentures**

- Excellent aesthetic result especially when bone loss is minimal
- Less flexible implant positions
- More technically demanding
- Longer treatment time
- Most expensive solution
- More difficult to repair/renew
- More difficult for patients to keep clean

**Ceramo-metal bridge**

- 6-8 implants in the maxilla – depending on bridge design
- 4-6 implants in mandible – may need to cantilever
- Bridge can be one piece or segmented
- Several bridge design options

**Maxilla – 8 implants with segmented bridge**

**Mandible – 6 implants with segmented bridge**

**Hybrid Bridge**

- 4 axial implants in mandible
- 6 axial implants in maxilla
- Limited by anatomical structures
- Supra-structure has metal sub-frame which is then layered with composite or can use denture teeth and pink acrylic
- Good solution for moderate bone loss cases
Hybrid Bridge

- Offers the advantage of a fixed solution whilst being able to replace hard and soft tissue also
- Can usually be supported by fewer implants than fixed ceramo-metal
- Can be repaired relatively easily but will need replacing in 5-10 years
- Can achieve excellent aesthetics
- More affordable for patient than ceramo-metal bridge

Maxilla – 6 axial implants

Maxilla – 6 implants with cantilever

Mandible – 4 implants

All-on-4

- Indicated where straight implants cannot be placed parallel to each other. 4 implants
- To avoid sinus augmentation, implants can be positioned and tilted anterior to the anterior sinus wall
- To avoid augmentation procedures in atrophic mandibles, the implants can be positioned and tilted anterior to the mental foramen
- Can be immediately loaded if conditions are favourable

Maxilla – 4 tilted implants

Patient factors

1. Aetiology of tooth loss
2. May be partially dentate with some good teeth
3. How long has the patient been edentulous
4. Hard and soft tissue loss
5. Palatal coverage
6. Availability for treatment
7. Finances

Principles of treatment planning

1. Correct Incisal edge position
   - Determines tooth display
   - Occlusal plane
   - Speech – F & V sounds vermilion border
   - OVD
Principles of treatment planning

2. Cervical edge position:
   • Average central incisor is 10.5mm in length and 8.5mm width
   • This then leaves the gap between the cervical margin and the residual ridge
   • Decisions need to be made whether to fill this space with pink acrylic/composite/porcelain or make the teeth longer. This depends on..........

Principles of treatment planning

3. Maxillary lip position:
   • Position of the upper lip in maximum smile
   • Average smile displays 75-100% of tooth
   • High lip line displays 100% of tooth and gingiva
   • Will the junction between prosthesis and residual ridge (PTJ) be visible – gummy smile?
   • How can this be hidden?

Principles of treatment planning

4. Gingival display - gummy smile caused by:
   a. Vertical maxillary excess
   b. Dento-alveolar extrusion (class 2 div II)
   c. Passive dento-alveolar compensation
   d. Hyper-mobile lip

Solutions:
   1. Le Fort 1 osteotomy or alveolopasty
   2. Match the pink acrylic/composite to the mucosa
   3. Botox

Treatment sequence – partially dentate

1. Decision to keep or XLA
2. The remaining teeth can be useful for:
   a. Providing occlusal stops and info on OVD
   b. Info on incisal edge position
   c. Info on tooth inclinations
   d. Info on tooth form and shade
   e. Serving as abutments for temporary bridgework or P/ whilst waiting for implants to integrate

Treatment sequence – edentulous

1. Create conventional F/F with ideal tooth positions and optimum aesthetic outcome
   • In pts with mild to moderate bone loss, this should be performed without the anterior labial flange to visualise tooth positions in relation to ridge
   • In pts with significant atrophy, the denture teeth will generally be positioned more anterior and inferior to ridge and thus flange and base plate req
Treatment sequence – edentulous

2. This then be used to create:
   • The interim prosthesis
   • Radiographic stent
   • Surgical guide

3. Take a CBCT
   with the radiographic stent to establish bone volume

4. Decide on prosthetic solution based on:
   • Tissue replacement required (pink & white)
   • Availability of bone and need for grafting/sinus lift
   • Number of implants
   • Pts finances

Costs

1. Planning time and wax-ups x £?
2. CBCT imaging, radiographic and surgical stents - £250
3. Guided surgery inc CBCT - £500
4. Number of Implants x £1000
5. Overdenture x £2000
6. Hybrid x £6000
7. Ceramo-metal - £10,000 plus
8. Must discuss lab costs with technician before quoting

Fees planning

Surgical Fees
Inc post-op care, second stage surgery, coverscrew/healing abutment

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Implant placement</td>
<td>£1000</td>
</tr>
<tr>
<td>Augmentation</td>
<td>£295</td>
</tr>
<tr>
<td>Crestal sinus lift</td>
<td>£295</td>
</tr>
<tr>
<td>Lateral window sinus lift</td>
<td>£795</td>
</tr>
<tr>
<td>Block bone graft</td>
<td>From £1000</td>
</tr>
</tbody>
</table>

Prosthetic Components and Lab costs
Inc analogue, abutments and crown with non-precious metal

<table>
<thead>
<tr>
<th>Restoration</th>
<th>Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cement retained bonded crown</td>
<td>£290</td>
</tr>
<tr>
<td>Screw retained bonded crown</td>
<td>£290</td>
</tr>
<tr>
<td>Bonded porcelain pontic</td>
<td>£140</td>
</tr>
<tr>
<td>Zirconia abutment &amp; Emax crown</td>
<td>£395</td>
</tr>
<tr>
<td>Temporary abutment &amp; crown</td>
<td>From £100</td>
</tr>
<tr>
<td>Precious metal</td>
<td>£rate/gram</td>
</tr>
</tbody>
</table>

Referral process

1. Send email to: manoj@aidp.co.uk with pt details, x-rays and clinical photos
2. Send letter to: 208 Swanshurst Lane, Moseley, Birmingham. B13 0AW
3. Send SMS to: 07958 42 46 43
4. Visit website: www.aidp.co.uk
Professional code of conduct

Our pledge to you:
1. We promise to return your patient back to you after your referral
2. We promise to develop your skill while at the same time you earn CPD hours
3. We promise to support and mentor you with our team
4. We promise to involve you in decision making with your patient
5. We promise to look after your patient and offer the very best care for them

Why introduce to your practice?

1. Additional professional skills – increased confidence
2. Professional services for patients
3. No risk – No CapEx, Expertise without cost
4. Turn-key support – you’re in safe hands
5. CPD Study group – two birds with one stone
6. Easy profits – I do all the work!

Leading mentoring support in a friendly, informal and safe environment

Summary & Action plan

1. Extraction information leaflet with options to restore edentulous spaces
2. Look for a simple first case – premolar/molar
3. Lets get started!!!