Goals and Objectives

- Continuation of the Synergy Training Program®
- To increase proficiency in identifying dental implant patients
- To increase proficiency in treatment planning dental implant patients

Goals and Objectives

- To learn to transition patients from teeth to dental implants
- To understand the “New Mixed Dentition”
- To keep up to date with new technologies and techniques

Eligibility

- Surgeon must have successfully sponsored a Synergy Training Program® in the past.
- Restorative dentist must have successfully completed a Synergy Training Program.

Program Outline

Session 1

- Course Introduction
  - Review of GSTP course schedule
  - Patient requirements for the course
- Treatment planning the patient transitioning from teeth to dental implants

Program Outline

Session 1

- Treatment planning for complex situations in the anterior aesthetic zone
  - Single tooth edentulous space -- single implants
  - Multiple missing teeth -- multiple implants
  - The influence of gingival biotype on treatment planning
  - Delayed provisionalization
  - Immediate non-occlusal loading -- immediate provisionalization

Program Outline

Session 1

- Treatment planning session
  - Presentation of completed cases from the previous STP
  - Trouble shooting treatment plans from the previous STP
  - Presentation of new cases for the GSTP®
Program Outline
Session 2

- New technologies for implant dentistry
  - CAD/CAM procedures and techniques
    - Encode® Complete
    - CAM StructSURE® bars
  - CT Guidance
    - Navigator™

Program Outline
Session 2

- Treatment planning session
  - Presentation of completed cases from previous sessions
  - Trouble shooting treatment plans from the previous session
  - Presentation of new cases for the GSTP®

Program Outline
Session 3

- Transitioning the full arch dental implant patient from teeth to dental implants
  - Temporization options
    - Immediate Occlusal Loading of full arch dental implants
      - Mandible
      - Maxilla

Program Outline
Session 3

- Transitioning the full arch dental implant patient from teeth to dental implants
  - Case design considerations
    - Number and placement positions of implants
    - Choice of restorative material
    - Attachment techniques

Program Outline
Session 3

- Treatment planning session
  - Presentation of completed cases from previous sessions
  - Trouble shooting treatment plans from the previous session
  - Presentation of new cases for the GSTP®

Program Outline
Session 4

- Occlusion
  - The re-restoration of the existing dental implant patient
    - Diagnosis and planning
    - Long term considerations and complications
    - Maintenance
    - Managing complications

Program Outline
Session 4

- Treatment planning session
  - Presentation of completed cases from previous sessions
  - Trouble shooting treatment plans from the previous session
  - Presentation of new cases for the GSTP®

Patient Requirements

- NEW treatment plans presented by each participant at all Sessions
- At least one case presented by the participant with treatment to commence and follow throughout the course
- Participants are encouraged to bring more than one case to the session.
- 3 to 5 Cases Each!

Handouts

- Cases are to be written up in the following format
  - Chief complaint
  - Dental history
  - Medical history
  - Charting (dental and periodontal)
  - Problem List / Assessment / Diagnosis
  - Treatment recommendations
  - Prognosis
Patient Selection Criteria

- Patient in good health
  - ASA class 1 or 2
- Patient requires at least one tooth replaced
- Patient needs to consent to be a part of the course and be willing to allow photographs of their dentition
- Grafting acceptable
  - May delay treatment

Treatment planning the patient transitioning from teeth to dental implants

The Transition from Teeth to Dental Implants

Challenges:
- Management of patient expectations
- Design Considerations
  - Fixed prosthesis vs. removable prosthesis
  - No flange vs. flange

Vertical Space Requirements

- Overdentures
  - 15 – 17 mm
- Hybrid Dentures
  - 13 – 15 mm
- Ceramo-Metal
  - 9 – 13 mm

The Transition from Teeth to Dental Implants

It is imperative to plan for long term prosthetics.

As a general rule, if a fixed restoration is fabricated for a partially edentulous clinical situation, then the patient is committing to additional fixed implant restorations with similar prosthetic designs when additional teeth are lost in the future.

The reverse treatment scenario may also apply.

Step By Step "Phased" Treatment Plan:
1) Extraction of all teeth with poor prognosis with initial provisionalization
2) Impressions and diagnostic wax up to full contour of all missing teeth
3) Fabrication of implant radiographic guides or surgical guides
4) Placement of all endosseous implants
5) Integration and uncovering as needed
6) Diagnostic wax-up to full contour and complete provisionalization
7) Final transfer impressions and fabrication of definitive prosthesis
8) Insertion of definitive prosthesis
9) Maintenance / recall

The Transition from Teeth to Dental Implants

Fixed with no flange

The Transition from Teeth to Dental Implants

Fixed vs. Removable
The Transition from Teeth to Dental Implants

Removable with flange

The Transition from Teeth to Dental Implants

Pink aesthetics vs. natural aesthetics

The Transition from Teeth to Dental Implants

Porcelain vs. acrylic

Clinical Case #1

Clinical Case #2

Treatment Planning

The Edentulous Patient

Where do we begin?

Clinical Scenarios

(Edentulous Mandible)

1. Conventional Denture
2. Implant Retained Overdenture
3. Implant Supported Overdenture
4. Hybrid Denture
5. DIEM

Clinical Scenarios

(Edentulous Mandible)

1. Conventional Denture
2. Implant Retained Overdenture
3. Implant Supported Overdenture
4. Hybrid Denture
5. DIEM

Clinical Scenarios

(Edentulous Mandible)
Clinical Scenarios (Edentulous Maxilla)

1. Conventional Denture
2. Implant Retained Overdenture
3. Implant Supported Overdenture
4. Hybrid Denture
5. DIEM

Clinical Scenarios (Edentulous Mandible)

1. Conventional Denture
2. Implant Retained Overdenture
3. Implant Supported Overdenture
4. Fixed (C & B)
5. DIEM

Classification of Implant Overdentures

- Implant Retained / Tissue Supported
  - "Implant Assisted"

- Implant Retained / Implant Supported
  - "Implant Supported"

The Transition from Teeth to Dental Implants

- Challenges:
  - Management of patient expectations
    - Functional Expectations
    - Functional Reality
    - Comfort
  - Management of patient expectations
    - As a general rule, patients expect to function as well as or better than they did before they lost their natural teeth.
    - These expectations may not be realistic due to many factors:
      - Case design/implant number
      - Occlusal material
      - Prosthetic design considerations: Fixed vs. Removable
The Transition from Teeth to Dental Implants

**Challenges:**
- Management of patient expectations
  - Functional Realities
    - Implant Assisted Overdentures:
      - 2 implant-assisted mandibular overdenture functions like a denture with added retention.
      - 4 implant-assisted maxillary overdenture functions like a denture with added retention.
    - Food trapping probable → PAIN

**Challenges:**
- Management of patient expectations
  - Functional Realities
    - Implant Supported Overdentures:
      - No tissue support → functional support may resemble fixed designs.
      - Locking bar attachments most retentive design → most like fixed design.
      - Prosthesis remains removable → psychological limitations.
      - Food trapping possible → NO PAIN

The Transition from Teeth to Dental Implants

**Challenges:**
- Management of patient expectations
  - Functional Realities
    - Implant Assisted Overdentures:
      - 2 implant-assisted mandibular overdenture functions like a denture with added retention.
      - 4 implant-assisted maxillary overdenture functions like a denture with added retention.
    - Food trapping probable → PAIN

**Challenges:**
- Management of patient expectations
  - Functional Realities
    - Implant Supported Overdentures:
      - No tissue support → functional support may resemble fixed designs.
      - Locking bar attachments most retentive design → most like fixed design.
      - Prosthesis remains removable → psychological limitations.
      - Food trapping possible → NO PAIN

Treatment Planning the Patient Transitioning from Teeth to Dental Implants

Treatment planning for complex situations in the anterior aesthetic zone

Biologic Width & Platform Switching

Diameter Driven Treatment Planning: Maxilla

<table>
<thead>
<tr>
<th>Tooth</th>
<th>Diameter*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central Incisor</td>
<td>5mm</td>
</tr>
<tr>
<td>Lateral Incisor</td>
<td>3.4 or 4mm</td>
</tr>
<tr>
<td>Canine</td>
<td>5mm</td>
</tr>
<tr>
<td>Premolars</td>
<td>4mm</td>
</tr>
<tr>
<td>Molar</td>
<td>6mm</td>
</tr>
</tbody>
</table>

Platform chosen based on the dimension of the tooth 3mm apical to the CEJ.

The Rule of 3’s:

3mm from the labial surface to the center of the implant
3mm from the adjacent tooth to the implant
3mm apical to the center of labial sulcus
Implants with smaller than “ideal” diameter restorative platforms may need to be countersunk deeper for proper emergence through the soft tissue.

Mapping

- How much space should be treatment planned between dental implants?
- How much space should be treatment planned between dental implants and teeth?
- Why is this important?

Biologic Width

Becomes the Driver of Crestal Bone Remodeling and the Resulting Support Scaffolding for the Soft Tissues

Evidence Based Research

- Epithelial attachment and connective tissue form the physiologic attachment apparatus around teeth

Conclusion: There appears to be a minimum of 3mm tissue thickness separating the bone from the oral environment with 2mm being the area of attachment tissue (Biologic Width).

Bone Level is Determined By:
- Soft tissue thickness of approximately 3mm (1mm sulcus, 2mm biologic width)
- Exposure to the oral environment, combined with the location of the Implant-Abutment Junction (IAJ) and of the Inflammatory Connective Tissue (ICT) Infiltrate
- Surface Topography

Biologic Width Surrounding Implants

- The implant-abutment junction (IAJ) being exposed to the oral environment, triggers a cascade of tissue reactions:
  - The 1mm of connective tissue moves apically to protect the bone from potential irritants
  - The connective tissue will always cover itself with about 1mm of epithelium
- Therefore, the 2mm biologic width forms below the micro-gap
- The bone will remodel to allow for this more apical formation of the biologic width.
Summary of Biologic Evidence

- When open to the oral cavity, the bone needs approximately 3mm of tissue for protection, this is the first prerequisite.
- The presence of either an implant-abutment interface or a rough smooth interface may establish an inflammatory zone with a vertical dimension of 0.5mm to 1.1mm and a lateral dimension of 0.2mm to 0.4mm.
- There is a biologic need to maintain an inflammation-free connective tissue zone of about 1mm apical to the inflammatory zone above the bone.
- The combination of these two numbers approximates the classic 2mm number reported in the literature as the vertical distance from the platform to the bony crest and appears to explain the "angular" crestal remodeling configuration.

Clinical Significance of the Formation of the Biologic Width

- Mid Facial Recession and Interproximal Space Between Two Implants

Platform Switching™

- The placement of one size smaller prosthetic component on an implant seating surface.
- The objective is to move the implant-abutment connection in from the implant shoulder.
Clinical Case

Will soft tissue follow the bone around the implant or the adjacent teeth?

Clinical Case #1

Are there any benefits to platform switching with single tooth implants if we can maintain at least 1.5mm of space between the implant platform and the adjacent teeth?

Problem List

- Violation of the Map
  - Poor implant diameter
  - Poor implant angulation
  - Poor implant position
  - Not platform switched
Clinical Case #2

Treatment planning for complex situations in the anterior aesthetic zone

The Single tooth edentulous space

Multiple Missing teeth

Total = 7mm

Two Missing Teeth

Total = 16mm

Two Missing Teeth

Total = 12.5mm

Two Missing Teeth
Two Missing Teeth

Clinical Case #1

Clinical Case #2

Clinical Case #3
Clinical Case #4

Three Missing Teeth

TOTAL = 23mm

Three Missing Teeth

TOTAL = 21mm

Three Missing Teeth

TOTAL = 18.75mm

Four Missing Teeth

TOTAL = 30mm

Three Missing Teeth

Four Missing Teeth

Four Missing Teeth
Clinical Case #1

Clinical Case #2

Clinical Case #3

Five Missing Teeth
Five Missing Teeth

Five Missing Teeth

Five Missing Teeth

Six Missing Teeth

Six Missing Teeth

Six Missing Teeth
Will the aesthetics of the case be guaranteed if mapping principles are followed and not violated?

Six Missing Teeth

Mapping is definite
Violation of the map leads to poor aesthetics
Adherence to the map does not guarantee aesthetics
Biotype, smileline, & the aesthetics of the adjacent teeth also influence final results

Treatment planning for complex situations in the anterior aesthetic zone

The influence of Gingival biotype on treatment planning
**BIOTYPES**

**Thin / Scalloped Biotype**
- Distance from papilla height to facial gingival margin is large
- Short contact area towards the middle to incisal third
- Tooth form is tall and tapered with large CL/CW ratio
- Thin band of attached mucosa
- Probably relates to initial tooth eruption through thin band of attached tissue
- Thicker facial bone

**Thick / Flat Biotype**
- Distance from peak of papilla to facial gingival margin is small
- Long broad contact areas from incisal to cervical third
- Tooth form is short and square with small CL/CW ratio
- Thick band of attached mucosa
- Probably relates to initial tooth eruption through a thick band of attached tissue
- Thinner facial bone

**Thin Biotype**
- Gingival recession common with bone level changes
- Tissue tears easily and does not heal well
- Thin tissue shows underlying metal
- CT grafts better than hard tissue for final augmentation to thicken tissue for better color...converts thin to thick (Kan et al)

**Thick Biotype**
- Bone levels change with less recession
- Scars are easier to hide
- Hard tissue augmentation for flat ridges works well at time of implant placement

Facial gingival recession of thin periodontal biotype seems to be more pronounced than that of thick biotype. Biotype conversion around both natural teeth and implants with subepithelial connective tissue graft has been advocated, and the resulting tissues appear to be more resistant to recession.


Treatment planning for complex situations in the anterior aesthetic zone

Delayed Provisionalization
Delayed Provisionalization

**Techniques:**
- Laboratory fabrication
- Chairside fabrication

1. Place implant
2. Fabricate surgical index or index impression
3. Laboratory fabricates a working cast from the surgical index or index impression
4. Wax-up to full contour and duplicate
5. Fabricate provisional restoration
6. Implant uncover
7. Insertion of completed abutment and provisional

Delayed Provisionalization

**Techniques:**
- Laboratory fabrication

1. Fabricate surgical index or index impression
2. Laboratory fabricates a working cast from the surgical index or index impression
3. Wax-up to full contour and duplicate
4. Fabricate provisional restoration
5. Implant uncover
6. Insertion of completed abutment and provisional

Surgical Index Fabrication

Delayed Provisionalization

**Techniques:**
- Chairside fabrication

1. Fabricate provisional shell
2. Implant uncover
3. Place provisional abutment and “mark facial”
4. Place abutment on lab holder and prepare
5. Place abutment on implant and refine prep
6. Pack cotton and wax in screw channel
7. Line provisional shell with material of choice
8. Place abutment on lab holder with lined provisional and finish shaping the provisional
9. Insertion of completed abutment and provisional

Delayed Provisionalization

**Techniques:**
- Chairside fabrication

1. Fabricate provisional shell
2. Implant uncover
3. Place provisional abutment and “mark facial”
4. Place abutment on lab holder and prepare
5. Place abutment on implant and refine prep
6. Pack cotton and wax in screw channel
7. Line provisional shell with material of choice
8. Place abutment on lab holder with lined provisional and finish shaping the provisional
9. Insertion of completed abutment and provisional

Conversion of Interim RPD

Delayed Provisionalization

**Techniques:**
- Chairside fabrication

Immediate Non-Occlusal Loading: Non-occlusal Loading

- Partially Edentulous Patients
- 93 implants in 38 partially edentulous patients
- All were immediately provisionalized with prefabricated abutments and acrylic provisional restorations
- Implants were restored at 8 to 12 weeks and followed for 18 months minimum
- 97.4% success rate with only .76mm of bone loss noted

Drago and Lazarra. JOMI, 2004

Immediate Placement: Non-occlusal Loading

- Partially Edentulous Patients
- 93 implants in 38 partially edentulous patients
- All were immediately provisionalized with prefabricated abutments and acrylic provisional restorations
- Implants were restored at 8 to 12 weeks and followed for 18 months minimum
- 97.4% success rate with only .76mm of bone loss noted

Drago and Lazarra. JOMI, 2004
Immediate Placement: Non-occlusal Loading

- Partially Edentulous Patients
  - 35 implants in 35 partially edentulous patients
  - All were immediately provisionalized with prefabricated abutments and acrylic provisional restorations
  - Implants were restored at 6 months and followed for 12 months
  - 100% success rate with only .55mm of papilla loss noted and .26mm of bone loss

Kan, et. al., JOMI. 2003

INOL Provisionalization

- Techniques:
  - Chairside fabrication
  1. Fabricate provisional shell
  2. Implant placement
  3. Place provisional abutment and "mark facial"
  4. Place abutment on lab holder and prepare
  5. Place abutment on implant and refine prep
  6. Park cotton and wax in screw channel
  7. Line provisional shell with material of choice
  8. Place abutment on lab holder with lined provisional and finish shaping the provisional
  9. Insertion of completed abutment and provisional -- consider venting prior to cementation

PreFormance™ Post

- For Cement-Retained Restorations
  - Straight and 15º PreAngled
  - PEEK Material
  - 180-Day Use
  - For Side for Anterior
  - Aesthetics: Collar Heights
  - Aesthetic Color
  - Strong Titanium Alloy Cap
  - QuickSeat® Connection or External Hex
  - Color-Coded for Certain® Implants
  - Carbide Bur, E Cutter Lab Bur, 180 Grit Diamond Bur

PreFormance™ Temporary Cylinder

- For Screw-Retained Restorations
  - PEEK Material
  - 180-Day Use
  - Knurled Surface For Mechanical Retention
  - QuickSeat® Connection or External Hex
  - Titanium Alloy Interface With QuickSeat® Connection
  - Color-Coded for Certain® Implants
  - Non-Hexed Also Available

INOL Requirements

- The soft tissue profile must be pleasing to the patient preoperatively
- The patient must be a candidate for immediate non-occlusal loading
- Implants torque in at 30NCM or greater
- The patient has a suitable occlusion for non-occlusal function
- The patient is a healthy non-smoker
- The patient understands the functional restrictions

INOL: Immediate Non-occlusal Loading

- Tooth present and hopeless
- Tooth is aesthetic: Favorable Biotype
  - Meets Criteria
  - INOL
  - Does Not Meet Criteria
  - INOL
- Tooth is un-aesthetic: Unfavorable Biotype
  - Site Development
  - Grafting
  - Restorative Dentistry
  - Implant Placement
  - Index impression vs. Surgical Index
  - Alternative Provisional: Ovate Flipper / AEFPD / IR
  - Tissue Training & Integration
  - Keep or Change Abutment (Stock or Custom)
  - Complete Case
  - 2nd Stage Uncovery & Delayed Provisionalization
  - Tissue Training & Integration

Homework For Session 2

- Complete, update & document “in progress” cases
- Select and work-up NEW PATIENTS
- Documentation
  - Chief complaint
  - Case history, dental and periodontal charting
  - Mounted casts
  - Clinical photographic images
  - Radiographs
  - FMX, panoramic, tomograms
- Prepare handouts for the group
- Review and abstract literature

INOL: Immediate Non-occlusal Loading

- Tooth missing
  - Favorable Edentulous Site
  - Meets Criteria
  - INOL
  - Does Not Meet Criteria
  - INOL
- Tooth missing
  - Unfavorable Edentulous Site
  - Site Development
  - Grafting
  - Restorative Dentistry
  - Implant Placement
  - Index impression vs. Surgical Index
  - Alternative Provisional: Ovate Flipper / AEFPD / IR
  - Tissue Training & Integration
  - Keep or Change Abutment (Stock or Custom)
  - Complete Case
  - 2nd Stage Uncovery & Delayed Provisionalization
  - Tissue Training & Integration

www.easprosthodontics.com

- For Doctors
  - Teaching Presentations
  - STP Session 1 Handout
  - Password: GSTPSession1loc21
Thank You!

Steven J. LoCascio, D.D.S.
308 Prosperity Drive, Suite 201
Knoxville, Tennessee 37923
steven@eastnprosthodontics.com

www.eastnprosthodontics.com