1. Single Tooth Implant Crowns

Single Tooth Implant Crowns

Nopsaran Chaimattayompol, DMD, MPH
Assistant professor and Division Head of
Fixed Prosthodontics and Implant Dentistry

(c) 2003, Nopsarin Chaimattayompol, D.M.D.

2. Session 8: Single Tooth Implant Crowns: Slide 2

(c) 2003, Nopsarin Chaimattayompol, D.M.D.
3. Introduction

Introduction

Single tooth replacement possibilities:
• Fixed Partial Dentures
• Resin Bonded Fixed Partial dentures
• Removable Partial Denture
• Single tooth implant crowns

*Each of the above has its positives and negatives*

(c) 2003, Nopsonin Chaimattayompol, D.M.D.

4. Patient Considerations

Patient Considerations

• What should the patient know?
• Students should be able to discuss all “pros” and “cons” of conventional prosthodontic versus implant therapy

(c) 2003, Nopsonin Chaimattayompol, D.M.D.
5. Fixed Partial Denture

Fixed Partial Denture

- Need to shape adjacent teeth
- Risks to need endodontics and post
- Expensive
- Hard to clean

(c) 2003, Nopsarin Chaimattayompol, D.M.D.

6. Removable Partial Denture

Removable Partial Denture

- Removable
- Large prosthesis for single tooth replacement
- Cost effective
- Easy to clean
- May show clasps

(c) 2003, Nopsarin Chaimattayompol, D.M.D.
7. Resin Bonded Fixed Partial Denture

Resin Bonded Fixed Partial Denture

- Need shallow incisal guidance
- Need large lingual surface of the abutment teeth
- Hard to clean
- Can debond
- Minimum tooth preparation
- Somewhat cost effective
- Esthetic

(c) 2003, Nopserin Chaimattayompol, D.M.D.

8. Session 8: Single Tooth Implant Crowns: Slide 8

(c) 2003, Nopserin Chaimattayompol, D.M.D.

Single Implant Crown

- Expensive
- Require surgical procedure
- Require time for healing/osseointegration
- Closest to replacing what lost
- Easy to clean
- Esthetic

(c) 2003, Nopsarin Chaimattayompol, D.M.D.

10. Smile Line

SMILE LINE

(c) 2003, Nopsarin Chaimattayompol, D.M.D.
11. Space Analysis

SPACE ANALYSIS

(c) 2003, Nopsarin Chaimattayompol, D.M.D.


(c) 2003, Nopsarin Chaimattayompol, D.M.D.

(c) 2003, Nopsarin Chaimattayompol, D.M.D.


(c) 2003, Nopsarin Chaimattayompol, D.M.D.
15. Oops!

OOPS!

(c) 2003, Nopson Chaimattayompol, D.M.D.

16. Ridge Anatomy

Ridge Anatomy

- Resorption
- Concavities
- Anatomical Landmarks

How do these factors affect the outcome of form, function, and esthetics of restoration?

(c) 2003, Nopson Chaimattayompol, D.M.D.
17. Ridge Deficiencies

Ridge Deficiencies

(c) 2003, Nopsarin Chaimattayompol, D.M.D.

18. Ridge Deficiencies

Ridge Deficiencies

(c) 2003, Nopsarin Chaimattayompol, D.M.D.
19. Surgical Enhancement

**Surgical Enhancement**

**Site Development**
- Hard/Bone augmentation
- Soft tissue augmentation

(c) 2003, Nopssarin Chaimattayompol, D.M.D.


(c) 2003, Nopssarin Chaimattayompol, D.M.D.
21. Session 8: Single Tooth Implant Crowns: Slide 21

22. Type of Single Tooth Abutment

**Type of Single Tooth Abutment**

- Prefabricate abutment for screw retained prosthesis
- Prefabricate abutment for cement retained prosthesis—Non Adjustable
- Prefabricate abutment for cement retained prosthesis—Adjustable
  - All ceramic abutment—straight/angled
  - All metal abutment—straight/angled
- Custom cast abutment
- Modified custom cast abutment

(c) 2003, Nopsarin Chaimattayompol, D.M.D.
23. Single Tooth Implant Abutment

Single Tooth Implant Abutment

- Anti Rotational
- Be able to index
- High preload for the abutment screw to prevent screw loosening
- High compressive and tensile strength to prevent fracture e.g. ceramic abutment

(c) 2003, Nopsonin Chaimattayompol, D.M.D.

24. Abutment Selection

Abutment Selection

- Do intraorally:  
  Remove healing abutment and measure with periodontal probe  
  Save time, cost and make one impression  
  Unpredictable outcome

- Do in laboratory:  
  Make implant level impression, form soft tissue level implant cast; make some measurement on cast (PAIT)  
  More time, cost and possibly additional impression  
  Predictable outcome

(c) 2003, Nopsonin Chaimattayompol, D.M.D.
25. Abutment Selection

Abutment Selection

Indirect Method (Laboratory Setting)
1. P=Position
2. A=Angulation
3. I= Interoclusal Distance
4. T=Tissue depth/Contour

(c) 2003, Nopsarin Chaimattayompol, D.M.D.

26. How to use PAIT

How to use PAIT

1. Make implant-level soft tissue cast
2. Mount cast
3. Cover implant with aluminum foil
4. Set up missing tooth to ideal form and position
5. Duplicate a wax up cast
6. Fabricate a clear thermoplastic template
7. Attach guide pin(s) to the implant
8. Retrofit and make access hole to facilitate seating of the clear template
9. Use PAIT to analyze proper abutment selection

(c) 2003, Nopsarin Chaimattayompol, D.M.D.
27. Type of Single Tooth Abutment

Type of Single Tooth Abutment

- Prefabricate abutment for screw retained prosthesis e.g. UCLA, AuraDapt
- Prefabricate abutment for cement retained prosthesis—Non Adjustable
- Prefabricate abutment for cement retained prosthesis—Adjustable
  - All ceramic abutment—straight/angled
  - All metal abutment—straight/angled
- Custom cast abutment
- Modified custom cast abutment

(c) 2003, Nopsarin Chaimattayompol, D.M.D.

28. Case#1+AAs-UCLA abutment (old version)

Case#1
UCLA abutment (old version)

(c) 2003, Nopsarin Chaimattayompol, D.M.D.
29. Session 8: Single Tooth Implant Crowns: Slide 29

(c) 2003, Nopsonin Chaimattayompol, D.M.D.

30. Session 8: Single Tooth Implant Crowns: Slide 30

(c) 2003, Nopsonin Chaimattayompol, D.M.D.
31. Make Implant-Level Impression

Make Implant-Level Impression

(c) 2003, Nopsarin Chaimattayompol, D.M.D.

32. Session 8: Single Tooth Implant Crowns: Slide 32

(c) 2003, Nopsarin Chaimattayompol, D.M.D.
Session 8: Single Tooth Implant Crowns: Slide 33

(c) 2003, Nopson Chaimattayompol, D.M.D.

Session 8: Single Tooth Implant Crowns: Slide 34

(c) 2003, Nopson Chaimattayompol, D.M.D. / Nobel Biocare. *Restricted Use
35. Session 8: Single Tooth Implant Crowns: Slide 35

(c) 2003, Nopsarin Chaimattayompol, D.M.D.

36. Form Implant-level Soft tissue Cast

Form Implant-level Soft tissue Cast

(c) 2003, Nopsarin Chaimattayompol, D.M.D.
Session 8: Single Tooth Implant Crowns: Slide 37

- **Position**
- **Angulation**
- **Intercuspual distance**
- **Tissue Depth/Contour**

(c) 2003, Nopsarin Chaimattayompol, D.M.D.

Session 8: Single Tooth Implant Crowns: Slide 38

(c) 2003, Nopsarin Chaimattayompol, D.M.D.
40. Type of Single Tooth Abutment

**Type of Single Tooth Abutment**

- Prefabricate abutment for screw retained prosthesis
- **Prefabricate abutment for cement retained prosthesis—Non-Adjustable e.g. CeraOne**
- Prefabricate abutment for cement retained prosthesis—Adjustable
  - All ceramic abutment—straight/angled
  - All metal abutment—straight/angled
- Custom cast abutment
- Modified custom cast abutment
41. Session 8: Single Tooth Implant Crowns: Slide 41

 Prefabricate Abutment Cement Retained Crown

(c) 2005, Nobel Biocare. *Restricted Use

42. CeraOne Abutment

**CeraOne Abutment**

- Impression Coping
- Laboratory analog
- Abutment Protective Cap
- Abutment Screw
- CeraOne Abutment
- Dental Implant
- Plastic/Gold cap
- Ceramic cap

(c) 2003, Noprarin Chaimattayompol, D.M.D./Nobel Biocare. *Restricted Use
43. Case #2+AAs- use Prefabricate (non-preparable) abutment +AAs...

Case #2

use Prefabricate (non-preparable) abutment

(c) 2003, Nopsarin Chaimattayompol, D.M.D./Nobel Biocare. *Restricted Use

44. Case #2+AAs-use Prefabricate (non-preparable) abutment

Case #2

use Prefabricate (non-preparable) abutment

(c) 2003, Nopsarin Chaimattayompol, D.M.D.
45. Session 8: Single Tooth Implant Crowns: Slide 45

(c) 2003, Nopsarin Chaimattayompol, D.M.D.

46. Session 8: Single Tooth Implant Crowns: Slide 46

(c) 2003, Nopsarin Chaimattayompol, D.M.D./Nobel Biocare. *Restricted Use
47. Session 8: Single Tooth Implant Crowns: Slide 47

(c) 2003, Nopsarin Chaimattayompol, D.M.D.

48. Session 8: Single Tooth Implant Crowns: Slide 48

(c) 2003, Nopsarin Chaimattayompol, D.M.D./Nobel Biocare. *Restricted Use
49. Session 8: Single Tooth Implant Crowns: Slide 49

(c) 2003, Nopsoin Chaimattayompol, D.M.D.

50. Session 8: Single Tooth Implant Crowns: Slide 50

(c) 2003, Nobel Biocare. *Restricted Use/Nopsoin Chaimattayompol, DMD, MPH
51. Session 8: Single Tooth Implant Crowns: Slide 51

(c) 2003. Nobel Biocare.  “Restricted Use” Nopasan Chaimattayompol, DMD, MPH

52. Session 8: Single Tooth Implant Crowns: Slide 52

(c) 2003. Nobel Biocare.  “Restricted Use” Nopasan Chaimattayompol, DMD, MPH
53. Session 8: Single Tooth Implant Crowns: Slide 53

54. Type of Single Tooth Abutment

Type of Single Tooth Abutment

- Prefabricate abutment for screw retained prosthesis
- Prefabricate abutment for cement retained prosthesis—Non Adjustable
- Prefabricate abutment for cement retained prosthesis—Adjustable
  - All ceramic abutment—straight/angled
  - All metal abutment—straight/angled
- Custom cast abutment
- Modified custom cast abutment

(c) 2003, Nopsarin Chaimattayompol, D.M.D.
55. Case #3.1+AAs-use Praparble/Adjustable Ceramic abutment

Case #3.1
use Praparble/Adjustable Ceramic abutment

(c) 2003, Nopsarin Chaimattayompol, D.M.D.

56. Session 8: Single Tooth Implant Crowns: Slide 56

(c) 2003, Nopsarin Chaimattayompol, D.M.D.
57. Session 8: Single Tooth Implant Crowns: Slide 57

(c) 2003, Nopsarin Chaimattayompol, D.M.D.

58. Session 8: Single Tooth Implant Crowns: Slide 58

(c) 2003, Nopsarin Chaimattayompol, D.M.D.
61. Session 8: Single Tooth Implant Crowns: Slide 61

(c) 2003, Nopsarin Chaimattayompol, D.M.D.

62. Session 8: Single Tooth Implant Crowns: Slide 62

(c) 2003, Nopsarin Chaimattayompol, D.M.D.
63. Session 8: Single Tooth Implant Crowns: Slide 63

(c) 2003, Nopsarin Chaimattayompol, D.M.D.

64. Session 8: Single Tooth Implant Crowns: Slide 64

(c) 2003, Nopsarin Chaimattayompol, D.M.D.
65. Session 8: Single Tooth Implant Crowns: Slide 65

(c) 2003, Nopsarin Chaimattayompol, D.M.D.

66. Session 8: Single Tooth Implant Crowns: Slide 66

(c) 2003, Nobel Biocare. 'Restricted Use
Session 8: Single Tooth Implant Crowns: Slide 67

(c) 2003, Nopsoin Chaimattayompol, D.M.D.

Session 8: Single Tooth Implant Crowns: Slide 68

(c) 2003, Nopsoin Chaimattayompol, D.M.D.
69. Session 8: Single Tooth Implant Crowns: Slide 69

70. Type of Single Tooth Abutment

Type of Single Tooth Abutment

- Prefabricate abutment for screw retained prosthesis
- Prefabricate abutment for cement retained prosthesis—Non Adjustable
- Prefabricate abutment for cement retained prosthesis—Adjustable
  - All ceramic abutment—straight/angled
  - All metal abutment—straight/angled
- Custom cast abutment
- Modified custom cast abutment

(c) 2003, Nopsarin Chaimattayompol, D.M.D.
Case #3.2

Session 8: Single Tooth Implant Crowns: Slide 72

(c) 2003, Nopsarin Chaimattayompol, D.M.D.
73. Session 8: Single Tooth Implant Crowns: Slide 73

(c) 2003, Nopsonin Chaimattayompol, D.M.D.

74. Session 8: Single Tooth Implant Crowns: Slide 74

(c) 2003, Nopsonin Chaimattayompol, D.M.D.
75. Session 8: Single Tooth Implant Crowns: Slide 75

76. Session 8: Single Tooth Implant Crowns: Slide 76
Type of Single Tooth Abutment

- Prefabricate abutment for screw retained prosthesis
- Prefabricate abutment for cement retained prosthesis—Non Adjustable
- Prefabricate abutment for cement retained prosthesis—Adjustable
  - All ceramic abutment—straight/angled
  - All metal abutment—straight/angled
- Custom cast abutment
- Modified custom cast abutment

(c) 2003, Nopsarin Chaimattayompol, D.M.D.

Case #4

(c) 2003, Nopsarin Chaimattayompol, D.M.D.
79. Session 8: Single Tooth Implant Crowns: Slide 79

80. Type of Single Tooth Abutment

**Type of Single Tooth Abutment**

- Prefabricate abutment for screw retained prosthesis
- Prefabricate abutment for cement retained prosthesis—Non Adjustable
- Prefabricate abutment for cement retained prosthesis—Adjustable
  - All ceramic abutment—straight/angled
  - All metal abutment—straight/angled
- Custom cast abutment
- **Modified custom cast abutment**

(c) 2003, Nopsarin Chaimattayompol, D.M.D.
Wide Platform (WP) indications

- Single tooth replacement in the molar region
- Posterior molar region where wider implant is indicated
- Must have adequate bone surround implant (minimum of 1 mm)

(c) 2003, Nopsoarin Chaimattayompol, D.M.D.

82. Session 8: Single Tooth Implant Crowns: Slide 82

(c) 2003, Nobel Biocare. *Restricted Use*
83. Single Tooth Implant Crowns: Slide 83

84. Research Results (1996)+AAs-1-implant VS 2-implant molar rep...

**Research Results (1996)**

1-implant VS 2-implant molar replacement

- Balshi—72 single molar implant crowns; 48% screw lessening with 1 implant; 8% with 2 implants
- Walther—236 maxillary anterior implant crowns; 96% success at 5 years; 89% at 10 years (periimplantitis, implant fracture or trauma)

(c) 2003, Nopsarin Chaimattayompol, D.M.D.
Case WP

88. Case WP+AAs- use Prefabricate Screw retained abutment

Case WP

use Prefabricate Screw retained abutment

(c) 2003, Nopsarin Chaimattayompol, D.M.D.
89. Case WP+AAs- use Prefabricate Screw retained abutment

Case WP
use Prefabricate Screw retained abutment

(c) 2003, Nopsarin Chaimattayompol, D.M.D.

90. Case WP+AAs-use Prefabricate Screw retained abutment

Case WP
use Prefabricate Screw retained abutment

(c) 2003, Nopsarin Chaimattayompol, D.M.D.
91. Case WP+AAs- use Prefabricate Screw retained abutment

Case WP
use Prefabricate Screw retained abutment

(c) 2003, Nopsarin Chaimattayompol, D.M.D.

92. Maintenance/Recare

Maintenance/Recare

• Statistics of screw loosening/failure
• Potential damage of screw loosening
• How to prevent cement retained implant crown from damaging internal receiving area of the implant

(c) 2003, Nopsarin Chaimattayompol, D.M.D.
93. Session 8: Single Tooth Implant Crowns: Slide 93

(c) 2003, Nopsoin Chaimattayompol, D.M.D.