Specialty Dentistry

• Dentistry has nine specialty fields recognized by the American Dental Association
  - Dental Public Health
  - Endodontics
  - Oral and Maxillofacial Pathology
  - Oral and Maxillofacial Radiology
  - Oral and Maxillofacial Surgery
  - Orthodontics
  - Pedodontics
  - Periodontics
  - Prosthodontics
History of dental implants
Three major groups of dental implants

- Subperiosteal “On Bone”
- Transosteal “Through Bone”
- Endosteal “In Bone”
Subperiosteal Implants

- Designed primarily to anchor dentures in the completely edentulous patient.
- These implants consist of a metal framework that attaches on top of the jawbone but underneath the gum tissue.
Fabrication
Subperiosteal Implants

- Epithelial migration, development of extended peri-implant pockets, and chronic infections led to exposure of the implant framework and its eventual removal.
Transosteal (staple) Implants

• Designed primarily to anchor dentures in the completely edentulous patient
• These implants are either a metal pin or a U-shaped frame that passes through the jawbone and the gum tissue, into the mouth
• Titanium
Transosteal (staple) Implants

1975 Small introduced transosteal mandibular staple
1976 bone plate Limited to mandible only
Transosteal (staple) Implants
Transosteal (staple) Implants
Transosteal (staple) Implants
Root Form Implants

Root Form Implant System (Branemark) Introducted in North America (Toronto, C.) 1982
Osseointegration

- Discovered by P. I. Branemark in the 1960's while he was conducting a series of animal experiments concerned with wound healing.

- In these experiments he used an optical chamber made of titanium. When he attempted to remove the chamber from its bone site he noticed that the bone adhered to the titanium chamber with great tenacity.
Osseointegration

“Direct structural and functional connection between live bone and the surface of an implant under load”

P.I. Brånemark, MD, PhD
Center for Applied Biotechnology
Göteborg, Sweden
Osseointegration

- He recognized the importance of this phenomenon.
- Over 50 designs were tested. He and his colleagues finally settled on a simple screw shape with a hex on the top.
Titanium

- Ninth most abundant element on earth
- Easy to divide into useful shapes which maintain their strength
- Strong
Titanium

- Resistant to corrosion
- Light weight
Endosseous Implants
Designs

Blades

Screw

Cylinder

Mini implants
Designs

Zirconium Implant
Benefits of Dental Implants

• Function
• Stability
• Improved nutrition
• Taste
• Preserves bone
• Improved appearance
• Preserves teeth
• Renewed self-confidence
Osseointegration

- 6-8 weeks – mandible
- 2-4-6 months - maxilla
Quality Type I, II, III, IV
Type I

Type I bone is comparable to oak wood, which is very hard and dense.
Type II bone is comparable to pine wood, which isn't as hard as type I.
Type III bone is like balsa wood, which isn't as dense as type II.
Type IV

Type IV bone is comparable to styrofoam
Implant Procedure Sequence

- Consultation
  - Medical evaluation
    - Caries exam
    - Periodontal disease evaluation
    - Oral hygiene evaluation
    - Occlusion
    - Preliminary impressions
    - FMX
    - Diagnostic Wax up
    - Fabrication of radiographic stent
    - I-Cat
Implant Procedure Sequence

• Treatment Plan
  – Fabrication of surgical template

• Surgical Consult
  – Implant Placement

• Fabrication of Prosthesis

• Hygiene maintenance
Surgical Template

• A guide used to assist in proper surgical placement and angulation of dental implants
Implant Placement
Computerized Guide Templates

- Dental implants can be placed in the correct position for esthetic and function.
- Allows for a determination of the need for adjunctive grafting procedures.
- Offers simplicity for the practitioner.
- Enables flapless surgery, reducing pain
- Less risk of infections