Vertical Alveolar Distraction in atrophic mandible
Objectives

- What is DO?
- Principles & Protocol
- Types
- Indications
- Planning
- Clinical Applications
- Pitfalls, Merits & Demerits
Distraction Osteogenesis is the biologic process of new bone formation between adjoining bone segments gradually separated by controlled incremental traction.

- lengthening of bone
- controlled tension
- a device
- lengthening of soft tissue envelope
History

- Gavriel A Ilizarov (1951), Russia
  *Father of Modern DO.*
- Codivilla (1905)-Italy: Femoral lengthening
- Alexander Limberg (Russia, 1928) lengthening of mandible
- Snyder et al (1973) maxillofacial.
- Constantino (1995) Transport distraction
- Chin & Toth (1996) Alveolar distraction
Phases

- Latency Phase (5-7 days)
  - Age
  - Site
  - Radiation/chemotherapy

- Distraction Phase (as needed)

- Consolidation phase (2-3 months)
Biomechanical Considerations

- **Distraction Vector**
  - Distractors should be placed parallel to axis of distraction
  - Perpendicular to osteotomy

- **Rate of distraction**: not > 0.8 mm at a time (osteon limit)

- **Rhythm of distraction**: multiple tractions per day, bone formation at a much faster rate
  - Automated Distraction
TYPES OF DISTRACTION

- Monofocal
- Bifocal
- Trifocal
Trifocal distraction

- 2 transport discs
- 4.5-5.5cm of bone gain – meeting in midline
- Annino et al 1994
Intraoral Mandibular Distractors
Extraoral Mandibular Distractors
Vertical Alveolar Distraction in atrophic maxilla
Alveolar Distractors

Alveolar ridge augmentation for implant fixation: status review

Extraosseous Alv Distractor: Martin

Intraosseous Alv Distractor: Lead (Lebinger)

Distraction Implant
Alveolar Distraction
Amoeloblastoma
Resection & reconstruction
Alveolar distraction in reconstructed mandible
Merits

- lengthening of muscles, nerves and skin
- expanded bone, even >20mm, of high quality
- good long term stability
- less distortion and loading of TMJ
- less relapse
Demerits

- two surgeries required, one to place and other to remove distractors
- inconvenience to patient, as placed for long time.
- scars with extraoral and intraoral distractors
Pitfalls

- Damage to tooth roots
- Fracture /Failure of Hardware
- Loosening of screws
- Paresthesia Inf Alv N
- Malocclusion
- Premature consolidation
- Delayed consolidation/Non Union
- Relapse
- Scar
- Incorrect vector
- Incomplete deformity correction
Summary

- Distraction Osteogenesis is a versatile procedure, large distractions possible.
- Holds great potential for osseous defects of craniofacial skeleton.
- Does not carry limitations.
- Even in infants & very young patients.
- Selection of correct device, vector essential.
DENTAL IMPLANTS

ENDOSTEAL
MUCOSAL
SUBPERIOSTEAL
TRANSOSSEOUS
DENTAL IMPLANTS

- also k/a endosseous implant or fixture
- surgical component that interfaces with the bone of the jaw or skull
to support a dental prosthesis: crown, bridge, denture, facial prosthesis
or
to act as an orthodontic anchor.
Osseo-integration

- form an intimate bond to bone
- materials, such as titanium.
DENTAL IMPLANTS
DENTAL IMPLANTS
Craniofacial Implants-Eye
Craniofacial Implants - EAR
SOFT TISSUE PROCEDURES

REMOVAL OF REDUNDANT CRESTAL SOFT TISSUE:

long term poor fitting prosthesis/ excessive alveolar bone resorption/ normal dentition against complete denture
Anterior mandible and maxilla

Bony augmentation/ Implants preferred
Preserve valuable attached mucosa

Care: min trauma to remaining tissues
Avoid excessive tissue excision that may obliterate vestibule
FRENECTOMY

- Max midline frenum, ling frenum, mx. Md. Buccal frenum
- DIAMOND incision: soft tissue sufficient
- Z PLASTY: short, broad frenum
EPULIS FISSLURATA

Benign pedunculated lesion, presents as excessive vestibular tissue

- Sharp excision
- Electrocautery
- Cryosurgery
- Laser excision
PALATAL PAPILLARY HYPERPLASIA

Secondary to chronic denture irritation under poor fit denture, some degree of candidal infection
Tt: denture relief, tissue conditioner
  Antifungal
  Electrocautery loop
Curettage
Cryo
Laser
VESTIBULOPLASTY

Types

- Mucosal Advancement (submucosal) Vestibuloplasty
- Secondary Epithelialization Vestibuloplasty – Kazanjian and Clark Techniques
- Grafting Vestibuloplasty – Mucosal vs. Skin Graft vs. AlloDerm

- MANDIBULAR
- MAXILLARY
Kazanzian’s vestibuloplasty
(lip switch)

Mucosal flap pedicled from alveolar ridge elevated from underlying tissue and sutured to depth of vestibule.

Inner portion of lip is allowed to heal by secondary epithelialization.
Clark’s Vestibuloplasty

mucosa pedicled from the lip
denuded periosteum heals by secondary epithelialization.
Objective 1

Secondary to chronic denture irritation under poor fit denture, some degree of infection seen

Tt should be

a  denture relief,
b  Antibacterial local application
c  mouth wash
d  denture adjustment with anti fungal
Objective 2

In order to gain good bony ridge support, the preferred choice of treatment is

a  denture relief
b  vestibuloplasty
c  alveolar distraction
d  superior ridge augmentation
Objective 3

Distraction osteogenesis allows

a  bone lengthening
b  muscle lengthening
c  nerve distraction
d  all of the above
Objective 4

Vestibuloplasty is done to achieve

a. bone lengthening
b. bone shortening
c. vestibule lengthening
d. vestibule shortening