Device Stability - Introduction

- retentive capacity (RC) of subpericranial pocket (SpP)
- experiments
  - measure RC
Surgical Technique - Position

- minimal incision approach
Surgical Technique - Position

- minimal incision approach
- device assumes "Back" position
Surgical Technique - Position

- minimal incision approach
- device assumes "Back" position
- anterosuperior ("Up") placement of device
  - minimize contact with supporting surfaces
Freeroll Angle in Recumbent Position
Surgical Technique - Fixation

- suture fixation and pedestal
- resists displacement
  - rotation (fantail groove)
  - sideways (pedestal/suture)
  - superior/inferior (pedestal)
  - lateral (tie down suture)
  - medial (silicone skirt/dura)
Surgical Technique - Fixation

- subpericranial pocket
- resists displacement
  - rotation (SpP)
  - sideways (SpP)
  - superior/inferior (SpP/bone)
  - lateral (SpP)
  - medial (bone)
Retentive Capacity – 5 Series

Average Retentive Capacity Versus Age

81 Patients
123 Implants
- 42 bilateral
- 39 unilateral

Avg RC = 5.17 +/- 2.56 N
Parabolic Distribution
Retentive Capacity Across Trials

Repeated Measures ANOVA
- Significant Decrease in RC over repeated trials (p<0.05) *

Force (N)

trial 1  trial 2  trial 3
Pedestals – 5p

- resist displacement
- positioning
- affect RC of SpP
Pedestals – 5p

- resist displacement
- positioning
- affect RC of SpP ?
Pedestals – 5p

- no exposed dura
- minimize drilling
- reduce surgical time
  - right 15.8 minutes
  - left 14.1 minutes

(n=43)

(37.8 hours = 18-20 implants)
Retentive Capacity – 5p (pedestal)

Average Retentive Capacity Versus Age

Age (Years)

Force (N)

5p
5
Retentive Capacity Across Trials – 5 & 5p

![Graph showing retentive capacity across trials for 5 and 5p forces.](image)

- Force (N)
- Trial 1, Trial 2, Trial 3
- 5p and 5 forces
Conclusions

- without a pedestal
  - retentive capacity of subpericranial pocket:
    - is highly variable (5.17 +/- 2.56 N)
    - decreases with manipulation

- with a pedestal
  - retentive capacity of subpericranial pocket:
    - is significantly greater
    - allows positioning of device
    - diminishes surgical time
    - decreases with manipulation