I. **Foot Drop** = Flaccid paralysis of ankle dorsiflexion  
   A. Common etiologies:  
      1. Peroneal nerve injury  
         a. Common PN – involves both ant and lat compt.  
         b. Deep PN – ant compartment muscles only  
      2. Ant compartment syndrome  
      3. Stroke  
      4. Sensory/Motor neuropathy (DM, idiopathic)  
   B. Often associated with equinus contracture  
   C. May be associated with cavus deformity

II. **Evaluation - Physical Exam** – Determine the “Personality” of each deformity  
   A. Walking, Standing and Non Weightbearing exam  
      1. Look for swing and stance phase deformities  
      2. Examine for contractures  
         a. Is ankle passively correctable? – often requires Achilles lengthening  
         b. Associated foot deformity?  
            * Cavus – may need DF 1st MTO  
            * Cavo-varus- may need DF 1st MTO and Calc osteotomy  
         c. Use Coleman Block Test to differentiate fixed heel varus from compensatory heel varus caused by fixed forefoot valgus  
      3. Complete understanding of complex deformities may require multiple exams/pt visits  
   B. Strength and sensibility testing  
      1. Are motors of sufficient strength for functional transfer?  
         a. Need at least a 4/5 muscle to transfer  
         b. Some power lost with out of phase transfer  
      2. Are motors spastic or have increased tone?  
         a. Spastic muscles could cause an overcorrection if not balanced  
      3. Are motors under voluntary control?  
      4. Peripheral neuropathy present?  
         a. Concern for skin ulceration  
         b. Concern for bone healing, neuropathic arthropathy

III. **Radiographic Evaluation**  
   A. Weight bearing foot views (esp Lateral) are helpful to determine:  
      1. Presence of foot deformity  
      2. Status of ankle joint  
         a. Ankylosis or bony block would prevent adequate DF ROM  
         b. May need gradual correction with ext fix prior to tendon transfer  
   B. Assessment of Joint stability  
      1. AP/Mortise of ankle – look for varus talar tilt  
      2. AP foot – look for medial subluxation of navicular  
      3. Lateral foot – look for subtalar and TN joint subluxation  
   C. Assessment of joint DJD – may need fusion of joints for pain relief

IV. **Surgical Treatment**  
   A. Basic Principles
1. Individualize the plan based on the specific exam and x-ray findings for each patient (Not Cookbook Surgery)
   a. Correct deformity => Then restore/rebalance motor power
   b. May take more than single visit for formulation of the plan
   c. Surgical correction may require two stages for complex deformities
2. Fully discuss the goals, expectations and recovery times with the patient
   a. Discuss non-surgical options
   b. Need for brace post op despite successful surgery in some patients
   c. Don’t promise “brace free” function
   d. Warn of wound healing problems that may occur
3. Determine the method of deformity correction that will fully correct the deformity
   a. Posterior release of equinus contracture:
      • Percutaneous TAL
      • Open Gastroc or G-S lengthening
      • Open TAL
      • Posterior capsule release
   b. Anticipate discovery of additional muscles that need release once ankle equinus is corrected – esp toe flexors
      • Percutaneous FDL/FHL tenotomy
      • Possible toe pinning x 6 weeks
4. Plan tendon transfers that will adequately rebalance the deforming muscle forces
   a. In-phase transfers preferred over out of phase
   b. Must be at least Grade 4/5 since one grade level of power lost with out of phase transfer
   c. Create a straight line of pull thru a non scarred area for best function
   d. Must have a mobile joint for the transfer to function
   e. Tendon attachment directly to bone is best
   f. Beware of transfer of spastic muscle – unpredictable function

B. “Standard” Procedures for Restoration of Ankle Dorsiflexion
1. No procedures are “standard” - all are individualized
   a. Add Achilles lengthening if ankle lacks 10 deg of passive DF
2. Loss of Ant tib only (Peroneals 5/5)
   a. Peroneus longus transfer to Ant tib insertion
3. Ant Compartment paralysis (Peroneals 5/5)
   a. Posterior tibialis tendon transfer thru interosseous membrane to 2nd cuneiform bone (interference screw)
   b. Weave PT into AT tendon as tendon brought anteriorly (adds balance to pull of PT muscle)
4. Ant and Lateral compartment paralysis
   a. Bridle Procedure
      • PT tendon transfer to 2nd cun (under retinaculum)
      • PL => PB transfer lateral leg
      • Pass distal stump PL thru PB insertion and subQ under ankle retinaculum into anterior ankle
      • Complete tri-tendon anastomosis of PT, AT and distal PL ant. ankle

References: