Clinical Decision Making on the Need for Autologous Bone Graft: Results of a Nationwide Survey Among Orthopaedic Foot and Ankle Surgeons

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Introduction

• Limited literature on the indications for autologous bone grafting in foot and ankle fusions

• Historically autograft has been used in:
  – Deformity
  – surface irregularities
  – defects (due to trauma, surgery, or other)
  – underlying co-morbidities and healing challenges
Purpose

• Assess the use of prognostic factors and predictive tests in clinical decision making for bone graft supplementation in foot and ankle fusion surgery
Methods

Survey Research Methodology

Key Informant Interviews

Pre- and Pilot Testing
Methods

• **Web based Survey**
  - 5 point Likert scale
    • Never, Seldom, Sometimes, Almost Always (AA), Always (A)
  - 17 clinical and 11 radiographic criteria felt to influence the decision to use Autologous BG

• **Blinded survey sent to Orthopaedic Foot and Ankle Surgeons in North America and Canada** (NA Foot and Ankle Research Group, 38 centers)

• **The degree of uniformity was assessed**
Results

- 48 surgeons responded (72.7%)
- **Strong Clinical indicators** for ABG use >70% A or AA:
  - prior nonunion of the indicated joint (96%), prior nonunion at adjacent joint(s) (74%), smoking history (72%)
- **Moderate Indicators** 50-70% A or AA
  - concomitant medications known to impede bone healing (65%), vitamin D deficiency (65%), diabetes (57%), and significant renal disease (57%).
Results

- **Strong Radiographic Indicators** > 70% A or AA:
  - Radiographic evidence of nonunion (96%), avascular necrosis (87%), evidence of potential incongruous apposition (84%), radiographic evidence of bone loss (76%), and osteoporosis or post-traumatic with subchondral collapse (71%)

- **Moderate Rad Indicators** 50-70% A or AA:
  - Subchondral cysts (60%), large surface areas to be fused (58%) more than one joint to be fused (51%)
Results

• **Weak indicators** <50% A or AA would use ABG:
  – Osteoporosis or prior stress fracture (46%), seropositive arthropathy (43%), age $\geq$65 (35%), post-traumatic (35%), hyperthyroidism/hypothyroidism (30%), low testosterone (28%), BMI over 35 (26%), soft tissue integrity (20%), prior foot and ankle infection (20%), and current foot and ankle infection (4%)
  – Prior adjacent joint fusions (47%), intra-articular deformity (31%) and extra-articular deformity (13%)
Discussion/Conclusions

• Strong uniformity of agreement among Orthopaedic F&A surgeons
• The Strong and Moderate indicators may be used as a guide in decision making for bone graft in hindfoot or ankle fusions