THE PROBLEM: not the same as a primary arthrodesis

Number of failed ankle arthroplasty cases certain to increase in foreseeable future

CONSIDERABLY MORE DIFFICULT:

due to (possible) infection; bone loss; deformity; limited soft tissue envelope

PRINCIPLES:

Maintain limb length
Obtain sufficient fixation
Preserve subtalar joint (where possible) & malleoli

ANATOMIC COMPRESSION ARTHRODESIS TECHNIQUE (HANSEN):

Preservation of bony anatomy/subchondral plate:
maximize inherent stability, vascularity; preserve medial & lateral malleoli

Minimal bone resection:
minimize limb shortening; minimize malleolar impingement

Multiplanar screws

ACAT / ANTERIOR PLATE AUGMENTATION (SANDERS):
Multiplanar screws / anterior plate: maximum rigidity

WORKUP (BERKOWITZ): Thorough exam!
Rule out deep infection: wound healing difficulties / antibiotic use
Skin/soft tissue envelope: overall condition / previous incisions
Medical co-morbidities / Nicotine use
Vascular supply: pulses / hair growth
Standing alignment: deformity / limb length inequality
Subtalar motion / pain
Standing XR Ankle & Foot:
deformity / lysis / remaining bone stock (talus) / subtalar jnt changes
CBC / ESR / CRP / aspiration
DECISIONMAKING:
- Deep infection? intra-op cultures; potential staged arthrodesis
- Preserve subtalar joint? sufficient talus bone stock; reasonable joint space
- Size of defect / bone graft options? cancellous vs structural
- Internal fixation options? screws/plate; nail; nail/plate

FILLING THE DEFECT:
- < 2 cm: CANCELLOUS only: minimal loss of limb length
- > 2 cm: STRUCTURAL: iliac crest autograft / allograft (IC / femoral head)
- severe: FEMORAL HEAD BULK ALLOGRAFT: acetabular reamers /
  osteoinductive agent: IC BMA / BMP / PRP / stem cells

"BOOKS ON A SHELF": (CAMPBELL)
- Tricortical iliac crest autograft/allograft / VERTICALLY oriented rectangular blocks
- Maintains length / maximizes bony apposition
- Must shape to make plantigrade (~ more trapezoidal)

FUTURE OPTIONS:
- TITANIUM SPINAL CAGE / cancellous autograft: OFF-LABEL
- TRABECULAR METAL IMPLANT / cancellous autograft: OFF-LABEL

POST-OP PROTOCOL:
- Splint/cast immobilization
- Strict NON-WEIGHTBEARING x 10-12 weeks
- Add BONE STIMULATOR for structural graft

REFERENCES:


