Acetabular and Femoral Defect Classification
Algorithmic Approach to the Reconstruction in Hip Revision Arthroplasty

**Type I**
Rim is intact with no significant distortion of the rim
- Acetabulum is hemispherical but there may be small focal areas of contained bone loss;
- Anterior and posterior columns are intact;
- Hemispherical cementless implant is almost completely supported by native bone and has full inherent stability;
- There is no migration of the component and no evidence of osteolysis in the ischium or teardrop;
- Kohler line has not been violated (medial most aspect of the component is lateral to the Kohler line);

**Type II**
Distorted but intact rim with adequate remaining bone to support a hemispherical cementless implant

**Type IIA:**
- Anterior and posterior columns are supportive and the rim is intact;
- Bone loss is superior and medial;
- Hip center is migrated superior; migration is less than 3 cm above the obturator line;
- Failed component migrates into a cystic defect medial to the thinned remaining superior rim;
- Most defects are treated with particulate allograft because the defect is contained;

**Type IIB:**
- Anterior and superior columns will support an implant but there is a small superior rim defect which is not contained;
- Superior rim is deficient for less than one third of the rim circumference;
- Migration is less than 3 cm above the obturator line directly superior or in combination with lateral migration;
- Femoral head allograft may be appropriate but majority of segmental defects are not grafted;
- Particulate graft is not an option with the Type IIB defects because there is no buttress to contain the graft;

**Type IIIC:**
- There are medial wall defects and migration of the component medial to Kohler’s line;
- Rim of the acetabulum is intact and will support the component;
- Reconstructions involve particulate graft placed medially;
- Superior rim is deficient for less than one third of the rim circumference;
- If the medial membrane is not a sufficient buttress for the particulate graft, then insert a wafer of femoral head into the defect;
- Graft is then placed over the wafer buttress;

**Type III**
Acetabular rim is not adequate for initial stability of the component and posterior column may require reconstruction

**Type IIIA:**
- Characterized by greater than 3 cm of superior migration of the acetabular component to the superior obturator line, moderate teardrop and ischial lysis, and an intact Kohler line;
- Host bone is adequate for ingrowth but the acetabular rim is not entirely supportive;
- Defects are associated with a non-supportive superior dome anterior and posterior columns remain intact, but hemispherical shell will have less than 50 percent host bone contact;
- Migration of implant is superior and lateral;

**Type IIIB:**
- There is less than 40% of host bone available for ingrowth;
- Rim defect is greater than ½ circumference;
- Failed component has migrated superior and medial;
- High risk of occult pelvic discontinuity (posterior column reconstruction necessary);
- Massive allografting and reconstruction cages are typically needed;

**Type IIIC:**
- Significant superior dome destruction with greater than 3 cm superomedial migration;
- Kohler’s line is broken;
- Severe ischial and teardrop lysis;
- Less than 40% host bone available for ingrowth and the rim defect is greater than ½ the rim circumference;
- Pelvic discontinuity;

**Type IV**
There is an extensive loss of metaphyseal cancellous bone and an intact diaphysis

**TypeIVA:**
- Damage metaphysis
- Intact diaphysis
- Absent cancellous bone in metaphysis
- Varus remodeling requires 8” stem (20 cm) to achieve 4 cm fixation
- Extended trochanteric osteotomy avoids fracture

**Type IVB:**
- The metaphysis is severely damaged and nonsupportive, with some portion of isthmus intact
- Lines on the radiograph demarcate the amount of femoral isthmus available for distal fixation
- With less than 4 cm of intact diaphyseal bone available for distal fixation

**Type IVc:**
- Severely damaged Metaphysis
- Severely damaged Diaphysis (non-supportive isthmus)