Titanium inter-body spinal trusses packed with bone graft are considered to be the gold standard treatment of severe degenerative disc disease, restoring alignment and disc height. This same principle can be applied to foot and ankle, using customized or custom titanium trusses manufactured using a 3D printer to fill voids of large segmental osteopenic defects. 2D printing is different from typical manufacturing techniques. It is founded on the principle of "subtractive manufacturing," or depositing material layer by layer. The customizable nature of 3D printing provides surgeons with the ability to tailor the fabrication to an individual patient’s anatomy, theoretically restoring joint congruity with concomitant structural integrity promoting successful consolidation.

**Methodology**

Three patients (patients 1-4, and 5) underwent implantation of a custom titanium truss at the ankle joint. Patients 1 and 4 underwent the procedure for failed index tibiotalocalcaneal arthrodesis procedures. Patient 5 underwent implantation of the custom truss for a failed total ankle arthroplasty. Two patients (patients 6, and 7) had standard prefabricated titanium trusses implanted for posttraumatic osteonecrosis and malunion of the subtalar joint. One patient (patient 2) had a nonunion following two attempted free fibular phalangeal joint arthrodesis procedures with secondary first ray shortening. One patient (patient 3) underwent a first tarsal intercalated arthrodesis with implantation of a prefabricated titanium truss for a shortened and elevated first ray.

**Financial Disclosures**

None.