Anterior Lumbar Spine Fusion Using a Free Vascularized Fibula Strut Graft within an Expandable Titanium Cage

Recalcitrant vertebral osteomyelitis presents unique challenges to the surgeon attempting spinal reconstruction. To achieve adequate debridement, reconstitution of structural integrity, and delivery of antibiotics many strategies have been conceived, however we are unaware of a report of a free vascularized fibula graft placed within a custom, expandable, titanium cage. We report a series of three cases successfully treated in this manner.

Three patients (average age 63.7) failed conservative and/or operative attempts at treatment for thoracolumbar/lumbar osteomyelitis, ultimately developing pathologic fractures. Preoperative spinal angiography in all patients showed severely compromised local blood flow. Definitive treatment consisted of posterior debridement and fusion (average 9 levels), followed by a thoracoabdominal approach for vertebral corpectomy (range 1-2 levels). Reconstruction was performed with a custom, expandable titanium cage. A vascularized fibular graft was placed within the cage and anastamosed to either the left gastroepiploic artery or the jejunal arcade.

Anastamosis patency was confirmed intraoperatively by Doppler ultrasonography. All patients continued antibiotics postoperatively and showed clinical improvement during their hospital courses. No postoperative neurologic deficits were notes, and all patients ambulated with assistive devices prior to discharge. One patient died of unrelated causes after discharge. The neurologic status and ambulatory capacity of the other patients was preserved and they showed evidence of successful fusion at average follow up of fourteen months.

A vascularized fibular strut grafts within an expandable titanium cage is successful in treating vertebral osteomyelitis. It can be technically demanding, but no complications related to the surgery were seen.

The described technique allows for a combination of the strength and versatility of expandable cages with the biologic advantage of a vascularized graft, in order to treat the difficult problem of recalcitrant osteomyelitis.