



Clinical Experience with Actifuse™ Synthetic Bone Graft in Non-Instrumented Multi-Level Lumbar Spinal Fusion

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Introduction

A 78 year old male presents with a history of low back pain for many years, although over the last 6 months he has developed increasing pain, numbness, “tightness” and weakness in his legs. The symptoms are increased with standing and walking, relieved with sitting. He is a retired pilot and feels as though his overall function is rapidly decreasing. Physical examination reveals good lumbar flexion, but only 15 degrees of extension, which causes pain/paresthesias radiating into the buttocks and thighs.

Radiographic evaluation reveals multi-level spondylosis (Figure 1). MRI shows severe canal stenosis at L4/5 and moderate at L3/4 secondary to facet joint and ligamentum flavum hypertrophy, as well as moderate foraminal stenosis at L3, L4 and L5 (Figure 2). As his symptoms and dysfunction were progressing despite exhaustive non-operative treatment, he elected to proceed with surgery. A laminectomy with posterolateral arthrodesis *in-situ* was performed from L3-L5.



FIGURE 1.
Pre-operative standing lateral radiograph
showing multi-level spondylosis



FIGURE 2.
Pre-operative MRI showing
stenosis at L3/L4 and L4/L5

Surgical procedure

After proper exposure and complete removal of soft tissue from the posterior bony elements, a bilateral laminectomy and foraminotomy was performed from L3-L5 to ensure complete decompression of the thecal sac and foramen. A high speed burr was utilized to decorticate the transverse processes, pars inter-articularis and facet joints. Through the midline incision a Jamsheedy needle was utilized to aspirate approximately 12cc of bone marrow aspirate from the posterior iliac crest. Local autograft removed from the spine was combined with 20cc of

Actifuse™ Synthetic Bone Graft and the bone marrow aspirate. This bone graft composite was then placed bilaterally in the posterolateral gutter from L3-L5. Estimated blood loss was 300cc. A Warm N' Form brace was utilized for 6 weeks post-operatively.

Six month follow-up

The patient had immediate resolution of the leg symptoms and a decrease in back pain, which continued to improve in the post-operative period. At six months post-operatively, he rated his overall pain as 1/10 and satisfaction with the surgery as excellent. AP (Figure 3) and lateral standing radiographs as well as a Computed Tomography (CT) scan of the lumbar spine obtained six months post-operatively show that the bone graft is remodeling well with a significant decrease in granular appearance (Figures 4, 5). There is almost complete incorporation of bone graft into the transverse processes at the L3, L4 and L5 levels. There are no signs of instability or spondylolisthesis.



FIGURE 3.
Six months post-surgery, standing AP radiograph showing stable fusion from L3-L5



FIGURE 4.
Coronal CT scan showing continuity of fusion from L3-L5 with bone graft incorporating and signs of remodeling

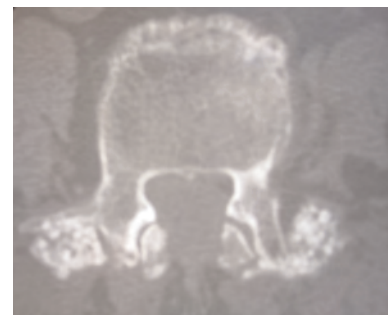


FIGURE 5.
Axial CT scan taken at L4 showing bone graft incorporated into transverse process on left and remodeling

*Actifuse™ is a unique silicated substituted bone graft which has been shown to produce:
More bone, less time.*



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