

# Spinal Fusion Naturally

with Allovance<sup>®</sup> Crunch**Plus**

Osteoinductive Allograft

Allovance<sup>®</sup> Crunch**Plus** provides outstanding intraoperative handling properties, conforming easily to the surgical site therefore creating an excellent environment for early and rapid bone healing.



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# The Natural Pathway to Clinical Success

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**Title:** The use of Demineralized Bone Fibres (DBF) in conjunction with super critical carbon dioxide (SCCO<sub>2</sub>) treated allograft in anterior lumbar interbody fusion (ALIF)

**Study Type:** Case Series

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## Case Presentation

We report on two cases of ALIF, both performed for discogenic low back pain, resistant to non-surgical therapies, on a background history of prior discectomy surgery.

### Case 1

A 29-year-old male presented with low back pain on a background history of a microdiscectomy surgery performed at L5/S1. Despite non-surgical therapies over a 15-month period, ongoing low back pain resulted in loss of employment as a labourer. Magnetic resonance imaging (MRI) and bone scan were suggestive of degenerative change at the L5/S1 disc, with absence of changes elsewhere in the spine. An L5/S1 ALIF was performed (*Figure 1*). A Redmond (A-Spine ASIA, Taiwan) 3-screw integral fixation ALIF construct was performed in combination with allograft bone and DBF, with follow-up over a 12-month period. Fusion status at 12 months revealed a solid union, with minimal symptoms. He returned to his occupation as a labourer following confirmation of fusion on a computed tomography (CT) scan (*Figure 1*).

### Case 2

A 37-year-old female presented with low back pain on a background history of multiple microdiscectomy surgeries performed at L4/5 over a 9-month period. The MRI revealed significant disc height loss, Modic type 2 endplate changes, and a positive bone scan at the L4/5 articulation. Conservative therapies were exhausted over 6 months. An L4/5 ALIF was performed, using a Redmond (A-Spine ASIA, Taiwan) 3-screw integral fixation ALIF construct packed with allograft bone and DBF. The patient was closely followed-up over a 3-month time period. Early osseointegration is detected at 3 months with significant reduction of her discogenic pain (*Figure 2*).

## Conclusions

The use of DBF as an extender, in conjunction to SCCO<sub>2</sub> treated allograft bone in lumbar constructs, alleviates the requirement for autologous bone harvesting and can assist in achieving early osseointegration and fusion. Given its favourable handling properties it allows the bone graft to be easily manipulated and packed into fusion constructs while providing the optimal amount of osteoinductive material to the site of healing. The combination of osteoinductive DBF and SCCO<sub>2</sub> treated allograft bone is a clinically safe and effective, yet low-cost alternative to high-dose rhBMP-2 products such as INFUSE® Bone Graft (Medtronic, Sofamor Danek, Minneapolis, MN).

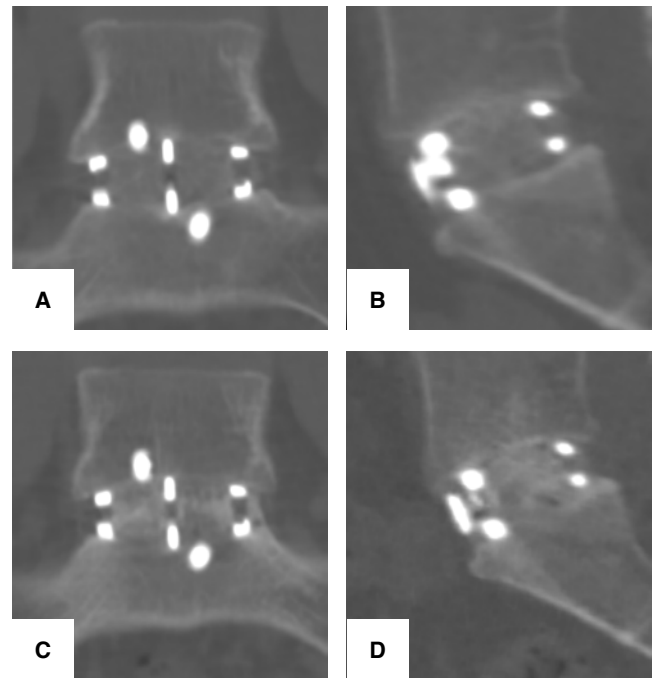


Figure 1: Case 1 (A,B) Coronal and sagittal CT lumbar at 3 months post-ALIF showing early fusion at L5/S1; (C,D) coronal and sagittal CT lumbar spine at 12 months post-ALIF showing progression of fusion at L5/S1.

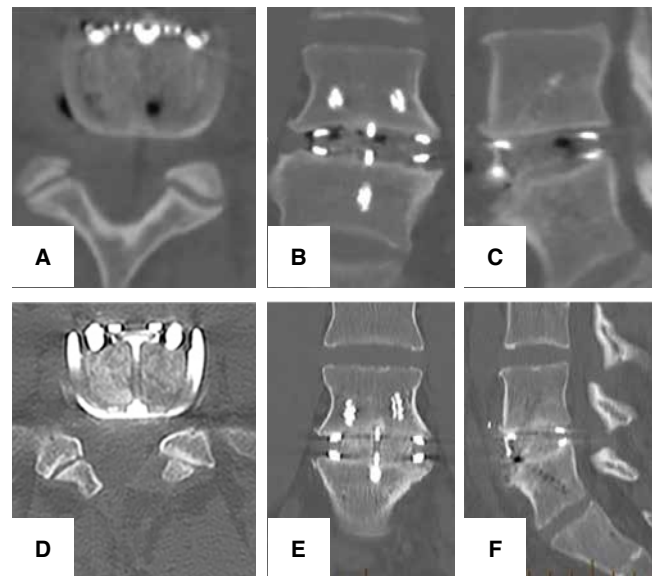


Figure 2: Case 2 (A,B,C) Day 1 post-operative axial, coronal and sagittal CT lumbar spine; (D,E,F) axial, coronal and sagittal CT lumbar spine at 3.5 months showing early fusion at L4/5 across ALIF cage.

A surgeon's experience with Allvance® Crunch**Plus** allograft in treating his patients for both lower spinal and cervical disorders. Case 1 shows the successful fusion following lumbar spinal fusion. Case 2 shows the Osseo-inductive ability of Allvance® Crunch**Plus** following a Pedicle Screw Fixation.

### Case Presentation: A 4 level ALIF: 15 months postop (Fibre + Crunch)

A 72 year old female presented with degenerative lumbar spine scoliosis and canal stenosis.

A 4 level ALIF was performed in combination with allograft (Allvance® Crunch**Plus**), with follow-up over a 15-month period. At 15-months the CT shows a well-positioned cage with good fixation, good osteointegration throughout the implant including welding of the implant with the adjacent endplates (*Figure 3a*). Fusion status at 15 months revealed a solid union (*Figure 3b*).

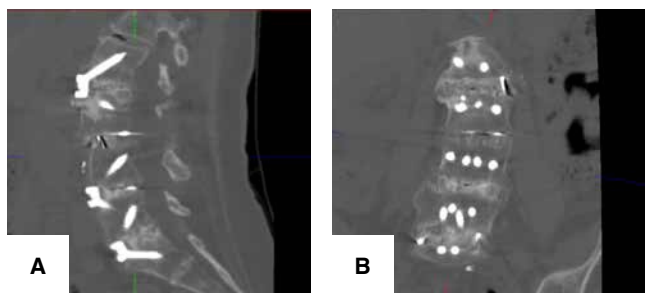


Figure 3: (A) Sagittal CT lumbar spine post ALIF showing a well-positioned case with good fixation, good osteointegration and fusion; (B) Coronal CT lumbar spine post-ALIF showing strong fusion. CT, computed tomography; ALIF, anterior lumbar interbody fusion.

### Case Presentation: A C6-C7 pedicle screw fixation both levels

A male with a facet fracture following a surfing injury. Radiological images confirmed fracture at the site (*Figure 4a*). A C6/C7 pedicle screw fusion was performed using a pedicle screw on lay with allograft (Allvance® Crunch**Plus**) (*Figure 4b*), with follow-up over a 6-month period.

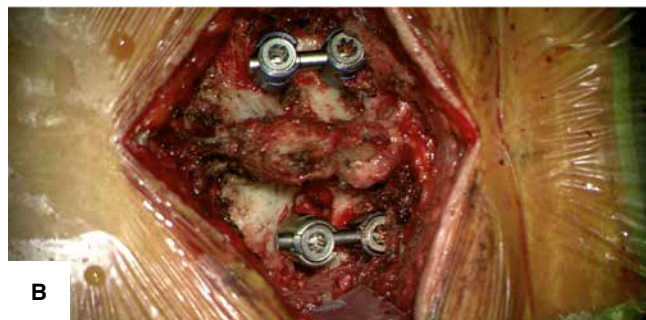


Figure 4: (A) Pre-operative axial and sagittal CT cervical spine; (B) Intra-operative picture of implant in-situ; CT, computed tomography.

At 6-months the CT scans have shown extensive bone remodelling and growth, with no visible signs of a defect. This is contrary to what is observed commonly at 6-month timepoint following a fracture where the defect would be visible, however it seems the inductive agent has bridged the gap and filled in the defect (*Figure 5*).

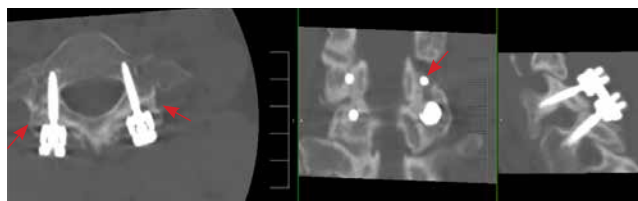


Figure 5: C6-C7 pedicle screw fusion for trauma. Note posterolateral graft incorporation at 6 months post-operative.

### Intraoperative Handling Properties

The in-theatre experience with Crunch**Plus**.

Allvance® Crunch**Plus** is easy to manipulate and handle intra-operatively due to its ability to stick together and be placed on the lateral gutters during spinal procedures: Cervical laminectomy and fusion (*Figure 6*) and Complex Cervical reconstruction (*Figure 7*).



Figure 6: An on lay in lateral gutters during a cervical laminectomy procedure.

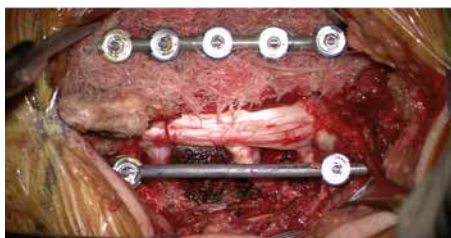


Figure 7: On lay of Crunch**Plus** around the spinal fixation rod during spinal surgery

The ability of Allvance® Crunch**Plus** to conform allows the graft to be tightly packed into the cage without leaving voids and covering the entire available volume (*Figure 8*). Complete coverage of the surface area of the cage cavity enables optimal contact of the graft with the endplates, hence creating an ideal scenario to initiate bone formation and growth.

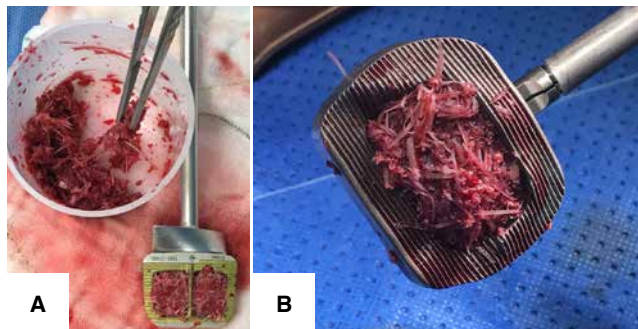


Figure 8: (A) Intra-operative preparation of Allvance® Crunch**Plus** and patient's blood. (B) intra-operative packing of prepared Allvance®Crunch**Plus** into a spinal cage.

## Key Features

- ✓ 100% bone - no synthetic carriers
- ✓ Every batch is tested independently for Osteoinductivity
- ✓ Super Critical Fluid (SCF CO<sub>2</sub>) treated



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AB-BK101 Allovance® Crunch**Plus** SMALL 3G (Demineralized and Mineralized Bone Matrix)

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AB-BK102 Allovance® Crunch**Plus** MEDIUM 8.5G (Demineralized and Mineralized Bone Matrix)

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