Supportive Article / Data utilizing autograft bone shavings / Outcomes:

Clinical and radiographic outcomes using local bone shavings as autograft in minimally invasive transforaminal lumbar interbody fusion.

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Abstract

**BACKGROUND:**

Transforaminal lumbar interbody fusion (TLIF) augmented with pedicle screw instrumentation has become a favored surgical treatment for management of lumbar degenerative disease and spondylolisthesis. Iliac crest bone graft has traditionally been used for interbody arthrodesis. Many substitutes for autograft have been suggested to reduce iliac crest graft morbidity. The present study was aimed to determine fusion rate and clinical outcome with local bone autograft drill shavings harvested during minimally invasive (MI) TLIF.

**METHODS:**

A retrospective study of 40 patients who underwent MI-TLIF using a cage filled with local bone shavings and pedicle screw fixation with a minimum 1-year imaging follow-up was performed. Bone shavings were collected during surgery by use of a simple specimen trap device. Fusion was assessed with computed tomography scan with sagittal and coronal reconstructions. Clinical assessment was performed using patient-filled preoperative and postoperative Oswestry Disability Index (ODI) and leg and back pain visual analog scale (VAS) score.

**RESULTS:**

The mean age at time of surgery was 54 years (range, 21 to 84 years). Clinical outcome was graded as excellent or good in 65% and 27% of patients, respectively, based on improvement in ODI and VAS. The mean ODI, leg, and back pain VAS score improved from 66, 6, and 9 to 30, 1, and 3 after surgery (P<0.005) Fusion was demonstrated on computed tomography scan in 67.5% of patients. Clinical outcome was graded as excellent or good in 92% of patients irrespective of the presence or absence of fusion (P=0.45).

**CONCLUSIONS:**

Use of a cage filled with local bone shavings harvested using a specimen trap during MI-TLIF is simple and can result in up to a 70% fusion rate with good clinical outcome in 92% of patients. This is the first study assessing fusion rate with local bone shavings, and the results may help spine surgeons in choosing the best graft option for patients undergoing posterior lumbar fusion surgery.
Microscopic Bone Analysis AFTER use of the Hensler Bone Press

"Light microscopic examination of autologous bone, after use of the HBP, revealed NO evidence of cell membrane disruption, which is consistent with osteoblast viability."

Conclusion:

Use of autograft generated from the high speed drill is not only viable, but proven to produce ‘good to excellent fusion rates’ as noted above. The bone analyzed after the Hensler Bone Press was also proven to show ‘no signs of cell membrane disruption, which is consistent with osteoblast viability.’

This cited article is the most recent article published, which was 2012. It was studied at Rush University Medical Center, Department of Neurosurgery. This was the first study to show conclusively that fusion occurs with local bone autograft shavings in a MI-TLIF.