

Utilization of a Bone Dust Collector in Anterior Cervical Fusion and Posterior Lumbar Interbody Fusion

Summary of background data:

Bone Dust Collectors (BDC) allow drilled bone dust to be efficiently collected during spinal fusions. Peer reviewed reporting on their use is scarce.

Objectives:

We sought to evaluate the safety of using a particular BDC (mean cost: \$250) in Anterior Cervical Fusions (ACF) and Posterior Lumbar Interbody Fusions (PLIF).

Methods:

Chart data from 124 patients who underwent either ACF or PLIF by a single surgeon between 2013 and 2019 was retrospectively analyzed. Patients receiving non-iliac autograft via BDC (Group 1, n=37, ACF: 40%), were compared to patients receiving non-iliac, Non-BDC autograft (Group 2, n=41, ACF: 40%), and patients receiving non-iliac, non-BDC autograft and allograft (Group 3, n=46, ACF: 40%). ACF allograft patients received 1cc of DBM putty (estimated cost of \$150/cc) and PLIF allograft patients received 5cc of DBM Putty. Partial bone growth between the graft and vertebral bodies was evaluated at 3 and 6 months. Other outcomes investigated include Clinical Outcome (measured using Odom's Criteria (OC)), Complication Incidence, Operative (OP) Time, Blood Loss (BL) and Hospital Length of Stay (LOS).

Results:

The number of post-operative complications in Groups 1, 2 and 3 was 3, 6 and 10, respectively. Patients who received BDC had comparable (to Non-BDC) partial bone growth rates of 58% at 3 months and 85% at 6 months. BDC patients displayed better clinical outcomes, a shorter mean OP time and LOS, and less BL than patients in Groups 2 and 3. ACF patients who received BDC displayed significantly better clinical outcomes at 1 and 3 months ($p=0.007$ and $p=0.03$, respectively), and a significantly lower mean OP Time (59.4 mins) than ACF patients in Group 3 (85.5 mins, $p=0.02$).

Discussion/Conclusion: BDC was safe to use and did not hinder fusion. Further studies should explore potential cost savings with use of BDC in PLIF patients.