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# The Efficacy of Local Autologous Bone Dust: A Systematic Review.

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## Abstract

**STUDY DESIGN:** A systematic review of bone dust as an autologous bone graft to encourage osseous fusion.

**OBJECTIVE:** To identify and review studies that report on the therapeutic potential of bone dust. The research question was structured as follows: populations-animal and human sources of bone dust harvested using burrs; interventions-autologous bone dust compared with other clinically utilized bone graft options; outcomes assessed-(1) in vitro cell viability, cell differentiation, and osteogenic potential and (2) clinical efficacy in the form of fusion rates as assessed using plain radiographs; study designs-in vitro, preclinical in vivo and clinical studies investigating the therapeutic potential of bone dust, harvested by burring, are included in this systematic review.

**SUMMARY OF BACKGROUND DATA:** Little is known about the efficacy of bone dust, generated during burring of local bone in spine surgery, as a bone graft to encourage osseous union.

**METHODS:** A systematic search was conducted in Medline, PubMed, OVID, Scopus, and Cochrane library. The following key words were used: bone dust, bone burring, bone paste, bone pate.

**RESULTS:** A total of 285 studies were reviewed. Fourteen articles were identified as relevant for inclusion in this systematic review. Current evidence suggests that bone dust retains osteogenic properties, but limited information is available regarding the osteoinductive potential of bone dust.

**CONCLUSION:** Bone dust represents a free source of autologous bone, which can be easily collected during the time of surgery and used as an augment to aid osseous fusion. Further research is required to evaluate the osteoinductive potential of bone dust. The retained growth factors in bone dust may potentially induce local osteoprogenitor cells to proliferate and mineralize to form new bone.



**KEYWORDS:** Bone burring; Bone dust; Bone grafting; Bone paste; Bone pate; Spinal fusion

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