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A simple method for bone-graft handling during spine surgery

Received: 19 November 2003
Revised: 19 February 2004
Accepted: 23 April 2004
Published online: 20 May 2004
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Abstract Morsellized bone-graft handling during spine surgery to get vertebral fusion can be a slow, laborious and time-consuming procedure. It is not absolutely exempt from complication risk. An easy, quick and inexpensive alternative technique is described.

Keywords Spine surgery · Vertebral fusion · Bone grafting

Introduction

Despite recent advances in spine surgery instrumentation, the use of morsellized bone graft is a well-established necessity in all types of vertebral fusion (posterolateral, transforaminal, transpedicular, anterior, etc.) ([1], [2]). To improve spinal fusion and minimize the amount of bone graft used, the addition of bone-graft substitutes and/or bone morphogenetic proteins has been reported. However, the placement of morsellized bone graft (with or without these additional osteoconductive or osteoinductive substances) at the desired level of vertebral fusion can be a slow, time-consuming and laborious procedure. It is difficult to get adequate graft packing and, occasionally, some bone chips will encroach on the epidural space, involving graft waste and even risk of neurological compression. The method presented here provides an easy and quick alternative for graft handling, avoiding those problems.

Technique

Cut off the end of one or more plastic syringes with a knife or a power oscillating saw and fill with morsellized

Fig. 1 Preparation and filling of the syringe, which can be carried out by a nurse/assistant

Fig. 2 Bone chips are injected into the appropriate area with precision

bone graft and/or bone-graft substitutes (Fig. 1). Pressing the syringe piston will introduce the graft at the desired level of fusion and compact it (Fig. 2). Subsequently, al-

ternate the introduction of bone chips with progressive packing, with an instrument if necessary. A 20 ml syringe (8 mm in diameter) or even an insulin-infusion type syringe (4 mm in diameter) may be used to fill cages and to compact graft between two vertebral end plates, in order to obtain interbody lumbar or cervical fusion.

Discussion

We have found this technique to be a very quick, easy and cheap method of handling morsellized bone graft and bone-graft substitutes during spine surgery, when these materials are used in relatively large quantities. Having the bone graft in a syringe will save time, and the nurse/assistant can prepare and fill syringes while the surgeon proceeds with the operation. It also allows more accurate placement of the graft, minimizing the quantity of bone chips that may be wasted through misplacement, especially in the epidural space, where there is possible risk of neurological compression.

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