THE USE OF WIRE RINGS FOR THE FIXATION OF SPINAL GRAFTS

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Fixation of bone grafts to the spinous processes of the vertebrae and especially to the posterior surface of the sacrum has always presented a difficult problem. Various methods have been used. The H-shaped graft is sometimes useful, but its rigid fixation depends upon the presence of well formed spinous processes. The spinous process of the sacrum is often poorly developed and in lumbo-sacral fusions fixation of the grafts by soft stainless steel wire rings has been found most useful. Indeed the rings give such excellent fixation that I have used them elsewhere in preference to the H-shaped graft, and they have the additional advantage that any number of vertebrae can be fused.

Technique—The method resembles the insertion of a ring into a pig's nose; in fact the pliers used to hold and close the rings are identical. The rings (Fig. 1) are made of non-toxic stainless steel and it is advisable to have them opened widely so that the greatest possible amount of lamina can be included.

The bases of the spinous processes and the adjacent parts of the laminae must be well prepared so that patches of subcortical bone are exposed. If interfacetal bone pegging is also employed, the necessary drilling and pegging are carried out at this stage. The rings are held in the special pliers (Fig. 1) and applied to the posterior surface of the laminae. By closing the pliers slightly the ring points are made to engage in the bone, but they should not be fully squeezed home until after the bone grafts have been placed within them.
The grafts, cut from the tibia, are long thin splinters, each the thickness of a match stick and of appropriate length for the area to be fused. The whole of the space within the rings as well as that between the spinous processes is tightly packed with the grafts (Fig. 2). Firm pressure with the pliers closes the rings and compresses the grafts against the spinous processes. In this way firm fixation is obtained (Fig. 3).

Post-operative treatment—If interfacetal bone pegging and ring fixation of the interspinous grafts are employed, a plaster bed is not considered necessary except in tuberculous disease. A plaster corset is used instead. The plaster corset is made a day or so before the operation, split down the front, and removed. Straps and buckles are applied to it so that it can be put on the patient over the dressings at the conclusion of the operation.

The patient is allowed up in the plaster after six weeks. Later the plaster may be replaced by a light lumbo-sacral support, which must be retained until at least six months from the time of operation.

The rings and pliers for holding and compressing them are made by Messrs Down Bros. and Mayer & Phelps Ltd., 32-34 New Cavendish Street, London, W. 1.