A NEW PATTERN OF BONE-HOLDING FORCEPS

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Existing patterns of bone-holding forceps for plating or grafting fractures of the long bones seem to have been designed with the object of holding together three objects simultaneously—namely, the two ends of the fracture and the plate or bone graft that is to be screwed to them. In that technique the bone-holding forceps are used in pairs; one forceps holds one of the bone fragments and one end of the graft or plate, and the opposite end of the plate or bone graft is held to the corresponding bone fragment with the other forceps. To get the fracture reduced and clamped to the graft or plate often requires considerable juggling, and maintenance of the reduction is impeded by the fact that the graft or plate obscures inspection of the fracture line. The blades of the forceps have to be comparatively narrow so that they do not cover more of the surface of the graft or bone plate than is available between two screw holes, and narrow blades reduce the rigidity of the clamping action. The Lowman clamp has the additional disadvantage that it must be passed underneath the fragments, and thus complete stripping of the bone ends is necessary on the deep surface.

The clamp described here (Fig. 1) holds in rigid alignment the two fragments of the fracture alone and then the graft or plate can be screwed to the exposed surface without

any need for the graft or plate to be held by the clamp. The essential feature is the design of the detachable jaws, which are provided in three sizes. For the plating or grafting of long bones the jaws carry a single longitudinal gutter on the surfaces which are opposed to each other. The fractured long bone is gripped in these jaws, and the parallel gutters then automatically coax the fragments into alignment as the curved surfaces of the fragments settle into the grooves under the pressure of the clamp (Fig. 2). The jaws are pivoted at their point of attachment to the forceps so that the pressure of the forceps is distributed equally to both fragments, and this pivoting action enables the fragments to be

FIG. 1

The forceps with range of detachable jaws.

held even if they are of different diameters or if the bone tapers at the site of fracture. The forceps can be applied without stripping the deep surface of the fracture. The fragments can be adjusted to obtain a "hairline" fit with the fracture line fully exposed and with the certain knowledge that this reduction will be maintained when the fracture line is obscured from vision by the application of the plate or graft.

In bone grafting with this clamp the exposed surface of the bone lying in the grip of

the clamp can be "planed" down with a chisel to give a flat surface extending accurately from one fragment to the other, so that the graft can be securely bedded against the fracture.

The smallest pair of parallel jaws are used for the radius and ulna while the other two sizes are available for large bones; it is, however, often surprising how the small pair of jaws can be used for even large bones.

To complete the range of usefulness of the instrument special jaws are provided for holding fractures of the patella, olecranon and medial malleolus. For the patella, two hooked

FIG. 2

Grooved jaws, pivoted at their attachment, used for gripping long bones in bone grafting or plating.

FIG. 3

Figure 3—Hooked jaws used to grip a fractured patella. Figure 4—Hooked jaw and peg used to grip fractured olecranon.

FIG. 4

jaws are used in the manner shown in Figure 3, which is self-explanatory. For the olecranon and medial malleolus one of the hooked jaws acts against a "peg-shaped" attachment in the opposite jaw of the clamp. For this a one-eighth inch drill-hole is made in the shaft of the ulna or tibia to receive the peg in the manner illustrated (Fig. 4).

This instrument has been on trial for over two years and is regarded as an important addition to the fracture surgeon's armamentarium. It is manufactured by Chas. F. Thackray Ltd., Park Street, Leeds 1.