Current Practice

NEW APPLIANCES

Precise Plaster Wedging: Fracture-angle/cast-diameter Ratio

Mr. F. BRIAN THOMAS, consultant orthopaedic surgeon, Hereford General and County Hospitals, Robert Jones and Agnes Hunt Orthopaedic Hospital, Oswestry, writes: The "wedging" of plaster casts to correct angular deformity of fractures is an accepted procedure. Surgeons experienced in fracture treatment are able to gauge almost by instinct the size of wood block required. To those with less experience plaster wedging is often a matter of trial and error, and more than one attempt at correcting the angulation of the fracture may be required.

The method of wedging described here eliminates guesswork. It is simple, accurate, and quick—it takes longer to describe it than

to do it. An easy theoretical exercise will make the principle clear.

If two pencil lines are ruled on the x-ray films through the long axis of each fragment the lines will meet to form an angle. This "fracture-angle" represents the arc through which the fracture must be bent to correct the deformity. It also corresponds exactly to the arc through which the saw-cut in the plaster must be opened to achieve the necessary correction. If the triangular portion of film making up this angle is cut out with scissors it can (in theory) be used as a template to measure the angle to which the saw-cut in the plaster must be opened (Fig. 1, A, B, C). It will be seen on this diagram

FIG. 1

that the apex of the triangular piece of film is placed exactly at the hinge. Where the template crosses the plaster on the side opposite to the hinge, the gap in the plaster represents the size of wood block required. Thus we now have a triangle lying across the fracture on the film. The long sides of this triangle are seen to represent the diameter of the plaster (on the film). The short base of the triangle (X-Y on Fig. 1) gives the measurement to which the wood block is cut.

In practice the size of the wood block is determined as follows. Pencil lines are ruled on the x-ray film through the long axis of each bone fragment. If the bone ends are in full apposition the point of intersection of the lines will coincide with the fracture. If the bone ends are not fully apposed, the lines must be prolonged to the point at which they meet (Fig. 2). On the same x-ray film a transverse line is ruled across the fracture, extending from plaster edge to plaster edge. This line gives the diameter measurement of the plaster, and its length is marked on the edge of a piece of paper. This measurement is then transferred to one or other of the long-axis lines on the film, and the triangle completed (Fig. 2). A wood block is cut to the length of the short base of the triangle and will be found to be the correct size for holding the open saw-cut in the plaster.

It may be argued that the diameter of the plaster on the x-ray film does not correspond exactly to the diameter of the cast itself. Actually, the diameter on the x-ray film is slightly greater, owing to the fact that x rays are divergent, and this produces some magnification on the film. Thus the wood block is slightly larger than would seem to be necessary. This, however, counteracts the fact that the fracture, owing to soft tissues around it, will angulate a little less than the angle to which the plaster is opened.

FIG. 2.—Thin lines are drawn through the long axis of each bone fragment. Long thick lines are diameter measurement of the plaster at the fracture. Arrows point to the short thick line, which is the block size.

ANY QUESTIONS?

We publish below a selection of questions and answers of general interest.

Electrolyte Action of Dental Fillings

Q.—What dental fillings are most prone to set up an electrolyte action in the mouth and what symptoms does it cause? Are particular items of diet, such as salt, apt to potentiate it?

A.—Weak galvanic currents are generated in most mouths in which metallic restorations are present. Indeed, they play an important

part in causing corrosion of many fillings. This may occur even though the restoration appears homogeneous to the naked eye, for frequently such restorations at a microscopic level contain areas of different composition.

Greater currents are developed when two dissimilar metals, such as gold or amalgam, come into contact within the mouth. The further apart in the electromotive series of

metals, the greater the potential that is generated. If two such restorations are placed in opposing teeth there is a short-circuit when the mouth is closed, and this may cause a sharp stab of pain until the potential falls owing to polarization. These symptoms occur more frequently in newly inserted restorations, and in most cases they tend to disappear after a short time, either owing to the formation of surface tarnished layers on the restorations or because the pulp recovers from the hypersensitivity caused by the initial trauma resulting from cavity preparation. Similar acute symptoms may result from contact between a restoration and other