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Fashions and fractures

In the past 10 years or so the management of fractures has changed in Britain. Unlike our Continental colleagues, orthopaedic surgeons here still continue the conservative approach taught so brilliantly by Watson-Jones. Now, however, even the most conservative surgeon will admit a more aggressive approach to some of the more difficult fractures. Undoubtedly one of the reasons for this change, however subtle, has been the introduction into this country of the Swiss AO/ASIF technique of internal fixation. These methods of rigid internal fixation with their excellent instruments—and the enthusiasm of the exponents—have done much to cause the change. Yet there are two caveats: on the one hand the method is not for the inadequately trained surgeon, and on the other just because the results are so good and the use of the equipment so technically interesting some surgeons have tended to use the instrumentation excessively. Regrettably this has led many units to reconsider the indications for such treatment.

One effect of the reappraisal of the management of fractures has been a great revival of interest in external fixation and the more widespread use of functional cast bracing. To the non-specialist the three methods of fracture management under discussion must seem very different, but they have one feature in common, an important factor: all allow movement of the joints while the fracture is healing. This freedom of movement overcomes what Continental surgeons call the plaster disease—stiff, painful joints after treatment of fractures.

External fixation of fractures has been employed for many years but never before to the extent now seen. In principle, it consists of pins to screw into the bone, a bar, and a means of attaching the bar to the pins. Two or three pins are carefully inserted through the soft tissue into the bone above and below the fracture. Both cortices are engaged. The fracture is reduced, and the bar is fastened to the pins to hold them in place, thus retaining the position of the fracture. The pins

may be driven through the bone and out the far side of the limb so that a bar may be applied to both ends, increasing the stability. Further rigidity may also be obtained by drilling another set of pins into the bone at right angles to the first set. These pins will engage only the bony cortices but will not transfix the limb. The fracture is held rigidly but, as the pins are inserted some distance from the fracture, it and any compound wounds do not come into contact with the apparatus.

Many different types of fixation device are now available, the more complicated being more expensive. Some allow compression to be applied to the fracture, but the main differences are seen in the methods of attaching the pins to the bar. Some use cement, others simple clamps, and others universal joints which may be tightened individually, giving much greater manoeuvrability when the fracture is being reduced. Cannon *et al* have recently described a simple method of external fixation using pins linked together by the flexible polyethylene tubing used by anaesthetists and filled with methylmethacrylate cement.¹ The pins are inserted into the bone and the tube applied to them while the cement is still fluid. When the cement sets a rigid bar is formed. They reported results as good as others using this fixation device, which costs £12.50.

External fixation of fractures has several advantages. It is easy to apply, even for the inexperienced surgeon. Its application does not affect the fracture site. This is especially important in a compound fracture where the introduction of a foreign material into a potentially infected area is still rightly regarded as dangerous and ill advised. Patients with burns, loss of skin or bone, or gross comminution of the fracture are best managed with external fixation, for the bone may be held rigidly and to length while plastic, vascular, or orthopaedic procedures are undertaken. External fixation devices may be applied to any long bone or even short long bones. Pelvic fractures are well controlled by their application. Rööser and Hansson have recorded their experience of treating femoral and tibial fractures in the same leg by this method.² Though they reported favourable results, in common with most surgeons they would prefer to fix the femoral fracture with an intermedullary nail if possible.

There are disadvantages. Some of the appliances are expensive, but this expense generally brings more versatility. Infection occurs occasionally in the pin tract but it may be cured after the removal of the pins by wound toilet, drilling out the hole, and appropriate antibiotics. Any sequestra should be excised. The rate of healing also tends to be slowed down. It is uncertain whether this is due to the fixation or to the severity of the fracture on which this treatment is used. Certainly when rigid fixation is obtained the fracture heals slowly with internal callus only, as with the AO system of plating.

External fixation is an excellent method of treating fractures, and is an important part of the surgeon's armament, but it is not the only method. It is of the greatest use where there is considerable soft tissue damage in the affected limb.

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