New Appliances

Iliac Bone Punch for Psoas Muscle Transplants

Mr. J. C. GRIFFITHS, of the Royal Manchester Children's Hospital, and Mr. E. DERVIN and Mr. O. B. HEYWOOD, of the Department of Mechanical Engineering, University of Salford, write: Transfer of the psoas muscle from the lesser to the greater trochanter is now a standard procedure in certain paralytic disorders of the hip. The indications for the operation, originally for paralytic hip dislocation, are now widening to include patients without dislocation but with muscular unbalance where the psoas is overactive or unopposed.¹

In an early attempt to perform an anterolateral transplant² a deep wedge was cut in the blade of the ilium. This technique is now less popular, and the muscle is more often transferred posteriorly through a hole in the blade of the ilium.³ Technical difficulties in the procedure include methods of gaining access to the lesser trochanter from an anterior approach, making a suitable hole in the ilium, and attaching the psoas tendon to the posterior aspect of the greater trochanter.

A bone punch has been devised to solve the problem of producing a hole in the ilium, and the prototype has been used successfully on several patients. The advantages of the device are threefold. Firstly, the dissection required is reduced since less room is needed. In particular, there is less necessity for wide stripping of tissues for access to the posterior aspect of the ilium, since the instrument will cut cleanly through both hard and soft tissues. This may be expected to reduce the need for wide periosteal stripping, which can produce new bone formation between ilium and femur, followed later by hip ankylosis. Secondly, the time needed for the operation is reduced. Thirdly, a circular hole is cut with clean edges. The psoas muscle passes through easily and does not catch on the jagged edges which remain when the hole is made by more conventional means. It has become clear that these edges are the most usual cause of difficulty and that if they are eliminated a smaller hole is quite adequate.

The punch (see illustration) is operated by turning the hand spindle; this drives the bevel wheel, causing the operating punch to move downwards. Any material between the jaws of the instrument is sheared cleanly and collected in the

Iliac bone punch: (a) jaw recess; (b) shear punch; (c) bevel wheel drive; (d) pinion driver with driving spindle; (e) handle incorporating spindle bearing; (f) split bearings (P.T.F.E.); (g) bearing cap.

lower jaw aperture. The punch is withdrawn by reversing the rotation of the hand spindle.

All the metal parts of the instrument, including the bevel gears, are made in stainless steel. The bearings are made from a low friction plastic (P.T.F.E.), and the whole instrument can be autoclaved without dismantling or lubrication. The mechanical advantage of the instrument is about 80 to 1, and the punch shears through the ilium with very little resistance at the operating spindle.

References

- ¹ Menelaus, M. B., *Journal of Bone and Joint Surgery*, 1969, 51B, 238.
- ² Mustard, W. T., *Journal of Bone and Joint Surgery*, 1952, 34A, 647.
- ³ Sharrard, W. J. W., *Journal of Bone and Joint Surgery*, 1964, 46B, 426.

"Disposable" Tray for Soaking Membranes for Kiil Dialysers

Dr. F. M. PARSONS, consultant in clinical renal physiology, and Mr. B. AUTY, senior artificial kidney technician, Renal Research Unit, General Infirmary at Leeds, write: We first encountered occasional pyrogen-like reactions in haemodialysis in 1956, coming on about 55 to 65 minutes after starting treatment, while using the Kolff-Brigham rotating model. The cause was traced to non-disposable nylon components used in the blood circuit. As nylon absorbs water (about 10% of its dry weight) we assumed that pyrogen-like substances could also be absorbed to be released later into the blood stream. These reactions ceased when all soiled non-

disposable parts were soaked overnight in Haemo-sol and then washed with tap-water in a pipette washer for six hours after each dialysis prior to reautoclaving before assembly for the next treatment.

When we started using Kiil dialysers it seemed that "pyrogen" must be prevented from gaining access to any material capable of absorbing water, particularly the flat-sheet cuprophane membrane, which is preferably wetted before assembly and then chemically sterilized before use. Initially we used autoclaved pyrogen-free 3% acetic acid for wetting the membrane in a polyethylene tank and for sterilizing the assembled dialyser. Only one pyrogen-like reaction occurred despite bacterial invasion of the dialysis fluid. Later the bacterial count in the dialysis fluid was reduced to insignificant levels by using filtration.¹ The high incidence of infections