in muscle, while leaving the constrictor (alpha) actions unopposed.

We would suggest on this limited experience the following pre-operative regime: phenoxybenzamine 1 mg./kg./day orally, plus pronethalol 300–400 mg./day (in three or four doses), for an adult, both drugs for three days before surgery.

If, during operation, undue tachycardia or abnormal rhythms occur, intravenous pronethalol might be necessary—say, 25 mg. at first.

We are grateful to the clinicians in charge of these cases for leave to refer to them here.

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Medical Memoranda

Accidental Loss of Plastic Tube into Venous System

With the increasing use of the soft intravenous polythene catheter, an interesting complication is occurring with what appears to be disconcerting frequency. Moreover, this complication of the "lost tube" is associated with a sur-

FIG. 1.—Venogram showing cephalic and axillary veins, with catheter (filled with dye) in the cephalic vein.

FIG. 2.—The two pieces of the catheter.

prisingly high morbidity and mortality, according to the collected statistics of Taylor and Rutherford (1963).

CASE REPORT

A 3-year-old girl had a skin-grafting operation for scalds of arm, chest, and neck. She was anaesthetized with thiopentone and D-tubocurarine, and then an intravenous drip was started through the left median antecubital vein just distal to the elbow, using a Bardic Deseret intracath. This type of apparatus is in common use in the Royal Liverpool Children's Hospital. It consists of a very sharp needle through which a soft polythene

catheter 8 in. (20 cm.) long is introduced into the vein, the needle being then withdrawn.

Just before the end of the operation the drip was taken down, and it was then observed that only part of the catheter had been removed. A piece about 6 in. (15 cm.) long had sheared off during introduction, probably owing to inadvertent withdrawal of the catheter against the sharp needle-edge at some stage, and was lost in the child. Firm digital pressure was immediately exerted over the left axillary and cephalic veins. A plain x-ray film taken on the operation table did not reveal the presence of the catheter. The arm and axilla were palpated for the presence of the catheter. A firm "cord" was felt in the pectoral region, but on exploration through a small incision this proved to be a tendinous band of the pectoral insertion. The terminal part of the cephalic vein was identified and was seen to have a normal calibre and blood flow.

An injection of 6 ml. of a radio-opaque dye (30% sodium acetate; "diagnol") was made into the cephalic vein at the wrist; firm digital pressure was maintained over the axilla apart from momentary release while the x-ray picture was being taken. The film clearly demonstrated the catheter in the cephalic vein (Fig. 1). The catheter was removed through a small appropriately sited incision (Fig. 2).

COMMENT

It is very commonly believed that this complication is rare, and that inert polythene tubing in the venous system is innocuous and does not merit determined efforts for its removal. That these beliefs are unfortunately not founded on facts is borne out by the reports of Moncrief (1958) and Taylor and Rutherford (1963).

Thus there was an incidence of lost catheter in 3 out of 135 cases as reported by Moncrief, stressing the need for very careful use of this invaluable but potentially dangerous mode of intravenous therapy. Moreover, of the 11 cases collected by Taylor and Rutherford, five patients died from infection as the direct result of the lost catheter, two died from causes unassociated with the intravascular catheter, and two underwent a right atriotomy for removal of the catheter. This experience of Taylor and Rutherford prompts them to suggest that every lost catheter should be removed, and that if for any reason a "waiting policy" is adopted an unexplained rise of temperature is a definite indication for right atrial exploration. Septic venous thrombosis is the commonest cause of death, though myocardial necrosis has also been described. The catheter usually ultimately lodges in the right atrium, impinging against the tricuspid valve, trailing back into the superior or inferior vena cava, but may occasionally negotiate the tricuspid valve and lodge in the pulmonary artery.

Should this complication occur we suggest that a contrast venogram may be of great value in locating the lost piece of catheter and facilitating its removal. A radio-opaque fibre or material incorporated in the catheter would also be advantageous.

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