Continuous extradural analgesia by means of repeated doses of local analgesic drugs through a catheter placed in the extradural space is now widely used in this country, both for the production of surgical analgesia and for the relief of pain. Using the caudal route, labour can be conducted painlessly, and by simply increasing the dosage the analgesia can be extended to cover a Caesarean section should this be necessary (Hingston, Cull and Benzinger, 1961).

Using the thoracic approach, Simpson (1961) produced a segmental extradural block which allowed patients with upper abdominal operations to have a completely pain-free postoperative course. Segmental block has been used with success in the treatment of chest injuries. Extradural analgesia will produce complete relief of pain compared with the relative analgesia of narcotic analgesics. The ability to cough without pain is of great value to the patient after operation and to the patient with a chest injury. The principal disadvantage of the method in the absence of a long-acting analgesic drug is the necessity for frequent “topping-up” doses. Many attempts have been made to simplify the technique of “topping-up”. Simpson and Salt designed the Oxford chuck (1961) whose inner chamber into which the extradural catheter was fed is protected by a sterile replacement cap. Cole described a 50-ml sterile syringe filled with analgesic solution, and enclosed in a plastic envelope, through which the plunger of the syringe could be depressed. Burn (1963) used a sterile polythene bag containing analgesic, which was fed into the extradural space by gravity.

This paper describes the use of a plastic disposable syringe for the production of continuous extradural analgesia.

**APPARATUS**

This is basically a 20-ml graduated disposable plastic syringe which has been modified in three ways. Firstly, the nozzle has been replaced by a chuck device which will allow a 0.020-inch polyvinyl catheter to be threaded through its centre into the barrel of the syringe. The catheter
can then be secured by tightening the chuck. Secondly, the piston is fitted with a plastic insert which is threaded to take a plunger rod; this will allow the plunger rod to be unscrewed and withdrawn from the syringe. Finally, the proximal end of the syringe is fitted with a plastic stopper which is drilled with a hole thus allowing the plunger rod to pass through it and also serve as a guide for it.

**METHOD**

The syringe is delivered in gamma ray sterilized plastic envelopes and has a small length of catheter protruding from the chuck which serves as a drawing-up needle. Under sterile conditions 20 ml of the analgesic is drawn into the syringe. The short length of catheter used for drawing-up is now discarded and the proximal end of a 3-foot length of catheter which has already been inserted into the extradural space and led over the patient’s shoulder is connected to the syringe by means of its chuck.

The syringe is then ready for use. The plunger rod is depressed until the required amount of analgesic is delivered to the patient. The plunger rod is then unscrewed and withdrawn from the syringe which is then strapped to the patient’s chest. When further injections are required the plunger rod is re-inserted and depressed by suitable amounts until the syringe is finally emptied. It is then replaced by a new one under sterile conditions, and connected to the 3-foot catheter as described above.

Ideally, extradural analgesia should be provided by a long-acting analgesic involving one injection alone. In this way the problem of sterility would be reduced, there would be no danger of overdosage, and it would be impossible for the patient to administer a dose himself. With drugs available at the moment continuous extradural analgesia involves the topping-up of analgesics at perhaps 2- to 3-hourly intervals. The method described here is an attempt to reduce the dangers of the topping-up procedure and make it as far as possible a simple, safe and sterile technique. “Scrubbing-up” is not necessary at each replenishment of the analgesic, only when replacing the syringe. There is no danger of an overdose as with a drip-feed mechanism. By having a detachable plunger passing through the plastic stopper at the open end of the syringe it is impossible for the patient to administer a dose himself. The size of the syringe allows the patient to walk about with it strapped to his chest and the difficulties of re-sterilization are overcome as the syringe is disposable. It is possible that there are other applications for the use of this syringe as any solution may be used in it.

**ACKNOWLEDGMENTS**

We are indebted to Professor Sir Robert Macintosh for his encouragement, and to Johnson’s Ethical Plastics Ltd., of Slough, for their co-operation in the development of this syringe and for their willingness to produce it in quantity.

The drawing is by Mr. I. W. Roberts of the Nuffield Department of Anaesthetics.

**REFERENCES**


