

urine output, and careful charting of blood and other fluid losses from drainage tubes etc.

Monitoring and care of the circulation is particularly important in patients who have undergone cardiac surgery including extracorporeal bypass and those in whom arterial hypotension has been induced deliberately to improve operating conditions or reduce blood loss (in middle ear or pelvic surgery, for example). In such cases direct monitoring and display of the arterial and central venous pressure, measurement of cardiac output and body temperature, and the storage or display of such information may place special demands on both training and space in the recovery room.

### Lack of pain relief

It is the scandal of modern surgery that a large proportion of patients suffer severe pain in the postoperative period. While there is no lack of feasible methods of pain relief there is a surprising reluctance to use them. The blame for this must be shared by surgeons and nurses but particularly by anaesthetists, whose special profession is the relief of pain.

In the vast majority of cases a prescription is written for a narcotic analgesic to be administered by intramuscular injection "as required," often with some qualification as to the minimum interval between injections. While this practice may presuppose timely treatment for each patient on the part of the nursing staff, day and night, even casual consideration of the normal administrative arrangements for the use of narcotics by nurses in hospital, and of the many other calls on the nurses' time, indicates that such assumptions are unwarranted.

It must be stated frankly that the alternatives are either more expensive or time consuming, or both.

The intravenous "titration" of narcotics against the patient's pain has established superiority to the intramuscular route. Contemporary understanding of opiate receptors in the central nervous system explains why relatively small doses of these drugs given intravenously provide better relief with a comparable duration of action.

Recent developments include programmed automatic syringe systems that allow safe intravenous administration of a narcotic by the patient himself. Having the means of analgesia at hand is popular with patients and may reduce the anxiety associated with pain to the extent that drug requirements are less and the quality of relief better than in conventional practice. Other self-administered methods include inhalation analgesia (premixed 50% nitrous oxide in oxygen (Entonox) or trichloroethylene or methoxyflurane in air), which have been very successful in clinical trials. The benefits of transcutaneous electrical stimulation are by no means certain.

Perhaps the most effective method of analgesia, because in most cases the relief is total, is nerve blockade by local anaesthetic; there are various methods depending on the site of surgery. The most popular with anaesthetists is extradural nerve block, in which a catheter is passed through a needle inserted into the extradural space roughly in the midpoint of the range of nerve segments to be blocked—for instance, T5-T11 for a right upper paramedian incision. The local anaesthetic solution is injected in a volume sufficient to block the required range of nerves and repeat injections are given after the early signs of returning discomfort; in a typical case in which bupivacaine 0.25-0.5% is used the injections may need to be repeated every two hours. Such blockade may be extended for several days if necessary, but the normal requirement is usually not more than 48 hours.

Intercostal nerve block in which a local anaesthetic solution is deposited around the intercostal nerve, usually at the posterior angle of the rib, when compared with extradural block has the advantage of a much longer duration, perhaps eight hours after a single injection, but there is no ease of access for repeat injection comparable with the extradural catheter. Intercostal injections carry the risk of inducing a pneumothorax, although in skilled hands this is unlikely. The method is particularly

suitable for transverse incisions on one side of the body, such as the Kocher's incision for cholecystectomy. Nerve block techniques may be life-saving in protecting high-risk patients from pulmonary insufficiency associated with surgical pain in the postoperative period. They are technically demanding, however, and call for a high quality of supervision by both nurses and doctors. Extradural block may be associated with postural hypotension, particularly in patients whose circulatory volume is less than normal. A rare possibility is the risk of accidental subarachnoid injection of the local anaesthetic solution resulting in the need for artificial ventilation as an emergency. Such problems are rare, however, and in experienced hands are not an impediment to the use of these valuable methods.

### Recovery rooms

Twenty years ago postoperative recovery rooms were virtually unknown in British hospitals. Doctors and nurses whose experience extends to that time have usually no difficulty in recalling the crises and occasional disasters that accompanied unattended airway obstruction, regurgitation and aspiration, ventilatory failure, or cardiac arrest in patients who had recently returned to the surgical ward from the operating theatre. Equally vivid are the recollections of fear in the young nurse detailed as a "special" nurse (usually behind the screens) for the high-risk postoperative patient.

Today the recovery room is an integral part of surgical practice and an essential component in progressive patient care. In several countries of the Western world, but particularly in Scandinavia, the concept has been extended to allow patients who have undergone major, routine surgery to receive the benefits of the more highly serviced recovery area in preference to the surgical ward for up to 24 hours. Such arrangements permit a logical deployment of nursing skills, particularly in times of staff shortages, and improve the quality of monitoring and record keeping. The direct benefit to the patient includes careful treatment of his pain: recovery room nurses have more time than those in the surgical ward to learn and practise the skills of intravenous or inhalation analgesia or to maintain nerve block analgesia by injection through a catheter.

The ideal is for the recovery room and the intensive care unit to be adjacent to allow medical support for the former in an emergency. Those with experience of this type of service, however, emphasise that the roles of the recovery area and of the intensive care unit are different and that only rarely should a patient need to be moved from one to the other. Thus a patient known to be suffering from septic shock or from severe chronic lung disease should be admitted to the intensive care unit, bypassing the recovery facilities.

There are early indications that 24-hour recovery facilities will become accepted in Britain over the next ten years; if this does happen it will constitute a major improvement in surgical care.

### Reference

- Spence AA. Postoperative pulmonary complications. In: Gray TC, Nunn JF, Utting JE, eds. *General anaesthesia*. 4th ed. Vol 1. London: Butterworth, 1980:591-608.

### Correction

#### Critical assessment of the clinical TNM system in breast cancer

We regret that two errors occurred in this paper from the Yorkshire Breast Cancer Group (12 July, p 134). Lines 5 and 6 of the Results should have read "... and in which the two clinicians agree as to the T category." In table I there should have been an asterisk against the figure 45 in the first row of the table.