Recovery after major surgery: does the anaesthetic make any difference?

Recovery is a term used frequently in anaesthetic and surgical publications. Many factors may affect recovery, but what does the term imply? Among doctors, nurses and patients the term may be perceived very differently. An anaesthetist may state that recovery has occurred when the patient regains consciousness and physiological stability is present; a surgeon may claim that the patient has recovered when the sutures are removed or when the patient is discharged from hospital. Patients, however, may consider that recovery only ensues when they are able to return to work or have the energy to resume their previous lifestyle. With so many different interpretations, patient recovery becomes extremely difficult to measure.

The variable used most often to assess recovery is duration of hospital stay. It is a reasonable assumption that the patient must have gained some degree of recovery to leave hospital, but this variable is influenced by many factors. For example, the practice of keeping patients in hospital so that they can vacate beds as the next surgical patient arrives, artificially prolongs duration of stay. Despite the absence of accurate data, it is important to consider if modern anaesthetic and surgical practices have hastened recovery after major surgery.

Duration of hospital stay has been declining over the past four decades, not only in the National Health Service (NHS), but also in the private sector. Patients undergoing hysterectomy in the NHS between 1948 and 1957 stayed in hospital for 21 days, but this had decreased to 10 days by 1978–1983. This trend has also been noted in the USA, in spite of an increase in the complexity of medical problems associated with surgery. Duration of stay continues to decrease, and in our hospital in London in 1996, patients undergoing hysterectomy stayed for only 4–5 days. Two key facets of anaesthesia may be implicated; attenuation of the neuroendocrine response to surgery and improved analgesic regimens.

Following Kehlet’s suggestion that neuroendocrine changes are not essential and obtunding them may improve surgical outcome, extradural analgesia and anaesthesia have been used extensively to decrease the stress response and postoperative morbidity. Few investigators have examined the problem directly and most data are derived from studies in which recovery was not a primary end-point. Liu, Carpenter and Neal also argue for more and better variables to assess recovery, such as return to work.

An improvement in postoperative analgesia has become the major thrust of many anaesthetic departments in recent years. Patient-controlled analgesia (PCA) has been adopted enthusiastically and there have been many studies promoting its advantages over conventional analgesic regimens. Although there were a few early reports indicating a more rapid discharge from hospital with PCA, meta-analysis of initial, randomized, control studies found no significant improvement. Mean duration of hospital stay was only 0.15 days shorter with PCA compared with conventional regimens. Neural block provides excellent postoperative pain relief, but again has little impact on recovery. Two studies using extradural analgesia after orthopaedic and colonic surgery failed to show a decrease in the duration of hospital stay. The effects of different extradural analgesic regimens on recovery after colonic surgery were reported recently. Extradural bupivacaine and extradural bupivacaine–morphine provided better analgesia than extradural morphine or morphine PCA, and were associated with more rapid recovery of gastrointestinal function. However, duration of hospital stay was similar in all groups, although the time to fulfill predetermined discharge criteria was improved significantly in patients who received extradural bupivacaine or extradural bupivacaine–morphine. The authors emphasized that, despite prospective agreement with all surgeons, and education of patients, nurses and residents, some patients were not discharged on meeting the fixed criteria. Reasons included travel arrangements, social situations and the patient’s or surgeon’s belief that further observation in hospital was necessary. This study encapsulates the difficulties in trying to examine the effects of anaesthetic techniques on recovery.

It seems likely that anaesthesia has only a minor role to play in enhancing recovery. Changes in surgical technique and the introduction of laparoscopic procedures have been more productive. There is general agreement that duration of hospital stay is much less when cholecystectomy is conducted laparoscopically than by laparotomy. Similar benefits have been claimed for appendicectomy and laparoscopic hernia repair was associated with more rapid return to work. The consensus on the
benefits of laparoscopic cholecystectomy was challenged in 1996 when a laparoscopic technique was compared with small-incision laparotomy16, there was no difference in duration of hospital stay, time back to full employment and time taken to return to full activity. This study used a novel method of determining recovery; the patient decided when to leave hospital. It is of interest that the duration of stay was 3 days with both techniques, possibly longer than anticipated after laparoscopy and shorter than expected after mini-laparotomy.

Nevertheless, the use of laparoscopic techniques is associated with rapid recovery and early discharge. The classical neuroendocrine response to abdominal surgery is similar with both techniques, but there is a significant decrease in markers of the inflammatory response to tissue damage, such as interleukin-6 and C-reactive protein with laparoscopy.17 18 The concept that tissue damage is a key determinant of recovery is supported by studies in which the length of the abdominal incision was varied19 and the use of even smaller laparoscopic ports.20

Barndram and colleagues combined recent developments in surgical and anaesthetic practice to enhance recovery in nine elderly patients undergoing colonic surgery.21 The surgery was laparoscopically assisted and this was combined with extradural analgesia with bupivacaine, early oral feeding and rapid mobilization. Opioids were avoided, if possible, and used only for rescue analgesia. Hospital stay was decreased to 2–3 days compared with the usual 8–10 days. These results are extremely impressive and show what can be achieved by enthusiastic anaesthetic and surgical collaboration. It is not possible from the design of the study to identify those factors responsible for the improvement. Further work with larger numbers of patients and suitable control groups will permit the relative contributions of anaesthetic and surgical factors to be determined.

At present we anticipate that patients who undergo major surgery will stay in hospital for up to 10 days. These expectations are known widely in the community and in hospital. Majied and colleagues found it necessary to blind the nursing staff and the patient to the type of surgery (laparoscopy or mini-laparotomy for cholecystectomy).16 This was achieved by randomizing patients after they had been anaesthetized, restricting nursing access to the operative details and by placing identical blood operative details and by placing identical blood stained dressings on the patients. The dressings were not removed until the patient decided that they were fit for discharge. The investigators also wrote to the general practitioners asking them not to influence the time taken by the patient before returning to work. The care taken to try to eliminate bias in this study shows how entrenched the expectations of patients, doctors and nursing staff are over recovery from major surgery. Cultural factors may be as important as anaesthetic and surgical techniques in influencing recovery.

Research into recovery after surgery is important for information, planning and economic reasons. A clear definition of recovery must be found together with an effective method of measuring this variable. We have discussed briefly some of the problems associated with using duration of stay to assess recovery. The patient’s view of recovery must be taken into account and not just those areas of interest to medical staff (resumption of oral intake, days of analgesic therapy, etc). This requires research projects to be extended into the period of convalescence after the patient has left hospital. This critical time has largely been ignored, so far, and yet is of major importance to the patient.

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References


