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Original Article

Patient compliance with postoperative analgesia after day case surgery: a multisite observational study of patients in North East London

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Abstract

Background: Pain is the commonest reason for delayed discharge and readmission post day surgery with up to 45% of patients reported to suffer moderate-to-severe post-surgical pain 24 hours after discharge. The importance of post-surgical pain management extends beyond the acute phase when one considers that all chronic post-surgical pain was once acute. Although much focus is given to perioperative analgesia, a patient's pain management once discharged can be overlooked, whilst at this time the patient's pain management is within their own hands.

Methods: We conducted this multisite observational study of adult patients undergoing day case surgery. After obtaining patient consent data was collected on the operation, intra- and postoperative analgesia administered and discharge analgesia prescribed. Patients were then contacted at home by telephone 48 hours after discharge and asked about their postoperative pain and analgesia requirements.

Results: Of 150 patients consented for the enrolment, we were able to obtain postoperative analgesia data on 100. A total of 68% of patients reported pain following discharge with 26% reporting severe pain, defined as a pain score of ≥ 7 . A total 68% of patients were prescribed and dispensed analgesia, and of those, 83% were compliant with their analgesia. Thus, we conclude that in this patient group, the incidence of postoperative pain was not due to lack of patient compliance, but inadequate analgesia prescription.

Discussion: We recognise that our data reflect a patient population in North East London but suggest that the results may still be relevant to a wider patient group across the United Kingdom as the incidence of postoperative pain in our study was similar to published figures. Better patient satisfaction with postoperative analgesia may be obtained with more patient- and surgery-specific analgesic prescription.

Keywords

Acute pain, pain, postoperative, patient compliance, adult, day case surgery, postoperative analgesia

Background

Pain is the commonest reason for delayed discharge and readmission post day case surgery with up to 45% of patients reported to suffer moderate to severe post-surgical pain 24 hours after discharge.¹ The importance of post-surgical pain management extends beyond the acute phase when one considers that all chronic post-surgical pain was once acute.² Although much focus is given to perioperative analgesia, a patient's pain management once discharged can be overlooked. Importantly, the operation may stay the

same, but the patient's subjective experience of pain may differ. Furthermore, once discharged, patients

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become solely responsible for their own pain management. Hence, not only is it vital to prescribe procedure- and patient-specific analgesia but it is also important to educate and empower them with the ability to manage their own pain.² Our study reviewed patients' experience of pain management following discharge after day surgery with a focus on the effectiveness and compliance with prescribed analgesia.

Methods

This observational study was conducted across a multisite trust in East London. Day case adult patients were recruited over the two sites of the trust between 21 October and 9 December 2013. Potentially, suitable patients were identified and their consent for data collection and for them to be contacted at home postoperatively was gained preoperatively.

Inclusion criteria included the following:

Age over 18;
Day case surgery under general, regional or local anaesthetic;
Patient consent to be contacted at home;
Competent in English language enough to be contacted at home via telephone without the need for a translator.

Exclusion criteria included the following:

Lack of patient consent;
Complication requiring patient admission to hospital.

Data were collected on patient demographics; the operation; intra- and postoperative analgesia administered, including regional analgesia; discharge analgesia prescribed; and the grade and speciality of the prescribing doctor. Following discharge, patients were contacted at home by telephone 48 hours after surgery and asked,

1. If they had experienced any pain following discharge;
2. If they received discharge analgesia from the hospital;
3. If they had been compliant with the analgesia;
4. Their maximum pain score on a scale of 0–10 since discharge;
5. If they felt the prescribed analgesia had been adequate to manage their pain.

The patients were also given the opportunity to feedback any comments they had with regards to their perioperative pain management.

Data on the maximum pain score over the 48 hours were collected by asking patients to rate their maximum pain on a Numerical Rating Scale of 0–10, with 0 equating to no pain and 10 equating to worst imaginable pain.

Patient compliance with analgesia was defined as taking medication as prescribed. For regular prescriptions, this meant taking the analgesics at the prescribed dose and dosing interval, and for as required analgesia, this meant taking the medication when in pain.

The results were then collated and analysed to calculate the primary outcome of percentage patient compliance with prescribed analgesia. Percentage compliance refers to the proportion of individual patients who were fully compliant with their analgesic prescription rather than the proportion of a prescription an individual patient was compliant with.

Anaesthetists within the department used a set data collection proforma to obtain consent and collect data, including via the telephone interview. As the data were collected with a view to improving services locally as well as nationally, approval for the research was gained through the local audit and service improvement department.

Results

Data were collected on patients undergoing day case Breast, General, Gynaecology, Orthopaedic, Urology and ENT surgery (Figure 1).

One hundred and fifty patients were recruited into the study. Forty-nine patients were lost to follow-up as they were not contactable 48 hours after discharge, one patient was excluded as she was readmitted to hospital 24 hours post surgery for bleeding and possible wound infection (Figure 2). The median age range was 50–60 years, with an approximately equal gender distribution of 52% male and 48% female patients. Of the 100 patients for whom we were able to obtain feedback, 89% of patients reported pain following discharge with 68% reporting moderate-to-severe pain with a pain score ≥ 4 , and 26% suffering severe pain, defined as a pain score of ≥ 7 . The overall median pain score was 5 with a range of 0–9.

There was no significant difference in pain scores or analgesic compliance between male and female patients with average pain score for both male and female patients being 4.4/10 and compliance with analgesia being 81.8% in female patients and 85.7% in male patients.

In all, 32% of patients were not prescribed or dispensed analgesia. For the 68% who were prescribed and dispensed analgesia, 83% of patients were fully compliant with their prescription. Patients who were given discharge analgesia rated the efficacy of the analgesia they received as: less than adequate (33%), adequate (51%) and more than adequate (16%).

Figure 1. Distribution of patients by surgical specialty.

Figure 2. Flow diagram of patients included.

The majority of prescriptions were made by anaesthetists (61%), and anaesthetic prescriptions were more likely to involve two different classes of analgesia, 91%, compared to 79% of surgical prescriptions. In addition, 43% of surgical and 26% of anaesthetic prescriptions were reported as less than adequate, by patients who were compliant with the prescription.

Subgroup analysis of patients undergoing day surgery by type of anaesthetic and severity of surgery found that average pain score ranged from a lowest of 2.5/10 for those patients having minor surgery under Local Anaesthetic (LA) or General Anaesthetic+Regional Anaesthetic (GA+RA), to a highest of 6.6/10 for patients having intermediate surgery under GA+RA or RA alone. Patients having surgery under GA alone had an average pain score of 4.21 if having minor surgery and 4.56 if having intermediate surgery. Severity of surgery was defined according to the National Institute for Health and Care Excellence (NICE) grade of surgery classification.³

Take-home analgesia was more likely to be given for intermediate surgery, 80%, than for minor surgery, 50% regardless of the type of anaesthesia; however, this did not affect compliance which was 83% and 93%, respectively, in the two groups.

Discussion

Pain can have undesirable physiological and psychological consequences,⁴ including a sense of suffering, poor wound healing, cardiorespiratory compromise and limited mobility⁵ with its associated morbidity. It is also a risk factor for progression to chronic pain.⁶ There are also economic factors such as delayed return to work or normal function⁷ for patients who suffer prolonged pain.

Interpretation of findings

The results of our study of adult patients undergoing day surgery revealed that 68% of patients report experiencing moderate-to-severe pain in the 48 hours post discharge, as defined as a maximum pain score of 4 or more in the 48 hours postoperatively. A more detailed analysis, as shown in Figure 3, shows a mean pain score of 4 and a median pain score of 5 with 26% reporting more severe pain (i.e. a pain score of ≥ 7). This level of postdischarge pain approximates the 45% reported in a systematic review¹ and suggests that our sample population is a good representation of a wider patient group.

In terms of postdischarge analgesia, 68% were prescribed and dispensed, 6% were prescribed but not dispensed and 26% were not prescribed analgesia, as presented in Figure 4. Figure 5 shows a greater proportion of patients who were prescribed and dispensed analgesia reported moderate to severe pain in the

Figure 3. Maximum pain scores reported by patients in the 48 hours post surgery (n = 100).

Figure 4. Prescription of discharge analgesia (n = 100).

48 hours postdischarge (78%) compared to those not dispensed (67%) and those not prescribed analgesia (61%). This most likely represents the fact that post-discharge analgesia is more commonly prescribed for intermediate surgery associated with more severe pain (83%) than for less painful minor surgery (60%). Significant pain reported by patients without postdischarge analgesia would suggest that despite the perceived low severity of the postoperative pain associated with their procedure, they still require some form of analgesia on discharge, and this should be taken into consideration by the prescribing physician.

Furthermore, despite evidence that regular use of analgesia in the immediate postoperative period reduces one's acute pain score and the rate of conversion to

chronic pain,⁸ of the postoperative analgesic prescriptions made, 22% were prescribed on an as required basis. Together with a lack of written advice on how to take the analgesia, maximum allowed doses and suggested combinations, we feel this does not encourage patients to feel confident in taking the analgesia that they require. As a result, following on from this study on a local level, we have produced a patient information leaflet in order to educate and empower our patients to know what analgesia can be taken together and the maximum dosing regimes.

In all, 6% of patients were prescribed analgesia, but this was not dispensed. All these prescriptions were for medications that can be bought over the counter, namely Paracetamol, Ibuprofen and Co-Codamol, and

Figure 5. Pain score in relation to analgesia prescription. (a) of the 68% prescribed and dispensed analgesia, (b) of the 6% not dispensed analgesia and (c) of the 26% not prescribed analgesia.

this may explain why these were not dispensed as patients may well have had these medications at home and hence refused the hospital prescription. This is in contrast to the other commonly prescribed analgesia, Codeine, Tramadol, Co-Dydramol and higher concentrations of Co-Codamol, which are not frequently dispensed over the counter and therefore when prescribed were dispensed in hospital. However, our study was not designed to investigate the reasons for non-dispensing of medication, and this would be of interest to investigate in future research. Of note, the average pain score for those patients prescribed but not dispensed analgesia was higher, 3.83/10, than those neither prescribed nor dispensed, 2.77, although is low in both groups.

With regard to our primary outcome, we found that of the patients prescribed and dispensed analgesia, 84% of patients were compliant with their prescribed analgesia. Interestingly, only 16% of patients were non-compliant with their prescribed analgesia. This is significantly less than the 45% non-compliance that we predicted would be present to account for the 45% of day case patients who experience significant postdischarge pain, as reported in recent literature (P value < 0.001).¹ Hence, non-compliance alone cannot account for the significant postdischarge pain reported and we propose, therefore, the main reason for inadequate postoperative pain management is inadequate analgesia prescription. Having said this, of the high proportion of patients reporting moderate to severe pain, the majority of patients who were compliant with their prescribed analgesia felt that the analgesia prescribed was either adequate or more than adequate (67%).

It is not surprising that patients having intermediate surgery would have higher postoperative pain scores on average than those having minor surgery. What is notable is that patients having surgery under GA alone irrespective of the severity of surgery had similar average

pain scores of 4.21/10 for minor surgery and 4.56/10 for intermediate surgery, but that patients having surgery with LA or RA with or without GA had very different pain scores depending on the severity of surgery with average pain scores of 2.5/10 for minor surgery and 6.6/10 for intermediate surgery. The latter group, patients having intermediate surgery with LA or RA with or without GA, also had a higher percentage of patients requiring morphine in recovery. In all, 40% of these patients required Morphine in recovery, compared to 18% for patients having GA alone regardless of the severity of surgery and none of the patients who had minor surgery under LA or GA + RA. This may reflect that less intraoperative systemic opiates were given to patients who had RA and thus when the regional anaesthesia wore off patients who had had intermediate surgery required analgesia in recovery and later had higher pain scores at home.

In this study, we did not differentiate patients who had GA maintained with inhalational agents versus intravenous agents, although it is common practice in the trust to use inhalational anaesthetic. There is some evidence that GA maintained with Propofol infusion results in decreased pain on a visual analog scale compared with Sevoflurane anaesthetic.⁹ Further studies may investigate if the route of maintenance of GA compared to RA influences postoperative pain.

Limitations of study

The authors recognise the limitations of the study that although a multicentre study, both hospitals were based in North East London. In addition, we had a two-third response rate with 50 of 150 patients being lost to follow-up or excluded from final analysis, which is significantly less than a similar study conducted in 1997.⁶

We also recognise that we collected data on patients' maximum pain score over 48 hours which may introduce an element of recall bias as it requires patients to remember their pain over the previous 48 hours. However, we felt that by collecting data on maximum pain scores, it would allow us to identify subtle differences in postoperative pain experience in the different patient groups, which may have levelled out if we had asked patients about their pain at 48 hours.

We have included day surgery patients undergoing a wide selection of surgical procedures under various specialties as we wanted this to be a pragmatic study characterising day case surgery in general rather than a particular surgical speciality. We feel that this helps with its generalisability, although recognise that it may not fit with day surgery units in other hospitals which may cover a smaller range of surgical specialty.

All patients in our study spoke English to a level adequate for them to be contacted at home by telephone. This was done to make the study feasible; however, the authors recognise that this may exclude some patients who do not have a sufficient grasp of English and again may make our conclusions not valid in another hospital setting.

Conclusion

Our findings support previous studies, which suggest that there is a significant incidence of moderate to severe postoperative pain in day surgery patients. In addition, we have found that one-third of patients who were prescribed analgesia experienced less than adequate pain relief, despite 84% of the patients sampled being compliant with prescribed discharge analgesia. We feel that it is therefore appropriate to conclude that the inadequacy of postoperative pain control is due to inappropriate analgesia prescription. We surmise that the level of dissatisfaction with postoperative analgesia may be improved by providing procedure- and patient-specific analgesic regimes, as well as education to both prescribers and patients, empowering patients to utilise optimal analgesia. We suggest that this is not an issue isolated to this trust,

and these findings may be utilised by similar trusts providing day case surgery.

Conflict of interest

The authors declared no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

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