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This edition of the Journal of Ambulatory surgery contains 4 disparate but interesting articles. From Copenhagen, we have a thought-provoking variation of Altemeier’s Procedure applied to stomal, rather than rectal prolapse with 8 of the 10 procedures performed in a day case setting. The procedure is elegantly illustrated by a series of photographs demonstrating each step of the operation. The author concludes that the procedure for full thickness prolapsed colostomy stoma offers a safe and easy day surgery option.

The second paper comes from Milton Keynes in the South Midlands of England. The authors are interested in the post-operative outcome of patients undergoing laparoscopic cholecystectomy, where the patients have failed both day case and overnight stay surgery, staying more than 48 hours. They suggest that in their series, this unfortunate group of patients accounts for 8% of the total and when compared to successful day case laparoscopic cholecystectomies, these patients are more likely to have had acute cholecystitis rather than biliary colic, and have a longer operating time with more drain insertions and conversions to the open procedure. The authors bravely state that some of these factors may be avoidable with greater attention to surgical detail and that their results continue to improve through a continuous audit programme.

Thirdly, comes our first paper from Iran. Here the authors are comparing post-operative pain scores after inguinal hernia repair by local anaesthesia versus general anaesthesia. Not surprisingly, patients in the local anaesthesia group had lower pain scores and a shorter length of stay. The authors are keen to promote local anaesthetic hernia repair in their country where the technique is performed in few centres.

Finally we have a comprehensive overview from Manchester, England, of 25 studies describing the experience of the patient and carer in the immediate post-operative period following day surgery. The author concludes that the main problems are threefold and relate to pain, anxiety and a lack of information. The article suggests that this is the result of the nurse/patient contact becoming more fragmented with the nurse/patient relationship now consisting of brief interactions in the outpatient department, preassessment, in the day surgery unit and in the community with little or no interaction on a professional basis between them. The author proposes that the solution may lie in the enhancement of the hospital/community interface with greater communication between the two.

Enjoy!

Doug McWhinnie
Joint Editor-in-Chief
The adaptation of Altemeier’s procedure to treat end colostomy prolapse: A simple option for day surgery

O. Bulut

Abstract

Aim: A simple technique similar to an Altemeier perineal proctectomy is presented as a localised correction under intravenous sedation.

Methods: Ten patients with prolapse of an end colostomy underwent this modified procedure between October 2010 and November 2011. Standard surgical and anaesthetic protocols were used.

Results: Eight of the 10 procedures were performed in outpatient settings and completed within 60 minutes. The postoperative course was uneventful in each patient. The median follow-up was 11 months (range 4–15).

Conclusion: This approach would appear to be a safe and reasonable alternative option for local treatment of a prolapsed colostomy stoma.

Keywords: Colostomy; stoma prolapses; stoma-related complications; day case; ambulatory surgery.

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Introduction

Stoma prolapse is one of the late complications of end colostomies and the estimated incidence is reported as ranging from 2–3% to 12%, dependent upon follow-up [1]. Stomal prolapse interferes with the patient’s quality of life and results in peristomal dermatitis, bleeding and difficulty in fitting the stomal appliance. Occasionally, stomal prolapse may lead to incarceration and strangulation requiring surgical correction. In the absence of an associated hermian, revision of the stoma usually does not require a laparotomy [2]. Some minimal invasive techniques including the use of stapling devices have been described for local correction of stoma prolapse [3–5]. However, most of these procedures are challenging on fragile elderly patients, especially in the case of incarceration and strangulation.

We present a simple technique similar to an Altemeier perineal proctectomy for the local surgical treatment of stomal prolapse, under minimal sedation in a series of 10 patients.

Methods

Surgical technique

The patient is placed in the supine position and 15 mg pancuronium and 5 mg midazolam are given intravenously for analgesia and sedation, respectively. A full thickness circumferential electrocautery incision is made on the prolapsed bowel approximately 5–7 mm from the mucocutaneous junction (Fig. 1). The space between the 2 layers of the prolapsed bowel wall are identified with the tip of a surgical clamp and circumferentially incised (Fig. 2). The everted colon is dissected, and the feeding vessels immediately adjacent to the bowel wall of the elongated section of prolapsed colon are ligated from the inner component of the prolapsed colon, effectively doubling the length of everted segment (Fig. 3). The elongated bowel is drawn out through the colostomy opening. Once, haemostasis has been achieved, the prolapsed colon is resected and the new stoma is fashioned as an end stoma with absorbable eversion sutures (Fig. 4). The sutures incorporate serosa at the base of the stoma including the circumferential mucosal edge. Three or four stay sutures are inserted between the edges of the remaining circular mucosal wound and the open end of bowel. It is important to see that there is an adequate amount of bowel projecting beyond the skin level to avoid stenosis. Further sutures are then placed between the stovers to secure a accurate apposition of the two epithelial surfaces. Eversion of the new stoma prevents the development of the stricture at the anastomotic site.

Results

A total of ten patients with full thickness prolapse of end colostomy underwent this procedure between October 2010 and November 2011. Table 1 summarizes demographic and perioperative data. Initial surgery was performed for colorectal cancer in 7 patients. Two patients were operated for ischemic colitis and one, previously operated for anal atresia, underwent sigmoidostomy as a final surgical procedure. Stomal prolapses developed within 3–16 months after the initial surgery and different conservative measures have been tried in the management of this complication. Two patients underwent emergency surgery by this technique due to incarceration or strangulation of the prolapsed colostomies (Fig. 5), requiring in-patient rather than day surgery.

Discussion

Treatment options for stomal prolapse vary from temporary, conservative measures to surgical intervention. Conservative measures include osmotic therapy with granulated sugar and manual reduction often results in recurrence [6]. A variety of surgical techniques has been used either locally at the stoma site or following laparotomy with attempting internal fixation or translocation of the colostomy. Surgical intervention with local revision can be performed in the absence of an associated hernia and laparotomy can be avoided in the majority of the cases. The procedures requiring laparotomy or major stoma revision are associated with remarkable morbidity, especially in elderly patients. In general, conventional procedures are more difficult to perform and often need general anaesthesia followed by several days of hospitalisation. Abudali et al. described an adaptation of Delorme’s technique to treat mucosal prolapse. This method involves an incision to the mucosa near the mucocutaneous junction followed by excision of the redundant mucosa and pllication of the muscular wall [7].

Recently, several methods describing the use of stapling devices to amputate the prolapsed segment as a local correction without laparotomy have been published. In general, the stapling devices seem to be useful in the local treatment of mucosal prolapse and the procedures can be performed under sedation without further medication or general anaesthesia [5, 8, 9]. However, available complications such as ulceration and stenagulation in cases with prolapse in permanent stoma require acute surgical treatment. Several attempts of manual reduction as a temporary measures in fragile, elderly patients may result in severe prolapse with resultant bowel oedema or ischaemia and strangulation. Local care of stomal prolapse is possible especially if the stoma is not incarcerated [10]. Therefore, the application of stapling devices may not be an easy and safe option in cases of redundant, ischemic prolapsed colostomy in the emergency situation.

Only two of our patients underwent emergency surgery in this study and they were discharged on the first postoperative day. All patients underwent minimal sedation. In two patients who had developed anastomotic stricture, and had been treated with several mechanical dilatations, an anastomosis was fashioned between the distal end of the intestine and the mucosal edge. All procedures were completed within 60 minutes and the blood loss was minimal. The postoperative course was uneventful in each patient. The median follow-up was 11 months (range 4–15). In the follow-up period, two patients had recurrences at 3 and 5 months, respectively.
patients rapidly returned to their normal life and recovered well without any complications. Two recurrences have been observed with this technique during the follow-up period. One underwent the same procedure for recurrence and another patient is now ready for reversal procedure. Although we currently use this approach only for stomal prolapse of end colostomies, it may be possible to be performed on patients having prolapsed loop stomas.

**Conclusion**

Although long-term data are lacking, this approach seems to be easy and safe to perform and is a reasonable option for local treatment of a full thickness prolapsed colostomy stoma, particularly in cases of emergency. We have successfully employed Altemeier’s perineal proctectomy technique to treat end colostomy prolapse as a outpatient procedure in 8 out of ten patients in our small series and commend this minimal technique as suitable for day surgery practice.

### Table I  Patient characteristics and perioperative data.

<table>
<thead>
<tr>
<th>Patient</th>
<th>Gender</th>
<th>Age</th>
<th>Reason for colostomy</th>
<th>Initial surgery</th>
<th>Complications</th>
<th>Follow-up (months)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>F</td>
<td>70</td>
<td>ischaemic left colon</td>
<td>LH</td>
<td>-</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>M</td>
<td>61</td>
<td>rectal cancer</td>
<td>APR</td>
<td>-</td>
<td>15</td>
</tr>
<tr>
<td>3</td>
<td>M</td>
<td>57</td>
<td>rectal cancer</td>
<td>APR</td>
<td>recurrence</td>
<td>14</td>
</tr>
<tr>
<td>4</td>
<td>M</td>
<td>75</td>
<td>rectal cancer</td>
<td>APR</td>
<td>-</td>
<td>14</td>
</tr>
<tr>
<td>5</td>
<td>M</td>
<td>77</td>
<td>ischaemic left colon</td>
<td>LH</td>
<td>stricture</td>
<td>12</td>
</tr>
<tr>
<td>6</td>
<td>M</td>
<td>38</td>
<td>anal atresia</td>
<td>Sigmoid colostomy</td>
<td>stricture</td>
<td>13</td>
</tr>
<tr>
<td>7</td>
<td>M</td>
<td>75</td>
<td>rectal cancer</td>
<td>HO</td>
<td>-</td>
<td>10</td>
</tr>
<tr>
<td>8</td>
<td>F</td>
<td>72</td>
<td>rectal cancer</td>
<td>HO</td>
<td>-</td>
<td>7</td>
</tr>
<tr>
<td>9</td>
<td>M</td>
<td>56</td>
<td>sigmoid colon cancer</td>
<td>HO</td>
<td>recurrence</td>
<td>6</td>
</tr>
<tr>
<td>10</td>
<td>M</td>
<td>71</td>
<td>rectal cancer</td>
<td>APR</td>
<td>-</td>
<td>4</td>
</tr>
</tbody>
</table>

F: female  M: male  LH: left hemicolectomy  APR: abdominoperineal resection  HO: Hartmann's operation

### References

What factors are associated with prolonged hospital stay following planned day-case Laparoscopic Cholecystectomy?

J Isherwood, DPJ Howard, R Saunders, Y Jabri, D Phillips, D McWhinnie

Abstract

While many studies of day case laparoscopic cholecystectomy focus on improving day case rates, the outcomes of those patients who fail day case discharge and have a prolonged length of stay (>48 hours) are less well documented. This case-controlled study investigates the factors responsible for prolonged admission following planned day-case laparoscopic cholecystectomy in a District Hospital performing approximately 250 laparoscopic cholecystectomies per year with a background day-case rate of 35%.

Keywords: Day case surgery; Laparoscopic cholecystectomy; Length of stay; failed discharge.

Introduction

The implementation of day-case laparoscopic cholecystectomy (LC) in England is a key National Health Service (NHS) target proposed by the NHS Institute of Innovation and Improvement. [1] Laparoscopic cholecystectomy is a high volume surgical procedure, and when performed as a day-case enables increased surgical department efficiency and reduced service cost with no reduction in patient satisfaction, safety, morbidity, re-admission rate, pain, or quality of life.[2, 3]

The majority of studies looking at this target have focused on the safety of day case laparoscopic cholecystectomy, and deemed it a safe method of practice. [4]

Other studies and guidelines have investigated ways of improving day-case rates across the NHS [5–7] However, few studies have investigated why patients fail to achieve day-case discharge following elective surgery and what factors are responsible for this. This case-controlled study investigates the factors responsible for prolonged admission (>48hours) following planned day-case LC in a large District General Hospital performing approximately 250 LCs per year with a background day-case LC rate of 35%.

Methods

Over a 3 year period from 2007–2010 all patients undergoing consecutive planned day-case laparoscopic cholecystectomy (n=776) were included in the study. Patients’ demographics, operative details, antibiotic usage, intra- and post-operative complications, and analgesic requirements were recorded using a standardised proforma. The case-controlled groups under investigation were classified as the case group and the control group.

The 62 prolonged stay (>48 hours) patients represented 8.0% of the total LCs performed over the 3 year period (62/776). The demographic profile of the study groups, (Failed DC and Successful DC) revealed similar patient age (58yrs v 53yrs), sex (male: 24.2% v 29.0%), co-morbidity, smoking status (21% v 24.2%), BMI > 35 (24.2% v 16.4%), ASA grading, and previous abdominal surgery rate (40.3% v 37.1%) (Table 1).

The most common indication for surgery (Figure 1) in the failed DC group was acute cholecystitis (45.2%) while in the successful DC group this accounted for only 21.0% of indications (p<0.01 2-tailed X2 test with Yates correction). In contrast, biliary colic was the primary indication for surgery in the successful DC group in 67.7% of cases but only 30.6% but in the failed DC group. (67.7% vs 30.6%, p<0.01 2-tailed X2 test with Yates correction). The operative duration was longer in the failed DC group compared with successful DC group (median 90mins vs 60 mins p<0.001, Mann-Whitney U-Test). Conversion to open (30.6% vs 0%) and use of intra-abdominal drains (45.2% vs 1.6%) were also significantly greater in the failed DC group (p<0.001 2-tailed Fisher’s Exact Test) as were early post-operative complications (42.9% vs 16.2%) (p<0.05 2-tailed X2 test with Yates correction). The experience level of the lead surgeon did not have a statistically significant impact on length of stay.

Generic operative complications such as post-operative nausea and vomiting (PONV), chest pain, port site pain and wound haematoma were similar between the 2 groups (Table 1), but the proportion of specific operative complications was significantly greater in failed DC versus successful DC (using 2-tailed Fishers exact testing), including sub-hepatic collections (8.1% v 0%) and bile leaks (8.1% v 0%). Social care concerns and poor pain control were responsible for prolonged admission in 8.1% and 11.3% of cases respectively.

Discussion

This study reveals multiple factors associated with failed discharge in patients undergoing planned day-case LC. Many (but not all) of these factors are preventable and their avoidance is likely to result in higher day-case LC rates and better patient care. Overall, the factors correlated with prolonged unplanned admission were:

Factors associated with prolonged stay in failed DC group:
- Age (over 50 years)
- Sex (male)
- Acute cholecystitis as primary indication for surgery
- Longer operative duration
- Conversion to open surgery
- Use of intra-abdominal drains
- Specific operative complications
- Social care concerns
- Poor pain control

Factors that were not significantly associated with prolonged stay:
- BMI
- ASA grading
- Previous abdominal surgery
- Experience level of lead surgeon

Conclusion

This study highlights the importance of identifying and addressing the factors associated with prolonged stay following day-case laparoscopic cholecystectomy. Further research is needed to develop strategies to improve day-case rates and reduce complications.
Table I Summary of all data collected for consecutive patient suffering unplanned prolonged hospital stay (Failed DC) versus those achieving successful day-case discharge (Successful DC).

<table>
<thead>
<tr>
<th>Demographics</th>
<th>Failed DC Group (n=62)</th>
<th>Successful DC Group (n=62)</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient Age *</td>
<td>58 (48-67)</td>
<td>53 (39-62)</td>
<td>NS</td>
</tr>
<tr>
<td>Male (%)</td>
<td>24.2</td>
<td>29.0</td>
<td>NS</td>
</tr>
<tr>
<td>Diabetes (%)</td>
<td>17.7</td>
<td>9.7</td>
<td>NS</td>
</tr>
<tr>
<td>Smoker (%)</td>
<td>21.0</td>
<td>24.2</td>
<td>NS</td>
</tr>
<tr>
<td>ASA grade (%)</td>
<td>I 29.0</td>
<td>I 30.6</td>
<td>NS</td>
</tr>
<tr>
<td>II 61.3</td>
<td>II 56.5</td>
<td>NS</td>
<td></td>
</tr>
<tr>
<td>III 8.1</td>
<td>III 3.2</td>
<td>NS</td>
<td></td>
</tr>
<tr>
<td>IV 0.0</td>
<td>IV 0.0</td>
<td>NS</td>
<td></td>
</tr>
<tr>
<td>BMI &gt; 35 (%)</td>
<td>24.2</td>
<td>16.4</td>
<td>NS</td>
</tr>
<tr>
<td>Previous abdo surgery*</td>
<td>40.3</td>
<td>37.1</td>
<td>NS</td>
</tr>
<tr>
<td>Indication for LC (%)</td>
<td>Biliary Colic 30.6</td>
<td>Biliary Colic 67.7</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Cholecystitis 45.2</td>
<td>Cholecystitis 21.0</td>
<td>NS</td>
<td></td>
</tr>
<tr>
<td>Recent pancreatitis 8.1</td>
<td>Recent Pancreatitis 4.8</td>
<td>NS</td>
<td></td>
</tr>
<tr>
<td>Previous jaundice 6.4</td>
<td>Previous jaundice 1.6</td>
<td>NS</td>
<td></td>
</tr>
<tr>
<td>Empyema 4.8</td>
<td>Empyema 1.6</td>
<td>NS</td>
<td></td>
</tr>
<tr>
<td>Operative time (mins)</td>
<td>90 (60-110)</td>
<td>60 (50-70)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Lead Surgeon (%)</td>
<td>Consultant 66.2</td>
<td>Consultant 42.1</td>
<td>NS</td>
</tr>
<tr>
<td>Registrar 29.0</td>
<td>Registrar 47.4</td>
<td>NS</td>
<td></td>
</tr>
<tr>
<td>Associate Specialist 4.8</td>
<td>Associate Specialist 10.5</td>
<td>NS</td>
<td></td>
</tr>
<tr>
<td>Conversion open (%)</td>
<td>30.6</td>
<td>0.0</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Drain insertion (%)</td>
<td>45.2</td>
<td>1.6</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Post-operative Complications (%)</td>
<td>Total: 42.9</td>
<td>Total: 16.2</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>PONV : 8.1</td>
<td>PONV : 6.5</td>
<td>NS</td>
<td></td>
</tr>
<tr>
<td>Subhepatic collection: 8.1</td>
<td>Subhepatic collection: 0</td>
<td>0.058</td>
<td>NS</td>
</tr>
<tr>
<td>Bile Leak: 8.1</td>
<td>Bile Leak: 0</td>
<td>0.058</td>
<td>NS</td>
</tr>
<tr>
<td>Chest pain / LRTI 6.5</td>
<td>Chest pain / LRTI 0</td>
<td>NS</td>
<td></td>
</tr>
<tr>
<td>Wound haematoma: 1.6</td>
<td>Wound haematoma: 3.2</td>
<td>NS</td>
<td></td>
</tr>
<tr>
<td>Urinary Retention 3.2</td>
<td>Urinary Retention 1.6</td>
<td>NS</td>
<td></td>
</tr>
<tr>
<td>Significant post-op port-site Pain (%)</td>
<td>11.3</td>
<td>4.8</td>
<td>NS</td>
</tr>
<tr>
<td>ITU admission (%)</td>
<td>3.2</td>
<td>0.0</td>
<td>NS</td>
</tr>
<tr>
<td>Mortality (%)</td>
<td>0.0</td>
<td>0.0</td>
<td>NS</td>
</tr>
</tbody>
</table>

*Values are given as median and interquartile range.

Pre-operative Surgical indications (cholecystitis vs biliary colic)

Operative Longer operating time, conversion to open, use of intra-abdominal drains

Post-operative Delayed removal of drains, bile leaks and perihepatic collections

Although only 8% of all planned day-case laparoscopic cholecystectomies result in a prolonged hospital stay, these patients represent an unfortunate group who suffer significant morbidity, including post-operative pain, PONV, and specific procedure-related complications including conversion to the open procedure. The need for a surgical drain in LC should be minimal, as a dry liver bed should be a surgical prerequisite before exiting the abdomen. Even if a drain is considered necessary, it is possible in most cases to remove the empty drain later in the day and allow safe discharge. Finally delayed discharge as a result of social concerns can be prevented by ensuring appropriate social support is in place before admission.

A reduction in length of stay may require improved surgical technique with appropriate attention to detail. In the hospital in question the conversion rate has been reducing year on year since 2005 as a result of an ongoing teaching and audit programme. Thus, if this trend continues, a reduction in prolonged stay patients should be expected, benefiting both the economic fortunes of the hospital, but most importantly, the quality of care of the patient.

References

Assessment of the effect of local versus general anesthesia on the pain perception after inguinal hernia surgery

M. Hosseinpour\textsuperscript{a}, A. Behbad\textsuperscript{b}, M. Resaei\textsuperscript{a}

Abstract

Background: The aim of this study is to compare pain score and complications of local and general anesthesia in surgical treatment of inguinal hernia.

Methods: 100 patients with inguinal hernia were selected in the LA (local anesthesia) group (n=50) morphine (0.1-0.2 mg/kg) was injected initially for premedication before herniorrhaphy was performed. In the GA group (n=50), after premedication, the operation was performed under general anesthesia. Major complication such as vasovagal reflex, drug reaction, operation time, pain score, local and general complication and length of stay in hospital were evaluated.

Keywords: Local anesthesia, Postoperative complications, postoperative pain, inguinal hernia.

Results: The operation time was similar between groups, but the length of stay was one day in the LA group and up to five days in the GA group. Vasovagal reaction was seen in 2% of LA cases and in 4% of the GA group. The 4 hour post operative visit pain score was 2.5±1.3 in LA cases and 6.9±1.8 in the GA group (p ≤0.001). The 8 hour post operative visit pain scores were similar in both groups (6.6±1.3 and 6.4±1.5 respectively).

Conclusion: Local anesthesia for inguinal hernioplasty offers a reduction in early postoperative pain and a reduction in length of stay when compared to general anesthesia.

Introduction

Inguinal hernia repair is one of the most common day surgical procedures performed in men, but the optimum method of anesthesia/analgesia in these patients remains unclear [1–2]. Geiv hernia repair under local anesthesia is cost-effective and safe [3–7], but within our country, it is not routinely used in all surgical centres.

In this study, we compared local and general anesthesia in patients with geiv hernia looking at the outcome measures of complications, post-operative pain and length of stay.

Methods

Male

Patients (n=100) scheduled for primary unilateral inguinal hernia repair were recruited for this study from May 2006 until May 2007. In this study, we compared local and general anesthesia in patients with geiv hernia looking at the outcome measures of complications, post-operative pain and length of stay.

Results

In this study, 100 patients were enrolled. Table 1 presents the demographic data, including the American Society of Anesthesiologists Classification and operative time. No significant differences were seen between groups. Length of hospital stay was 1±0.5 days in LA group and 2.5±1.3 in GA group (P ≤0.02).

Intraoperative complications

There were no neurological complications in any groups. Vasovagal reflex was occurred in 2% of LA versus 4% in GA groups (NS)

Post operative local complications

Hematoma was occurred in 6% of GA group and 4% of LA group (NS). Seroma was recorded in 2% of GA group (NS). Wound infection was similar in both groups (2%).

Post operative general complications

Nausea and vomiting were occurred in 25% of GA group. Urinary retention was occurred in 2% of GA group while atelectasis, diagnosed according to post operative early fever was found in 4% of GA group. Aspiration was occurred in 2% of GA group. None of these findings were significant.

Post operative pain

VAS values in 4 and 8 hours after operation are shown in Figure 1. At 4 hours postoperatively the VAS was 2.5±1.3 in the LA group and 6.9±1.8 in the GA group (P ≤0.001). At 8 hours after operation the VAS was 6.6±1.3 in the LA group and 6.4±1.5 in the GA group (NS).

Discussion

Pain is an important problem after hernia repair and local anaesthesia offers an economic advantage for our institution and quality care for our patients.

Post operative pain scores differences may be are related to the half-life of Lidocaine with good local anesthesia maintained at for hours but not at 8 hours. Advantages of local anesthesia have been reported by other authors. In eight randomized studies [13–23], authors compared local anesthesia with general anesthesia. Results of two of these studies showed no significant pain difference between groups [19–24]. Sakellaris et al [26] showed that local anesthetic infiltration with a modulated hypotonic-pituitary-adenal axis response. He showed that painful stimuli can cause cortisol and prolactin release and post-operative nausea.

Toivanen [27] showed that ilioinguinal block lasted 6 hours post operatively, and after that its effect declined as was found in our own study.

Perhaps our most significant finding in terms of ambulatory surgery was the significant difference in length of stay between our LA and GA groups. Most of the LA group returned home the same day, demonstrating an economic advantage for our institution and quality care for our patients.

References


Abstract

Aim: To evaluate the experiences of patients and caregivers in the early transition phase of recovery at home following day surgery.

Background: A global increase in elective day surgery has taken place over the last two decades. This has arisen from enhanced surgical and anaesthetic techniques, healthcare cost containment and patient preference. Minimal hospital stay ensures meticulously managed surgical practices dominate leaving nursing-based knowledge limited room for expression. However, patients may require much help once discharged hence providing nurse-led involvement much potential.

Data Sources: Five databases from 2000 – 2011 were searched including MEDLINE, CINAHL, British Nursing Index, PsychINFO and Cochrane Database of Systematic Reviews. Reference and citation tracking was performed on included publications.

Review Methods: One reviewer screened titles and abstracts for possible inclusion over a 10 month period. Data synthesis involved thematic analysis informed by the findings of the included literature.

Keywords: Literature review, day surgery, ambulatory surgery, recovery, caregivers, carers, nurses and nursing.

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E-mail: m.mitchell@salford.ac.uk

Introduction

A global transformation has taken place in elective surgery over the last 20 years as a result of innovations in minimally invasive surgical techniques [1]. This trend will continue as the level and diversity of surgical procedures able to be undertaken on a day-case basis grows [2]. The reasons for such reforms concern advances in laparoscopic surgical techniques [3], improved anaesthetic practices [4], increase use of short acting/regional anaesthesia [5], healthcare cost containment [6, 7] and patient preference [8].

Nursing has been central to such change managing day surgery units [9], conducting nurse-led pre-assessment clinics [10], undertaking nurse specialists roles [11] and implementing enhanced recovery practices [12]. However, meticulous surgical/anaesthetic practices and limited patient stay have restricted the opportunity for the wider expression of nursing-based knowledge [13, 14]. Nursing has adapted to these developments with little advancement of nursing-based knowledge aside from practices derived from descriptive studies or expert opinion. For example, Bothe & Donoghue [15] describe the organisation of care following the introduction of two new surgical procedures, Marley & Swanson [16] nursing management of post-operative complications and Roberts & Fenech [17] implementation of an enhanced recovery protocol. As a result nursing knowledge may need to be broadened to investigate the complete patient experience of surgery, especially as many challenges arise for patient and carer following discharge [13]. Flanagan [18] states “Despite much health care being shifted from in-patients to out-patient settings, with much of the actual care being conducted in the home, nurses have not shifted their focus of care from the hospital setting” (p.50).

Criteria for acceptance for day surgery covers three domains i) medical (fitness for anaesthesia), ii) surgical (operation possible in day surgery) and iii) social (adult escort, adult support for 24 hours and suitable domestic circumstances) [19]. If all criteria are met, surgery can be undertaken and the patient duly discharged. Consequently, minimal surgical stay obliges nurses to ensure patients adhere to a relatively inflexible schedule of admission, treatment and discharged [20, 21]. Information is offered during the whole process to assist home recovery but largely the day surgery unit has no further contact with patients. However, patients have not fully regained all pre-operative functions at discharge [22], can experience problems once discharged [23], recovery can take longer than expected [24], numerous unforeseen events can arise [25, 26] and contact the General Practitioner or District Nurses can be minimal [27].

The brief time for nurse/patient interaction inherent in all stages of the patient’s journey has ensured information provision [28] and its timely delivery [29] are central to the nurses’ role [30]. However, information provision for home recovery is not always adequate [31] and post-operative telephone contact in the United Kingdom sporadic [8]. Following a study by Moran et al [32] concerning telephone support, the most valued aspects for patients were reassurance, information provision and the opportunity to ask questions. All patients considered such support to be the responsibility of the day surgery unit. Carer responsibility and arrangements before and after surgery can be extensive [33] and as more complex surgery is undertaken such responsibility may increase [34]. For example, a recent thoracic day surgery study required carers to manage patients discharged with an ambulatory chest drain (Heimlich valve which removes air from a pneumothorax) in situ for 2 weeks [35]. Amid...
such innovation, the profession may need to broaden its focus on surgical recovery, establish a more co-ordinated hospital/ community ethos (18) and consider the wider psycho-social implications (36).

Review

Purpose

This literature review seeks to describe, evaluate and summarise the pertinent published material [17, 38] and content guided by the PRISMA Statement [19]. A number of literature reviews have been undertaken previously on home recovery following day surgery but these have been medically orientated (post-operative morbidity focus and subsequent revision of treatment) [40, 41], focused purely on nursing management of pain (42) or care during hospitalisation [43-45]. Rosin et al [66] has more recently undertaken a review largely concerned with post-operative symptom management and states “As more surgery is undertaken in day surgery, it is necessary to map out symptoms, experiences and management, at home, in a much more detailed manner that recognises and addresses individual and social consequences.” (p.16). The purpose of this review is to identify studies from the literature expressly focusing on recovery at home following day surgery.

Search methods

Initial databases searched were MEDLINE, CINAHL, Cochrane Database of Systematic Reviews, British Nursing Index and PsycINFO between March - December 2011. The search terms used were day/ambulatory surgery and recovery, day/ambulatory surgery and caregivers/ carer’s all with ‘adults only’. Additional papers accessed from reference and citation tracking. British Association of Day Surgery website (www.day.surgery.org.uk) and International Journal of Ambulatory Surgery website (www.iaas-med.com).

Analysis was undertaken by a single researcher over a 10 month period. Each citation was considered for possible inclusion viewing first the title, followed by the abstract where necessary. Those found to be unrelated were discarded. A total of 803 studies meeting the initial criteria were uncovered (569 in MEDLINE, 207 in CINAHL, 18 in Cochrane, 5 in British Nursing Index and 4 in PsycINFO) (Fig. 1).

Inclusion / exclusion criteria

All articles included were written in English between 2000 – December 2011. To be included, the focus had to be post-operatively on adult patients’ experiences of recovery at home following day surgery and raise nurse-led support issues. Thereby, home recovery needed to be a sustained focus. However, studies focusing on return to work or contact with healthcare professionals were included as they contained informative aspects of the recovery process. Studies were excluded for several reasons. Many medical studies had a predominant morbidity focus associated with improvement in practice [47-49], rate of surgical recovery [10], in patient surgery [31], management of medical treatment in day surgery [52] or assessment of hospital-based recovery [11]. Studies with an ophthalmic [54], dental [55] or oncology focus [56] were excluded as these were regarded as areas perhaps requiring separate reviews because of the possible additional issues associated with such surgery. Mixed sample studies examining different between days, 25 hour and in-patient surgery [24, 57] were excluded as they were undertaken largely to examine the feasibility of converting patient surgery into day-care surgery. Studies concerning the development of validated tools to measure recovery were of relevance [58-61] although were excluded as their focus was not specifically on recovery but on validating tools to assess recovery. Five studies were reported twice. Brattwell et al [64] and [65] were included as one reported recovery at 4 weeks, the other at 6 months. Dewar et al [66] and [67] are included as the second reporting had a differing focus. Moreover, [68] and [69] are included as the second paper had a unique focus on the sociological impact of day surgery. Markovic et al [70] was reported twice as the first focused on quality of care and the second on pain management [71]. Finally, Rosin et al [72] reported post-operative discomfort and Rosein et al [73] examined level of discomfort over a sustained period.

Search outcome

Twenty five studies are included in this review. Thirteen studies employed quantitative research methods and nine a qualitative approach. Three had an experimental design thus providing some comparative data (Table 1). The three studies used an intervention in the design, Dewar et al [66] and [67] describe the same intervention in both papers. In Wuosawicz Kemps et al [74] the treatment group were provided with a post-operative exercise plan together with an accelerometer (device clipped to the trousers to measure and display distance walked). The control group received no post-operative exercise plan only the accelerometer.

After examining the abstracts, 692 studies were excluded for many reasons but mainly a lack of day surgery focus. Thus 111 full-text articles were considered for review. After retrieving and reading the full papers, a further 86 were excluded for a number of reasons but mainly a wider medical focus (Fig. 1). Finally, 25 articles were included and reviewed. The final number included 13 quantitative research studies, 9 qualitative research studies and 3 quasi-experimental research design studies. Analysis was undertaken by a single researcher.

Sample and Setting

The setting for each study was patients who had undergone elective day surgery and discharged home. Seven studies were conducted in Sweden, six in the United Kingdom, four in the USA and three in Australia, two in Denmark and one each in Hong Kong, Finland and Holland. Sample sizes ranged from 7 [75] to 358 [76]. Participants’ treatment included gynaecological, urological, Ear Nose and Throat, cosmetic surgery and general surgery.

One study used purposive sampling and the remainder convenience sampling. Response rates, where available, ranged from 68% to 91%. The techniques for data collection varied with eleven studies gathering data by tape-recorded telephone interviews, eight by postal questionnaire, four by tape-recorded face-to-face interviews, two by postal diary and two by biological measures / physical testing and diary completion. Twelve studies used more than one data collection technique [64-67, 74, 76-82] and data was collected in the patients’ home in two studies [77, 83].

Measures

Only two studies [51, 64] used the same post-operative measure of recovery although the European Quality of Life-5D instrument is not day surgery specific [84]. McIntosh and Adams [79] employed the Quality of Recovery instrument (QoR-40) [85] and Hospital Anxiety and Depression Scale [86]. Berg et al [70] used the validated Swedish Post-discharge Recovery Scale [62] and Quality of Recovery-29 Scale [87] modified scales of the original by Kleinbeck [61] and Mylne et al [83]. Rosin et al [72, 73] utilised the Swedish version of the Brief Pain Inventory (BPI-SF) [88]. Six studies used open-ended questioning and in all cases one question commenced the interviews [68, 69, 72, 75, 83, 89].

Seven studies used research-designed open and closed questionnaires regarding experiences during convalescence such as morbidity,

<table>
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<tr>
<th>Author</th>
<th>Study Title</th>
<th>Sample Details</th>
<th>Purpose</th>
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<th>Reference</th>
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<tbody>
<tr>
<td>Bisgaard</td>
<td>Cholecystectomy</td>
<td>Swedish patients, 27</td>
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Table I

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<th>Sample/Setting</th>
<th>Measures</th>
<th>Major Findings</th>
</tr>
</thead>
<tbody>
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<td>Berg et al.</td>
<td>To describe post-operative recovery on post-operative days 1, 7 and 14 after differing orthopaedic day surgery procedures</td>
<td>Post-operative postal survey (study period not provided).</td>
<td>n=238 Danish patients having GA for knee arthroscopy (n=140), hand/ arm (n=128), foot/ leg (n=71) and shoulder orthopaedic surgery (n=19) surveyed at 1, 7 and 14 days post-surgery.</td>
<td>Post-operative self-reported questionnaires - Swedish Post-discharge Surgery Recovery (S-PSR), Quality of Recovery - 23 (QOR-29), Perceptions of Health and demographic data.</td>
<td>In comparison, shoulder surgery patients experienced slower rate of recovery and were more physically dependent. Recovery took at least 2 weeks for shoulder surgery patients. Higher age and positive emotional state may have a beneficial influence on recovery. Recommends investigating recovery and emotional status. However, many younger patients in the sample did not return their questionnaires at 14 days post-surgery which may have influenced the results.</td>
</tr>
<tr>
<td>Bisgaard et al.</td>
<td>To explore recovery following uncomplicated laparoscopic cholecystectomy.</td>
<td>Pre- and post-operative postal survey (OCTOBER 1997 - JUNE 1999).</td>
<td>n=200 Danish patients having GA for laparoscopic cholecystectomy, completed pre- and post-operative questionnaires.</td>
<td>Post-operative self-reported questionnaire regarding expected duration of convalescence. Post-operative self-reported questionnaire completed on day of return to work/main recreational activity. VAS for fatigue and verbal rating scale for PONV.</td>
<td>Recovery measures suggest patients returned to normal level of functioning on 2nd or 3rd post-operative day. Physical motor ability was normalised after 2 - 3 days and sleep by 2nd night. Post-operative cardio-respiratory function was normalised within first few post-operative days. However, it is recognised the close professional attention this group received may have contributed to swift recovery. Concludes recovery can be 2 - 3 days following laparoscopic cholecystectomy as opposed to previous in-patient open cholecystectomy recovery of 2 - 3 weeks. However, the post-operative management of this group was quite extensive.</td>
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<tr>
<td>Bisgaard et al.</td>
<td>To analyse recovery following uncomplicated laparoscopic cholecystectomy.</td>
<td>Diary completion and bio-physical testing for 1 week prior to surgery and for 1 week after surgery (September 1998 - April 1999).</td>
<td>n=20 Danish patients having GA for laparoscopic cholecystectomy underwent pre- and post-operative bio-physical testing plus post-operative diary completion.</td>
<td>Write-up physical movement monitor for 1 week before 1 week after surgery; sleep pattern diary for 1 week before/ 1 week after surgery; treadmill exercise test 1 day before surgery/post-operatively day 2 and 8; nocturnal pulse oximetry: 1 night (1 week before surgery)/ post-operatively nights 1, 2 and 3; pulmonary function test 1 day before surgery/post-operative at 3 hours then on day 3, 2 and 3 and 8; pain/ fatigue self-assessment 6 hours after surgery for 30 days and date of return to work recorded.</td>
<td>Recovery measures suggest patients returned to normal levels of functioning on 2nd or 3rd post-operative day. Physical motor ability was normalised after 2 - 3 days and sleep by 2nd night. Post-operative cardio-respiratory function was normalised within first few post-operative days. However, it is recognised the close professional attention this group received may have contributed to swift recovery. Concludes recovery can be 2 - 3 days following laparoscopic cholecystectomy as opposed to previous in-patient open cholecystectomy recovery of 2 - 3 weeks. However, the post-operative management of this group was quite extensive.</td>
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<td>Brattwald et al.</td>
<td>Exploration of the longitudinal changes in health profile following discharge.</td>
<td>Postal survey (Autumn 2006 - Spring 2008).</td>
<td>n=355 Swedish patients having GA for hernia repair (n=107), arthroscopy (n=122) and breast augmentation (n=126) surveyed pre-operatively and again at 1 and 3 months.</td>
<td>Euro-Quality of Life (EQ-5D) questionnaire which has 5 dimensions (mobility, self-care, usual activities, pain/discomfort and anxiety/depression) plus extra items regarding sleep, sexual activity and analgesia use.</td>
<td>40% reported pain and immobility issues and this was significantly greater in hernia repair and arthroscopic procedures patients. Patients undergoing arthroscopic procedures experienced a slower recovery. Majority of patients satisfied although information provision and pre-operative preparation viewed as important. Many expected a faster recovery, especially arthroscopic procedure patients. Patients voluntarily undergoing cosmetic breast augmentation were included in the sample which may have influenced the overall findings.</td>
</tr>
<tr>
<td>Brattwald et al.</td>
<td>Explore self-assessed recovery and resumption of symptoms after a day surgery during the first 4 weeks.</td>
<td>Postal survey (Autumn 2006 - Spring 2008).</td>
<td>n=355 Swedish patients having GA for hernia repair (n=107), arthroscopy (n=122) and breast augmentation (n=126) surveyed pre-operatively and again at 24 hours.</td>
<td>Pre-operative interview regarding demographics and symptoms. Four questionnaires given to complete at the arranged date concerning pain, mobility problems, depressed mood, sleep disturbance, need for analgesia, satisfaction with procedure, support received, unplanned visits to hospital and other needs for health care contact.</td>
<td>No serious complications or sequelae stated. 32% (n=89) had pre-scheduled contact with the hospital (visit to telephone). Only patients having hernia repair contacted the hospital. Of the patients with hernia repair, 40% reported pain and immobility issues and this was significantly greater in hernia repair and arthroscopic procedures patients. Patients undergoing arthroscopic procedures experienced a slower recovery. Majority of patients satisfied although information provision and pre-operative preparation viewed as important. Many expected a faster recovery, especially arthroscopic procedure patients. Patients voluntarily undergoing cosmetic breast augmentation were included in the sample which may have influenced the overall findings.</td>
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<tr>
<td>Briggs et al.</td>
<td>Safety and acceptability of day-case laparoscopic cholecystectomy.</td>
<td>Telephone survey (May 2005 - May 2008).</td>
<td>n=106 United Kingdom patients having GA for laparoscopic cholecystectomy surveyed at 2, 5 and 14 post-operative days.</td>
<td>Research-designed questionnaires regarding pain, nausea and vomiting, analgesia use, wound care, diet, mobility, satisfaction and contact with primary healthcare providers.</td>
<td>94% satisfied with day surgery. Mild pain and nausea reported by vast majority, 2nd day: 90% back to normal activity after 14 days. 33% of patients gain advice from primary healthcare providers during first 14 days with wound care most common reason for contact. 6% preferred an overnight stay. Improved information regarding wound healing recommended and education of staff and patients very important. Study largely concerned with introduction of day-case laparoscopic cholecystectomy.</td>
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<tr>
<td>Cheng et al.</td>
<td>To investigate compliance with post-operative instructions.</td>
<td>Telephone survey (study period not provided).</td>
<td>n=102 United Kingdom sampled patients having GA for wide variety of surgery surveyed at 24 hours</td>
<td>Research-designed questionnaire regarding travel home, time arrived, care details / time place in attendance, activities after 24 hours (driving, alcohol, cooking, cleaning, childcare). Questionnaire in appendix.</td>
<td>All but three discharged home by carer/taxi driver escorted (n=95). All patients remembered instructions regarding avoidance of certain tasks for 24 hours. n=29 had no carer for 24 hours, n=3 leaving them on home arrival. 70% of cases slept in same room, 4% drove a vehicle within 24 hours, half with passengers. Over a quarter went out of the house with n=5 visiting their General Practitioner/n=10% admitted to cooking, cleaning and caring for children. However, over 50% of the original sample were lost and could not be contacted by telephone.</td>
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</table>
### Table 1

**Design/Time**

**Sample/Setting**
- 11: 600 Australian patients having GA for day surgery surveyed regarding experiences of recovery during the first 3 post-operative days.
- 12: 223 American patients having non-ambulatory surgery surveyed 4-7 days postoperative.
- 13: 100 Australian patients having non-malignant surgery surveyed within the first 7 days postoperative.
- 14: 100 Hong Kong Chinese patients having GA for day surgery surveyed during a 2-month period.

**Measures**
- 11: Questionnaire administered by telephone to patients during the first 3 post-operative days.
- 12: American patients having GA for day surgery surveyed regarding experiences of recovery during the first 3 post-operative days.
- 13: Pre and post-operative pain management and recruiter additional information.
- 14: Telephone prompted questionnaire

**Results/Findings**

<table>
<thead>
<tr>
<th>Author</th>
<th>Purpose</th>
<th>Sample Size</th>
<th>Design/Time</th>
<th>Sample/Setting</th>
<th>Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cox, K., O'Connor, P. (2003)</td>
<td>To investigate the experiences of patients with regard to discharge planning and to determine if information provided was helpful.</td>
<td>600 Australian patients having GA for day surgery surveyed regarding experiences of recovery during the first 3 post-operative days.</td>
<td>12: Dewar, et al (2003)</td>
<td>To determine if information provision is related to patient satisfaction.</td>
<td>Telephone survey (Study period 1-5 months after intervention).</td>
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</table>

**Conclusions**

- Patients rated information provision significantly higher than discharge preparation and home recovery. Patients rated satisfaction with discharge preparation and home recovery as significantly lower than with information provision. This suggests that patients may not have been adequately prepared for discharge and home recovery, and that information provision may be an important aspect of discharge preparation and home recovery.

**Recommendations**

- Discharge preparation and home recovery should be improved to ensure patients are adequately prepared for discharge and home recovery.

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**Notes**

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<td>Telephone survey (Study date August 1st - October 2000)</td>
<td>n=312 Australian patients having GA for gynaecological surgery surveyed at 48 hours.</td>
<td>Researchers-designed post-operative open and closed item questionnaire focussing on information requirements, hospital admission, home recovery and advantages/ disadvantages of day surgery.</td>
<td>Private patients (28% of sample) statistically significantly less satisfied with information provision. Caree's response ability looking after the patient while undertaking domestic duties was demanding. Quality of care greater for patients sharing the household with the carer. 12% of patients had to care for other family members once home. Day surgery described as convenient although emotionally stressful. A number of patients underwent investigative breast surgery or termination of pregnancy which may have adversely influenced their views of recovery.</td>
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<tr>
<td>Markovic et al (2002)</td>
<td>To identify informal support during convalescence at home.</td>
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<tr>
<td>McIntosh &amp; Adams (2011)</td>
<td>To examine the association between pre and post operative anxiety in influence on recovery after 48 hours.</td>
<td>Postal survey (2008).</td>
<td>n=54 United Kingdom patients having GA for minor (n=7), intermediate (n=39) and major (n=8) surgery (specific surgery not detailed).</td>
<td>Demographic details, Hospital Anxiety and Depression Scale (HADS) on admission. Further copy of HADS and Quality of Recovery Scale (QoR-40) for home completion after 48 hours.</td>
<td>Female patients found to be more anxious than males although no statistically significant relationship was established between anxiety and quality of recovery. However, only a small timeframe of recovery was examined and the measures employed were possibly inappropriate. The HADS was originally developed for measuring anxiety in psychiatric patients and the QoR-40 scale used to measure recovery is not refined for day/ short stay surgical recovery. (see Lidwell et al 2009).</td>
</tr>
<tr>
<td>Mottram (2011a)</td>
<td>To explore patients' experiences of day surgery using a sociological framework of analysis.</td>
<td>Semi-structure, telephone interviews (2004 - 2006).</td>
<td>n=145 patients and n=100 carers in the United Kingdom. Patients underwent GA for general, ENT and orthopaedic surgery (numbers in groups not provided).</td>
<td>Two interviews at 48 hours and 4 weeks following surgery. Open-ended, tape-recorded interview which commenced with the question &quot;How are you feeling since you had your surgery?&quot;</td>
<td>Patient's sickness role examined. Patients experiences could be divided into three themes i) Resisting sick role (72% - incapacity forced individuals to grudgingly accept resting. ii) Limited absorption to the sick role (24%) - by accepting the sick role they gained some protection from employers. iii) Actively seeking the sick role (4%) - some felt the sick role was denied them by the process of day surgery. Western culture of efficiency has pervaded health care leaving little room for convalescence.</td>
</tr>
<tr>
<td>Mottram (2011b)</td>
<td>To explore patients' experiences following discharge from day surgery.</td>
<td>Semi-structure, telephone interviews (2004 - 2006).</td>
<td>n=145 patients and n=100 carers in the United Kingdom. Patients underwent GA for general, ENT and orthopaedic surgery (numbers in groups not provided).</td>
<td>Two interviews at 48 hours and 4 weeks following surgery. Open-ended, tape-recorded interview which commenced with the question &quot;How are you feeling since you had your surgery?&quot;</td>
<td>Three themes emerged all under the category of 'limited support following discharge' i) Unplanned return to hospital (n=283-286), 7 days (n=268-271) and 3 months (n=190-239) post-surgery. ii) Unplanned return to hospital (n=283-286), 7 days (n=268-271) and 3 months (n=190-239) post-surgery. iii) Unplanned return to hospital (n=283-286), 7 days (n=268-271) and 3 months (n=190-239) post-surgery.</td>
</tr>
<tr>
<td>Rosén et al (2010)</td>
<td>To describe perceived causes of discomfort during home recovery.</td>
<td>Postal survey (May 2006 - May 2007).</td>
<td>n=298 Swedish patients having GA for urological, orthopaedic and general surgery surveyed at 48 hours (n=113), 7 days (n=110) and 3 months (n=40) post-surgery.</td>
<td>One open-ended item on a questionnaire &quot;If you are still experiencing discomfort related to your surgery, what is the reason, in your opinion.&quot;</td>
<td>Frequency of discomfort due to pain and wound problems most prominent 1st hour at 48 hours, 7 days and 3 months. Cause of discomfort rated as type of surgery, incorrect treatment, insufficient access to healthcare providers and information. Patients satisfied with information provision regarding what symptoms to expect and how best to treat these symptoms should they occur. However, the patients experienced a wide range of surgical procedures and unexpected occurrences, ii) Lack of perceived support and iii) Nostalgia for times past. Unexpected occurrences concerned access to a healthcare professional for correct advice. Lack of perceived support concerned limited professional advice and reduced district nursing insight into their problems. Nostalgia was associated with less personalised, local care being replaced by a standardised more global service. Anxiety arose from a modern NHS which encourages self-reliance and self-care.</td>
</tr>
<tr>
<td>Rosén et al (2011)</td>
<td>To describe patients' perception of pain, their return to normal activities and daily function overtime</td>
<td>Postal survey (May 2006 - May 2007).</td>
<td>n=298 Swedish patients having GA for urological, orthopaedic and general surgery surveyed at 48 hours (n=283-286), 7 days (n=268-271) and 3 months (n=190-239) post-surgery.</td>
<td>Swedish version of Brief Pain Inventory-Short Form. This examines pain in relation to daily function. Additional yes/no items asked also relating to activity and work.</td>
<td>55% of patients rated worst pain experienced at 48 hours, 43% at 7 days and 34% at 3 months. General activity, normal face, tape clipped to trousers to mobilise quickly felt less hindered by pain during physical activity. Patients operated over many years had underlying chronic orthopaedic conditions. As the prevalence of people with musculoskeletal disorders increases with growth of an older population, recovery issues relating to level of home care required may increase.</td>
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<tr>
<td>Saboome et al (2008)</td>
<td>To describe day-case surgery patients' Health-Related Quality of Life.</td>
<td>Postal survey (March - August 2004).</td>
<td>n=131 Finnish patients having GA for urological orthopaedic surgery surveyed 2 weeks before and 2 weeks after surgery</td>
<td>European Quality of Life-5D = A Health-Related Quality of Life instrument with five dimensions (mobility, self-care, usual activities, pain, discomfort and anxiety/ depression). A Visual Analogue Scale for 0 - 100 worst and best imaginable health state.</td>
<td>41% reported some problems with mobility and 79% moderate pain. 51% had no problems with usual activities prior to surgery and this decreased to 35% after surgery. Patients with underlying chronic health issues had lower EQ-5D scores than patients with no underlying chronic health issue. Self-care activities disturbed following surgery although many patients had underlying chronic orthopaedic conditions. As the prevalence of people with musculoskeletal disorders increases with growth of an older population, recovery issues relating to level of home care required may increase.</td>
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<tr>
<td>Wasiowski-Kempni et al (2009)</td>
<td>To assess resumption of physical activity following day surgery.</td>
<td>Diary of daily activity and accelerometer (November 2005 - October 2006).</td>
<td>n=64 Dutch patients having GA for laparoscopic cholecystectomy monitored using accelerometer device for 3 days before surgery and 7 days after surgery. Echocardiometer device clipped to trousers to measure and display the distance walked. Diary of daily activity for 7 post-operative days.</td>
<td>Sample divided into intervention and control group. Intervention group given post-operative recovery exercise plan and accelerometer. Control group just given accelerometer and they could not view the amount of activity undertaken display. Diary given to both groups for recording of pain, nausea, wound, fatigue and other factors limiting activity.</td>
<td>Most patients not fully recovered after 1 week. No statistically significant difference established between the two groups regarding physical activities levels. Worrying effects of intervention group showed a statistically significant difference in physical activity levels than women in the control group after 1 week. Patients who were encouraged to mobilise quickly felt less hindered by pain during physical activity. For all patients pain limited activity (80%) and they experienced fatigue (63%) together with many wound management issues (72%). However, the practical application of patients being fitted with an exercise monitoring device may limit this approach.</td>
</tr>
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</table>
wound management, diet, contact with healthcare providers, activity and return to work [1, 18, 70, 71, 78, 90, 91]. There was little information, if any, provided in the papers regarding testing for validity and reliability of the researcher-designed questionnaires. A number of studies [66, 73, 76, 79, 82] used validated measures such as Visual Analogue Scales for pain, State-Trait Anxiety Inventory [83], Patient Health Questionnaire [84] and EuroQol five-dimension questionnaire and some included number with an activity scale [94] and an anxiety scale [95].

Five studies used patient diaries (mostly for 1-5 post-operative days) to record symptoms such as pain, nausea, fatigue, wound management and other factors limiting activity [66, 67, 74, 77, 78]. Further study [77] utilized a battery of exercises and recorded physical movement on a wrist-worn movement monitor for one week before and after surgery. A similar quasi-experimental study involved a leg-worn physical movement monitor for one week before and after surgery [74] where the treatment group were provided with a leg-worn physical movement monitor for one week before and after surgery. A similar quasi-experimental study involved a leg-worn physical movement monitor for one week before and after surgery [74] where the treatment group were provided with a leg-worn physical movement monitor for one week before and after surgery.

The measures of recovery used were largely researcher-designed, non-validated measures or not day surgery specific. Two systematic reviews of recovery measures [40, 58] recommend using the Quality of Recovery Scale [81] but this scale is anaesthesia orientated and not day surgery specific (ambulatory surgery only 14% of sample).

Excluded from abstract -
47. Not day surgery
46. Surgical studies
45. Psychological studies
44. Other studies
43. Not day surgery
42. Medical audits
41. Anaesthesia research
40. Inpatient vs. day surgery comparison
39. Literature reviews
38. Research design and development
37. Oncology studies
36. Symptom scale and short stay unit
35. Psychological studies
34. Case studies
33. Open ended questions
32. Open ended questions
31. Other studies
30. Patient satisfaction
29. Mental health and wellbeing
28. Psychological research
27. Post-operative care
26. Research design and methodology
25. Full text studies
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4. Inpatient vs. day surgery comparison
3. Literature reviews
2. Research design and development
1. Oncology studies

Results
The themes to emerge from this review concern pain management, information provision and post-discharge anxiety. Thirteen quantitative studies measured recovery by patient’s experiences of returning to ‘normal’ routine, level of mobility, level of activity and pain. Six studies rated worst pain at 48 hours, 63% at 7 days and 34% at 1 month although the patients surveyed experienced a wide range of conditions. Flanagan [18] interviewed 77 patients undergoing orthopaedic surgery and reported participants to be pain free after 12 hours. However, after 24 hours not only were patients experiencing much pain but had made no preparations for its management. The sudden onset frightened many as they had initially been pain free but something was ‘wrong’. The long acting local anaesthetic nerve block, used during surgery had ceased to work and this aspect of treatment had been poorly understood. Many patients held misconceptions regarding pain management and termed follow-up support, viewed pain as a symptom that must be endured and did not request help from their families or General Practitioner despite increasing levels of discomfort.

In an experimental study by Dewar et al [66] patients in the treatment group benefited statistically significantly from pre-operative teaching regarding pain management and daily telephone calls. In the second reporting, Dewar et al [67] determined patients required post-operative encouragement to take analgesia due to fear of side-effects and adhesion. Further, many patients had unforeseen questions arising during recovery. In the experimental study by Wasowski-Kemp et al [74] no statistically significant difference was established for the patients in the treatment group who were given a post-operative recovery exercise plan. However, a statistically significant difference was established with regard to gender. Future studies need to consider assessment of recovery with a validated day surgery specific instrument.

The nine qualitative studies measured recovery using the patient’s personal experiences of surgery and convalescence. Pain was deemed to be the most common in younger patients, those with limited post-operative information and thus made recovery more challenging. Anxiety was associated with limited information, unexpected events and by caregivers attempting to ensure their relative gained adequate rest. Relatives were largely absent at the point of discharge hence much information was forgotten due to the latent effects of anaesthesia or not gained due to a lack of opportunity to speak prior to discharge.

Discussion
Pain Management
Approximately half of the studies suggest pain management to be a challenge. A review by Cox and O’Connell [78] surveyed 80 patients undergoing gynaecological surgery and established, on post-operative day ten, 60% were still experiencing pain. The remaining 40% had been experiencing pain for an average of 7 days. Many women associated any other health issues they had as they had been experiencing symptoms longer than informed. The estimated period of recovery suggested by the doctors was viewed as optimistic and not recovering at the stated pace gave rise to concern [78, 80]. However, there are services that relate to a specific surgical procedure (diagnosis and treatment of endometriosis) which may have wider implications for patients. Her Hawth et al [81] uncovered 15% of patients were experiencing severe pain during the first post-operative day with 41% experiencing moderate pain. Pain was found to be significantly related to delayed recovery and concerned many patients who were informed recovery would take 2 or 3 days. Sahnoun et al [82] surveyed 131 orthopaedic patients for 2 weeks and 79% reported experiencing severe to moderate levels of pain. However, many patients were undergoing treatment for chronic orthopaedic conditions. Wasowski-Kemp et al [71] interviewed 315 women and established 54% were still experiencing pain after 48 hours. It was suggested factors leading to an inability to manage pain were being young (<35 years), having previous experience of day surgery and limited information. However, some of the patients underwent breast biopsies and termination of pregnancy which could prompt a more emotive response.

In a study by Rosén et al [72] pain was experienced by 56% of patients after 48 hours, 58% after 7 days and 25% after 3 months. Persistent discomfort was attributed to incorrect treatment, insufficient access to healthcare provision and lack of information. In a 2nd reporting by Rosén et al [73], 55% of patients rated worst pain at 48 hours, 63% at 7 days and 34% at 1 month although the patients surveyed experienced a wide range of conditions. Flanagan [18] interviewed 77 patients undergoing orthopaedic surgery and reported participants to be pain free after 12 hours. However, after 24 hours not only were patients experiencing much pain but had made no preparations for its management. The sudden onset frightened many as they had initially been pain free but something was ‘wrong’. The long acting local anaesthetic nerve block, used during surgery had ceased to work and this aspect of treatment had been poorly understood. Many patients held misconceptions regarding pain management and termed follow-up support, viewed pain as a symptom that must be endured and did not request help from their families or General Practitioner despite increasing levels of discomfort.

Bruttall et al [64] revealed patients undergoing arthroscopic procedures and inguinal hernia repair experienced statistically significantly more pain than patients having breast augmentation. After 4 weeks, 11% of arthroscopic procedure patients stated they were still experiencing pain, 11% of inguinal hernia repair patients and 3% of breast augmentation patients. However, patients undergoing voluntary cosmetic surgery with patients undergoing treatment-centred surgery may be a problematic comparison. Bruttall et al [63] (2nd reporting) stated many patients needed support and required follow-up support, viewed pain as a symptom that must be endured and did not request help from their families or General Practitioner despite increasing levels of discomfort.

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Conclusion

The opportunity for the expression of nurse-led knowledge in fast-paced, contemporary surgery has been limited by innovations in surgical technology, anaesthetic practice, and enhancement of controlling cost/time and a lack of contemporary surgical nursing evidence on which to base innovative care and education. This review has established the need for greater degrees of professional insight beyond the acute setting in the form of telephone support and/or personal contact to offer information with regard to pain management, dealing with unforeseen events and anxiety. More nurse-led interventional studies focusing on the challenges arising from this review are required using validated measures of recovery, specific to minimal hospital stay. Without such evidence, nursing-based knowledge may remain under-represented in modern elective surgery.

Surgeons/patient and anaesthetist/patient contact has remained relatively unchanged in this new surgical era but nurse/patient contact has become more fragmental. Nursing contact now takes place during brief interactions in the out-patient clinic, pre-assessment clinic, day surgery unit and community with little or no interaction on a professional basis between these groups [3, 101]. More, a more coordinated approach to communication and information provision is also required to establish a greater hospital/community nursing ethos [13] especially with the possible increase in the number of elderly patients undergoing day surgery [46]. Modern elective surgical nursing must adapt to the meticulous medical practices of minimal stay surgery and seek to develop its unique contribution to modern surgery by further investigation into the hospital/home transition.

Limitations

The review is open to English publication bias and thereby possibly limiting the findings of the review. A limitation also to recovery is the lack of a supportive person during admission, no communication more fully with the doctors and nurses. Brattwall et al [77] studied patients recovering from laparoscopic cholecystectomy who underwent a challenging exercise plan and suggested the lack of a supportive person during admission, no movement, treadmill exercise 1 day prior to surgery then again on the day of surgery, and biological measurement. A wristband was wore to monitor patients forgetting information leading to much apprehension once home. McIntosh and Adams [79] surveyed 54 patients concerning the sick role and regretted the demise of a period when they communicating more fully with the doctors and nurses. Markovic [85] not refined for minimal stay surgery.

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References


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Ambulatory Surgery provides a multidisciplinary international forum for all health care professionals involved in day care surgery. The editors welcome reviews, original articles, case reports, short communications and letters relating to the practice and management of ambulatory surgery. Topics covered include basic and clinical research, surgery, anaesthesia, nursing; administrative issues, facility development, management, policy issues, reimbursement; perioperative care, patient and procedure selection, discharge criteria, home care. The journal also publishes book reviews and a calendar of forthcoming events.

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Electronic submissions should be accompanied, on a separate page, by a declaration naming the paper and its authors, that the paper has not been published or submitted for consideration for publication elsewhere. The same declaration signed by all the authors must also be posted to the appropriate Editor-in-Chief.

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