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Editorial
D. McWhinnie

The adaptation of Altemeier’s Procedure to treat end colostomy prolapse:
A simple option for day surgery
O. Bulut

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

Assessment of the effect of local versus general anesthesia on the
pain perception after inguinal hernia surgery
M. Hosseinpour, A. Behdad & M. Resaei

Literature review: Home recovery following day surgery
M. Mitchell
This edition of the Journal of Ambulatory surgery contains 4 disparate but interesting articles. From Copenhagen, we have a thought-provoking variation of Altmeier’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). This approach would appear to be a safe and reasonable alternative option for local treatment of a prolapsed colostomy stoma.

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

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 hernia, 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 stoma prolapse, under minor sedation in a series of 10 patients.

Methods

Surgical technique

The patient is placed in the supine position and a total of 15 mg pentazocine 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. 1). The elongated bowel is drawn out through the colostomy opening. Once haemostasis has been achieved, the prolapsed colon is defunctioned 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 stay's 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 summarises demographic and perioperative data. Initial surgery was performed for colorectal cancer in 7 patients. Two patients were operated for ischemic colitis and one, previously underwent sigmoid colectomy 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 inpatient rather than day surgery.

Discussion

Treatment options for stoma 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. Abulafi et al. described an adaptation of Dehorne’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 strangulation in cases with prolapse in permanent stomas 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 ischemia and strangulation. Local care of stoma 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 a simple technique similar to an Altemeier perineal proctectomy for the local surgical treatment of stoma prolapse, under minor sedation in a series of 10 patients.

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Only two of our patients underwent emergency surgery in this study and they were discharged on the first postoperative day.
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 an 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.

Authors’ addresses: Department of General Surgery, Milton Keynes Hospitals NHS Foundation Trust, Standing Way, Milton Keynes, MK5 6LD.

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 successful day cases (same day admission and discharge) or failed day cases with prolonged admission (>48hr admission). All consecutive failed day-cases (DC) with greater than 48hr admissions (n=62) were included. Their outcome measures were compared and contrasted to a matched control group of consecutive successful DC patients (n=62).

IBM SPSS Statistics version 15 (IBM Corporation, New York) was used for statistical analysis.

Results

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:
Table 1: Summary of all data collected for consecutive patients 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></td>
<td>II 61.3</td>
<td>II 56.5</td>
<td>NS</td>
</tr>
<tr>
<td></td>
<td>III 8.1</td>
<td>III 3.2</td>
<td>NS</td>
</tr>
<tr>
<td></td>
<td>IV 1.6</td>
<td>IV 0.0</td>
<td>NS</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></td>
<td>Cholecystitis 45.2</td>
<td>Cholecystitis 21.0</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td></td>
<td>Recent pancreatitis 8.1</td>
<td>Recent Pancreatitis 4.8</td>
<td>NS</td>
</tr>
<tr>
<td></td>
<td>Previous jaundice 6.4</td>
<td>Previous jaundice 1.6</td>
<td>NS</td>
</tr>
<tr>
<td></td>
<td>Empyema 4.8</td>
<td>Empyema 1.6</td>
<td>NS</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></td>
<td>Registrar 29.0</td>
<td>Registrar 47.4</td>
<td>NS</td>
</tr>
<tr>
<td></td>
<td>Associate Specialist 4.8</td>
<td>Associate Specialist 10.5</td>
<td>NS</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</td>
<td>Total: 42.9</td>
<td>Total: 16.2</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Complications (%)</td>
<td>PONV: 8.1</td>
<td>PONV: 6.5</td>
<td>NS</td>
</tr>
<tr>
<td></td>
<td>Subhepatic collection:8.1</td>
<td>Subhepatic collection: 0</td>
<td>0.058</td>
</tr>
<tr>
<td></td>
<td>Bile Leak 8.1</td>
<td>Bile Leak: 0</td>
<td>0.058</td>
</tr>
<tr>
<td></td>
<td>Chest pain/ RLTI 6.5</td>
<td>Chest pain/ RLTI 0</td>
<td>NS</td>
</tr>
<tr>
<td></td>
<td>Wound haematoma: 1.6</td>
<td>Wound haematoma: 3.2</td>
<td>NS</td>
</tr>
<tr>
<td></td>
<td>Urinary Retention 3.2</td>
<td>Urinary Retention 1.6</td>
<td>NS</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 pre-requisite 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
1. NHS Institute for Innovation and Improvement Delivering quality and value: Focus on Cholecystectomy London 2006.
In the GA group (n=50), after premedication, general anesthesia (Pasteur Institution Production, Iran) 8-10ml was performed over 5-10 minutes. In the LA group, after infiltration, 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.

Methods

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

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. Vaso-vagal reaction was seen in 23% of LA patients and 4% of GA patients. The 4 hour post-operative pain score in the LA group was 2.5±1.3 and 6.9±1.8 in the GA group (P = 0.001). In LA group, 4.8% of patients required local anaesthesia while in GA group, these patients had no need of local anaesthesia. Postoperative pain was similar in both groups. There was no significant difference in postoperative pain between groups.

Conclusion:

Local anaesthesia offers a reduction in early postoperative pain and a reduction in length of stay when compared to general anaesthesia.

Discussion:

Intra operative complications

There were no neurologic complications in both groups. Vaso-vagal reflex was occurred in 2% of LA versus 4% in GA groups (NS).

Post operative local complications

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

Post operative systemic complications

Nausea and vomiting were occurred in 2% of GA group. Urinary retention was occurred in 3% of GA group while atelectasis, diagnosed according to post operative early fever was found in 4% of GA group. Aspiration 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 6.6±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).

References


Table 1 Demographic and operative data.

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<th>Local anaesthesia</th>
<th>General anaesthesia</th>
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<tr>
<td>n</td>
<td>50</td>
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<tr>
<td>Age(years)</td>
<td>47.5±17.32</td>
<td>49.6±16.34</td>
<td>NS</td>
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<tr>
<td>Operative time(min)</td>
<td>21.7±4.03</td>
<td>23.26±5.2</td>
<td>NS</td>
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<tr>
<td>ASA class I</td>
<td>45</td>
<td>49</td>
<td>NS</td>
</tr>
<tr>
<td>ASA class II</td>
<td>55</td>
<td>51</td>
<td>NS</td>
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</table>

Post operative pain scores may be different in the same patient. Life of Lidocaine with good local anaesthesia maintained at for hours but not at 8 hours. Advantages of local anaesthesia have been reported by other authors. In eight randomized studies [19–23], the others compared local anaesthesia with general anaesthesia. Results of these studies showed no significant pain difference between groups [19–24].

Sakellaris et al [26] showed that local anaesthetic infiltration with intravenous ketorolac could modulate hypotensive-pituitary-adrenal axis response. He showed that painful stimuli can cause cortisol and insulin release and postoperative ileus.

Toivanen [27] showed that ilioinguinal block lasted 6 hours post operatively, and after that its effect declined as was found in our 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, compared to the GA patients who stayed overnight. A significant economic advantage for our institution and quality care for our patients.


Literature review: Home recovery following day surgery

Mark Mitchell

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 medical 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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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 broaden 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].

Results: Twenty-five studies were included in the review. Common themes were pain, information provision and anxiety. Pain management was a concern exacerbated by reduced information. Much information had been forgotten due to latent effects of anaesthesia, limited opportunity on the day of surgery or information booklets lacking a problem-solving approach. Anxiety was associated with inadequate information, unexpected events or by carers striving to supervise a successful recovery.

Conclusions: Recovery at home with limited access to healthcare professionals presented a number of challenges mostly relating to inadequate knowledge/ information. Future research should explore continued nurse/ patient contact, nurse-led support services and patient and carer information booklet content.

References

[1]...
such innovation, the profession may need to broaden its focus on surgical recovery, establish a more co-ordinated hospital community and consider the wider psycho-social implications [36].

Review

Aim
This literature review seeks to describe, evaluate and summarise the pertinent published material [37, 38] and content guided by the PRISMA Statement [39]. 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]. Rosén et al [46] 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/ care/ carer/ carers with ‘adults only’. Additional papers accessed from reference and citation tracking, British Association of Day Surgery website (www.day-surgery uk.org) 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 the title, 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 – 2011. To be included, the focus had to be placed solely 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 [31]. 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 possibilities between day, 23 hour and in-patient surgery [24, 57] were excluded as they were undertaken largely to examine the feasibility of converting in-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 or 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 a differing focus. Mottram et al [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, Rosén et al [72] reported post-operative discomfort and Renström 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). Thirteen studies used an intervention in the design, Dewar et al [66] and [67] describe the same intervention in both papers. In Wasowicz-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 in each in Hong Kong, Finland and Holland. Sample sizes ranged from 7 [75] to 358 [76]. Participants’ treatment included gynaecological, urological, orthopaedic, 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, 81].

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) [81] and Hospital Anxiety and Depression Scale [86]. Berg et al [70] and Scandinavian Post-discharge Recovery Scale [62] and Quality of Recovery-29 Scale [87] modified scales of the original by Kleinbeck [63] and Myles et al [88]. Rosén 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>
<thead>
<tr>
<th>Table 1: Day surgery studies examining patients’ experiences of home recovery (2000 – 2011)</th>
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<th>Author</th>
<th>Purpose</th>
<th>Design/Time frame</th>
<th>Sample/Setting</th>
<th>Measures</th>
<th>Major Findings</th>
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<tbody>
<tr>
<td>Berg et al (2011)</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>Binaigad et al (2001)</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 on physical recovery.</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 levels of functioning on 2nd or 3rd post-operative day. Physical motor function 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 uncomplicated 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>
</tr>
<tr>
<td>Binaigad et al (2002)</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-physiological 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;6771 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 1, 2, 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 function 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 uncomplicated 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>
</tr>
<tr>
<td>Binaigad et al (2011)</td>
<td>To investigate 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=26) surveyed pre-operatively and again at 3 and 6 months.</td>
<td>Euro-Quality of Life (EQoL) 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>
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<td>Brattwall et al (2010a)</td>
<td>Explore the self-assessed recovery and restatement of symptoms after a day surgery during the first 4 weeks.</td>
<td>Postal survey (Autumn 2008).</td>
<td>n=355 Swedish patients having GA for hernia repair (n=107), arthroscopy (n=122) and breast augmentation (n=26) 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 required, unplanned visits to hospital and other need for health care contact.</td>
<td>No serious complications or sequelae stated. 32% (n=197) had unscheduled contact with the hospital (visit/telephone) during first post-surgery week. n=15 patients with pain, n=5 with swelling, n=5 wound dressings and mobilisation/ questions n=7, n=38 patients contacted hospital during weeks 3 and 4 for mainly pain and wound related issues. The majority needed help from a relative during the initial period at home. 13% of hernia repair patients and 13% of arthroscopic surgery patients would have preferred longer in hospital. 43% of breast augmentation would have preferred longer in hospital although these patients were already 24 hours stay.</td>
</tr>
<tr>
<td>Brattwall et al (2011)</td>
<td>(2nd Reporting)</td>
<td>Explore self-assessed recovery and restatement of symptoms after a day surgery during the first 4 weeks.</td>
<td>Postal survey (Autumn 2008).</td>
<td>n=355 Swedish patients having GA for hernia repair (n=107), arthroscopy (n=122) and breast augmentation (n=26) 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 required, unplanned visits to hospital and other need for health care contact.</td>
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<td>Briggs et al (2009)</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 questionnaire regarding pain, nausea and vomiting, anxiety/sedation, 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 gained 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>
</tr>
<tr>
<td>Cheng et al (2002)</td>
<td>To investigate compliance with post-operative instructions.</td>
<td>Telephone survey (Study period not provided).</td>
<td>n=102 United Kingdom 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 in attendance, activities after 24 hours (driving, alcohol, cooking, cleaning, childcare). Questionnaire in appendix.</td>
<td>All but three escorted home by carer (taxi driver escorted others). 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 cars slept in same room, 4% drove a vehicle within 24 hours, half with passengers. Over a quarter went out of the house with 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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<td>Author</td>
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<td>Cox &amp; O’Connell (2003)</td>
<td>To investigate experiences of home recovery</td>
<td>Postal and telephone survey (Study period 6 months although date not provided)</td>
<td>n=80 Australian patients having GA for gynaecological surgery surveyed regarding experiences of recovery during first 10 days.</td>
<td>Researcher-designed post-operative symptoms diary for days 1 to 4 of recovery. Patients who returned the diary by post were telephoned after 10 - 15 days regarding problems - carer support, information and contact with healthcare professionals.</td>
<td>Main problems day 1 to 4 mobility, tiredness, pain and diet with mobility, tiredness and pain the most difficult to manage. Main problems on day 10 pain (66%), mobility issues (30%) and tiredness (25%) 45% contacted healthcare professionals for suture removal, pain management, medical problems and emotional support. Care for 3 was described as very important. 18% stated they would have preferred in-patient stay for ‘professional monitoring’. However, the findings relate to a specific surgical - diagnosis and treatment of endometriosis.</td>
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<td>Dewar et al (2003)</td>
<td>To determine if telephone interviews with patients during home recovery improved outcomes.</td>
<td>Postal diary completion and telephone survey (Study period 1 - 5 days over a 5 month period although date not provided).</td>
<td>n=222 Australian patients having GA for anal surgery (n=93), hernia repair (n=32), arthroscope (n=99) and breast reduction (n=36) surveyed at 1 - 5 post-operative days.</td>
<td>Sample divided into intervention and control group. Intervention group had pre-operative pain management teaching and telephone diary for first 3 post-operative days. Both groups telephone on day 5 for pain assessment. Pre-operative State-Trait Anxiety Inventory and pain measured using Brief Pain Inventory (Visual Analog Scale 1 - 10).</td>
<td>During first 3 days intervention group had statistically significantly less pain than control group and also at day 5. Further, from day 1 - 2 the intervention group had statistically significantly less pain moving than control group. No difference established between two groups regarding nausea and vomiting, constipation, faecal incontinence and grogginess. By day 2 intervention group had statistically significantly greater ability to concentrate and have relations with others. There was no statistically significant difference between groups regarding analgesia consumption. Patients appeared to benefit considerably from post-operative telephone advice. Patients voluntarily undergoing cosmetic breast augmentation were included in the sample which may have influenced the overall findings.</td>
</tr>
<tr>
<td>Dewar et al (2004)</td>
<td>To describe telephone interviews with patients during home recovery.</td>
<td>Postal diary completion and telephone survey (Study period 1 - 5 days over a 5 month period although date not provided).</td>
<td>n=222 Australian patients having GA for anal surgery (n=85), hernia repair (n=32), arthroscope (n=99) and breast reduction (n=36) surveyed at 1 - 5 post-operative days.</td>
<td>Sample divided into intervention and control group. Intervention group had pre-operative pain management teaching and telephone diary for first 3 post-operative days. Both groups telephone on day 5 for pain assessment. Pre-operative State-Trait Anxiety Inventory and pain measured using Brief Pain Inventory (Visual Analog Scale 1 - 10).</td>
<td>Many patients had misconceptions regarding pain management and required additional information. Patients unable to absorb information on discharge and also unable to group information via telephone on day 1 and 2. Patients developed unforeseen questions during recovery. Many reluctant to take analgesia due to side-effects, fears of being not pain-free or viewed as a weakness. Some were embarrassed to ask for help. Some patients needed additional teaching about the recovery process. Some also had fatigue with the realisation that one day surgery does not equal to one day recovery. Patients welcomed the therapeutic elements implicit in the telephone calls. However, all patients were only undergoing one type of investigative orthopaedic surgery.</td>
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<td>Flanagan (2009)</td>
<td>To investigate experiences of home recovery.</td>
<td>Telephone, tape-recorded interviews. (Study period 6 months although date not provided).</td>
<td>n=77 American patients having GA for knee arthroscopy interviewed at 12, 24 and 72 post-operative hours.</td>
<td>Researcher-designed post-operative symptoms diary schedule with an additional demographic details section.</td>
<td>Experiences at 12 hours concerned relief that event was over, satisfaction but much nausea, vomiting and sore throat. At 24 hours much pain and a lack of preparation to manage pain. A good deal of anxiety concerning pain, swelling, immobility and wound management. At 72 hours patients commented on the fatigue and some patients were unprepared for fatiguing with the realisation that one day surgery does not equal to one day recovery. Patients welcomed the therapeutic elements implicit in the telephone calls. However, all patients were only undergoing one type of investigative orthopaedic surgery.</td>
</tr>
<tr>
<td>Gillmartin (2007)</td>
<td>To investigate patients’ perceptions of discharge planning and home recovery.</td>
<td>Open-ended, face-to-face, tape-recorded interviews. (Study period 6 months although date not provided).</td>
<td>n=10 United Kingdom patients having GA for gynaecological (n=14), urological (n=12) and general surgery (n=4) surveyed between 7 - 10 post-operative days in the home.</td>
<td>Researcher-designed post-operative open-ended interview focusing on the lived experience for the first week of recovery. Interviews began by asking to “relate their experiences of discharge preparation” and “compare their expectations and experiences of discharge planning and home recovery”.</td>
<td>Discharge planning was considered by the majority to be well organised. However, many problems arose from the communication of information. Being given information whilst recovering from general anaesthesia, lack of opportunity to speak with the surgeon post-operatively, absence of relatives to listen to instructions, limited ability regarding symptom management and little awareness of potential problems. However, this was a small purpose day surgery patient sample.</td>
</tr>
<tr>
<td>Horwath (2003)</td>
<td>To investigate patients physical recovery once home.</td>
<td>Postal survey (Study period 6 months although date not provided).</td>
<td>n=91 American patients having GA for gynaecological surgery surveyed for 1 to 6 post-operative days.</td>
<td>6-page pack with daily log of pain (Roth Fatigue Score) and function (Katz Index of Activities of Daily Living). Telephoned on post-operative day 3 and 5 to prompt questionnaire completion.</td>
<td>40.7% reported moderate pain 1st post-operative day. Not returned day 6 did 90% report moderate to severe fatigue experienced by almost half of patients at day 3. Informed by staff they would be active by day 3 although more than half needed 5 - 6 days. Pain significant factor in delayed recovery. However, some patients were undergoing diagnost and treatment for infertility which may have caused additional concern. Telephonic support recommended for late on day 1 to aid recovery. Pre-operative information should state assistance with activities of daily living needed for 4 to 6 days following surgery.</td>
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<td>Lau et al (2001)</td>
<td>To identify significant factors influencing recovery and return to work.</td>
<td>Telephone survey (Study date 1999).</td>
<td>n=149 Hong Kong patients having GA for gynaecological surgery surveyed (Post-operative period of survey not provided).</td>
<td>Age, gender, occupation, duration of convalescence, return to work, type of hernia/ method of surgical repair.</td>
<td>Heavy duty workers returned to work significantly later than sedentary workers. Also, patients aged 50 years or below returned to work sooner although this just failed to reach a statistically significant level. Although this paper was published in 2001, data was collected between 1995 to 1998.</td>
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<tr>
<td>Markovic et al (2002)</td>
<td>To identify informal support during convalescence at home.</td>
<td>Telephone survey (Study date Aug 16 - October 2000).</td>
<td>n=12 Australian patients having GA for gynaecological surgery surveyed at 48 hours.</td>
<td>Researcher-designed post-operative open and closed item questionnaire focussing on information requirements, hospital admission, home recovery and advantages/disadvantages of day surgery.</td>
<td>Many patients (28% of sample) rated their level of satisfaction with information provision. Carer’s responsibility looking after the patient while undertaking domestic duties was very 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 emotional support limited. A number of patients undergoing invasive breast surgery or termination of pregnancy which may have adversely influenced their views of recovery.</td>
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<tr>
<td>Author</td>
<td>Purpose</td>
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<tr>
<td>Markovic et al</td>
<td>To identify informal support during convalescence at home.</td>
<td>Telephone survey</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 focusing on information requirements, hospital admission, home recovery and disadvantages of day surgery.</td>
<td>Private patients (28% of sample) statistically significantly less satisfied with information provision. Caregivers' ability looking after the patient while undertaking domestic duties was demanding. Quality of care greater for patients sharing the household with the caregiver. 12% of patients had to care for other family members once home. Day surgery described as convenient although emotionally stressful. A number of patients went through diagnostic work-up for breast cancer or termination of pregnancy which may have adversely influenced their views of recovery.</td>
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<td>McIntosh &amp; Adams</td>
<td>To examine the association between pre and post operative anxiety and influence on recovery after 48 hours.</td>
<td>Postal survey</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>Women found to be more anxious than males although no statistically significant relationship was established between anxiety and quality of recovery. However, only a small time frame of recovery was examined and the measures employed were possibly inappropriate. The QoR-40 was originally developed for measuring anxiety in psychiatric patients and the QoR-40 scale used to measure quality of recovery is not refined for day short stay surgical recovery. (See Liddell et al. 2009).</td>
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<tr>
<td>Mottram</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>Patients' sick role examined. Patients' experiences divided into three themes i) Resisting sick role (72%) - incapacity forced individuals to grudgingly accept resting. Anxiety for carers as patients would not accept temporary disability. ii) Limited acceptance to 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>
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<tr>
<td>Mottram</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 across the category of 'Limited existential support' following discharge. i) Fatigue and other factors influencing patients' experiences of day surgery (numbers in groups not provided). 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>
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<tr>
<td>Rosén et al</td>
<td>To describe patients' perception of pain, their return to usual activities and daily function over time</td>
<td>Postal survey</td>
<td>n=298 Swedish patients having GA for urological, orthopaedic and general surgery surveyed at 48 hours (n=118), 7 days (n=110) and 3 months (n=46) 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 disorders due to pain and wound problems more prominent 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 perceived complications and their reliance and self-reliance were low.</td>
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<td>Rosén et al</td>
<td>To describe patients' perception of pain, their return to usual activities and daily function over time</td>
<td>Postal survey</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 work, ability to walk particularly affected by pain. Pain interfered with return to work at 7 days. Consequently only 57% had returned to usual activities a few six days. However, orthopaedic patients were employed in the survey and such chronic healthcare conditions have the potential for persistent longer term pain.</td>
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<tr>
<td>Sahoon et al</td>
<td>To describe day-case surgery patients' Health-Related Quality of Life.</td>
<td>Postal survey</td>
<td>n=131 Finnish patients having GA for mainly orthopaedic surgery surveyed 2 weeks before and 2 weeks after surgery.</td>
<td>European Quality of Life-5D + 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>European QoL-5D + 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. For all patients pain limited activity (80%) and they interfered with return to work at 7 days. Consequently only 57% had returned to usual activities a few six days. However, orthopaedic patients were employed in the survey and such chronic healthcare conditions have the potential for persistent longer term pain.</td>
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<td>Wasowsicz-Kempf</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 (accelerometer 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 per day. Diary given to both groups for recording of pain, nausea, wound, fatigue and other factors limiting activity. Most patients not fully recovered after 1 week. No statistically significant difference established between the two groups regarding physical activity levels. Women in the 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>
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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] validated measures such as Visual Analogue Scales for pain, State-Trait Anxiety Inventory (STAI) [47], and European Quality of Life measure [84], post-operative nausea and vomiting scale [94] and an activity level scale [95].

Five studies used patient diaries (mostly for 1 to 5 post-operative days) to record symptoms such as pain, nausée, 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 post-operative exercise plan. In total, nine methods of measurement of recovery were used: morbidity, activity level, anxiety, quality of life, open/closed researcher-designed questionnaires, diaries, healthcare provider communication, review of medical records and patient contact.

In a qualitative study by Dewar et al. [66] patients in the treatment group benefitted 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 adverse effects. 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 concern prompting 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. 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 stated that post-operative analgesia and analgesia 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, those delays relate to a specific surgical procedure (diagnosis and treatment of endometriosis) which may have wide implications for patients. Horvath 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. Solomou et al. [82] surveyed 131 orthopaedic patients for 2 weeks and 79% reported experiencing moderate to severe pain levels of pain. However, many patients were undergoing treatment for chronic orthopaedic conditions. Bandypadhyay et al. [71] interviewed 315 women and established 54% were still experiencing pain after 48 hours. It was suggested factors relating to an inability to manage pain were being younger (<35 years), having previous experience of day surgery and limited information. However, some of the patients underwent breast biopsy and termination of pregnancy which could prompt a more emotive response.

In a study by Rosin 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 Rosin et al. [73], 50% of patients rated pain at 48 hours, 53% at 7 days and 34% at 1 month although the patients surveyed experienced a wide range of conditions. Flanagan et al. [18] interviewed 75 patients undergoing arthroscopy and reported participants to be pain free after 12 hours. However, after 24 hours no only were patients experiencing much pain but had made no preparations for its management. The sudden onset frightened many as they had insufficient pain relief and nothing had been ‘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 required follow-up support. Pain was seen as a symptom that must be endured and did not request help from their families or General Practitioner despite increasing levels of discomfort.

Brattwald 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, 13% of arthroscopic procedure patients stated they were still experiencing pain, 11% of inguinal hernia repair patients and 17% of breast augmentation patients. However, patients undergoing voluntary cosmetic surgery with patients undergoing treatment-centred surgery may be a problematic comparison. Brattwald et al. [63] (2nd reporting) stated many patients needed support and guidance after their surgery as being the most challenging issue. Berg et al. [76] surveyed patients undergoing differing types of orthopaedic surgery (knee arthroscopy, hand/foot surgery and knee arthroscopy) and established shoulder surgery was the group to experience a slower, less comfortable recovery. Barthelson et al. [89] suggested patients experienced quite differing degrees of pain following laparoscopic cholecystectomy although the sample size was somewhat limited. Analgesia was provided for the first 48 hours and pain management good but on the 3rd day when the prescribed analgesia was complete for some, the pain returned.

Information Provision

Gilmore [85] interviewed a small purposive sample of patients in their homes after 7-10 days and found discharge to be well organised although aspects of information provision were challenging. Some patients lacked the information and were uncertain about the plan of discharge which obscured the information adequately prior to discharge. In a study by Briggs et al. [3] of patients following laparoscopic cholecystectomy it was established 33% contacted a healthcare professional within 14 days of an unplanned consultation and in the majority of cases this was for advice on wound management. In a small study of 7 patients undergoing laparoscopic fundoplication (surgical repair of hiatus hernia) information provision (written and oral) was deemed thorough [72] but not sufficient to be sufficient. These studies likewise highlight an information deficit especially with regard to handling unforeseen events [67, 69, 89].

Bandyopadhyay et al. [71] recommend information provision should be improved as patients who had a good understanding of their treatment had a better recovery. Lau et al. [90] studied patients returning to work following inguinal hernia repair (data collected 1995 to 1998) and it was uncovered younger patients who had sedentary jobs return to work statistically significantly sooner. Bugeard et al. [80] suggested absent from recreational activities for 2 days following laparoscopic cholecystectomy and return to work after 1 week. Cheng et al. [91] established reasonable compliance with post-surgery instruction although 4% drove, 3% consumed alcohol, 28% went swimming, 5% did physical activity for children all within 24 hours of surgery. However, over 50% of the original sample was unable to be contacted.

Dewar et al. [66] conducted a quasi-experimental study where the treatment group were provided with pre-operative teaching on pain management and the control group had no such intervention. Although no difference was established between the two groups with regard to analgesia consumption, the treatment group experienced statistically significantly less pain during the first 5 days. However, all patients were telephoned each day for 3 days and both groups benefited from the advice offered. In a quasi-experimental study by Wasowski-Kemp et al. [74] the treatment group received a post-operative recovery exercise plan prior to surgery and the control group were provided a list of physical activity that each group was monitored by an accelerometer (device clipped to the trousers to measure and display the distance walked). No statistically significant difference was established between the two groups although the control group benefited more from the physical activity with an accelerometer in a reduced situation of subjective pain and a faster recovery, especially for females. Female participants in the treatment group were found to be statistically significantly more active than females in the control group. Many reflected on a National Health Service that did not cater for children with such an exercise monitoring device may limit its clinical application.

Post-discharge Anxiety

Mottram [69] interviewed 145 patients and 100 carers and uncovered much anxiety associated with a contemporary healthcare system that encouraged self-reliance and self-care with limited professional help. Many recalled a National Health Service that was no longer personal and local approach. Rosin et al. [72] suggested the lack of access to healthcare providers and limited information was a cause of concern and dissatisfaction. Barthelson et al. [89] studied patients following laparoscopic cholecystectomy and expressed a desire for pre-operative sedation and experienced a greater degree of anxiety. Additionally, the latent effects of anaesthesia gave rise to many
The opportunity for the expression of nurse-led knowledge in fast-paced, contemporary surgery has been limited by innovations in surgical care and anaesthesia, pharmacological emphasis on controlling costs/time and a lack of contemporary surgical nursing evidence on which to base innovative care and education. This review has established an initial requirement 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 surgery. Without such evidence, nursing-based knowledge may remain under-represented in modern elective surgery.

Surgeon/patient and anaesthetist/patient contact has remained relatively unchanged in this new surgical era but nurse/patient contact has become more fragmented. 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 [1, 101]. More importantly, no coordinated approach to communication and information provision is also required to establish a greater hospital/community nursing ethos [11] 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 investigating the hospital/home transition.

**Conclusion**

**References**


[24] Flanagan [18] stated patients welcomed the telephone interview (undertaken as part of the research process) as it offered a therapeutic element to recovery.

**Limitations**

The review is open to English publication bias and thereby possibly excludes a number of studies from the Scandinavian countries where research in this area is prominent [99, 100]. A limitation also occurred from the varied methods of data collection employed by the studies (low morbidity rates, assumption of ‘normal’ activity level, return to work, time off work, hospital stay, discharge to home etc) in day surgery specific measures of recovery. Furthermore, many studies (especially medical) do not always stipulate from which group of patients data is collected. For example, an aspect of surgery can be examined with no clear expression of in-patient or day case treatment. Finally, an international review can create problems with terminology as day surgery in America is defined 23 hour stay but this is not the case in Europe. In addition, some studies employ the term ‘out-patient surgery’ and must be read carefully to determine if this is day surgery or indeed a brief outpatient’s department procedure.
M. Markovic, M. Bandyopadhyay, T. Vu and L. Manderson. ‘They are marvellous with you whilst you are in but the
A. Mottram. Telephone follow-up for day surgery patients’ health-related quality of life. International Journal of
A:92–98.
BMC Nursing.
Ambulatory Surgery is the official clinical journal for the International Association for Ambulatory Surgery.

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.

Submission of Articles

All papers should be submitted by e-mail as a Word document to one of the Editors-in-Chief. Anaesthetic papers should be sent to Beverly K. Philip and surgical papers to Doug McWhinnie. Nursing, management and general papers may be sent to either Editor.

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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