Nursing intervention for day-case laparoscopic cholecystectomy


Summary

A considerable amount of elective surgery can now be undertaken on a day-case or short-stay basis – 23-hour or 72-hour stay. Such changes to modern surgery are transforming surgical nursing as a result of the reduced levels of physical care traditionally required by elective surgical patients. Brief hospital stay and self-care have become the greater part of preparation for, and recovery from, elective surgery. Education and psychological aspects of care are also important in the development of elective surgical nursing. This article focuses on laparoscopic cholecystectomy performed as a day-case procedure and identifies the changing aspects of nursing intervention required.

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Keywords

Elective surgical nursing; Laparoscopic cholecystectomy; Physical intervention; Psycho-educational care

Together with considerable financial savings and public demand, day-case cholecystectomy is increasingly being performed within day-surgery facilities worldwide (Bueno Lledó et al 2005). However, with concerns over possible post-operative pain, nausea and vomiting, studies have indicated that such surgery must either be performed during morning operating sessions to allow for an adequate recovery period (Blatt and Chen 2003) or on a 23-hour stay basis (Talamini et al 1999). Re-admission as a direct result of complications of day-case laparoscopic cholecystectomy remains low (Jain et al 2005).

In the UK, only 5% of NHS trusts perform 50% of laparoscopic cholecystectomies in day-case facilities (Department of Health (DH) 2006), possibly because of potential complications such as secondary haemorrhage, subhepatic collection of bile and infection of the biliary tree (Leaper and Peel 2003).

Considerations for laparoscopic cholecystectomy

A diagnosis of cholecystolithiasis or gallstones is usually established via abdominal ultrasonography and patients are only considered...
for day surgery if uncomplicated gallstone disease is established. Additionally, patients must satisfy the recognised criteria for day-case surgery (Royal College of Surgeons of England 1992):

- The patient should present with a physical status grading of Level I or II as per the American Society of Anesthesiologists (1991) grading scale (Box 1).
- The individual should be within one hour’s drive from his or her residence to avoid excessive travelling and increased movement following surgery.
- The patient should have appropriate home circumstances; he or she should have a home telephone, be registered with a GP and an adult should be responsible to care for him or her for a minimum of 24 hours.
- The patient and surgeon should agree to surgery in a day-case facility.

The following conditions contraindicate day surgery and should also be taken into consideration (Johansson et al 2006):
- The patient presents with a body mass index (BMI) greater than 40.
- The individual has experienced recent acute cholecystitis or thickening of gallbladder wall.
- There is a suspicion of a stone in the common bile duct (choledocholithiasis) (Figure 1).
- The patient has previously undergone complicated upper abdominal surgery.
- The individual has a history of chronic abdominal pain or constipation.

Patients with a history of jaundice, abnormal liver function test or a dilated common bile duct are also considered as high risk and may require ‘open’ surgery. A satisfactory electrocardiograph (ECG) and full blood count should be obtained before surgery is considered (McWhinnie et al 2004).

Pre-operative assessment

Comprehensive pre-assessment is the foundation of safe, effective day surgery (Ayantunde et al 2005). Pre-assessment is essentially concerned with the appraisal of risks and benefits of surgery and anaesthesia for the individual patient (Carlisle 2003). The NHS Modernisation Agency (2002) and the DH (2002) view information provision and assessment of fitness for surgery and anaesthesia as central to minimising the number of patients who cancel or fail to attend on the day of surgery. In a pilot study by the Operating Theatre and Pre-operative Assessment Programme National Team (2002), 68% of all day-case cancellations resulted from the patient’s actions, with 23% failing to attend, 19% presenting as unfit for surgery on the day, 12% cancelling the appointment.

<table>
<thead>
<tr>
<th>BOX 1</th>
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<tbody>
<tr>
<td><strong>Physical status grading scale</strong></td>
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<table>
<thead>
<tr>
<th>Level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Absence of organic, physiological, biochemical or psychiatric disturbance.</td>
</tr>
<tr>
<td>II</td>
<td>Mild or moderate systemic disturbance caused either by the condition to be treated surgically or another disease process, for example, mild diabetes, anaemia and controlled hypertension.</td>
</tr>
<tr>
<td>III</td>
<td>Severe systemic disturbance from any cause such as heart disease, severe diabetes with vascular complications, pulmonary conditions and angina.</td>
</tr>
<tr>
<td>IV</td>
<td>Life-threatening systemic disorders which may not be corrected by elective surgery such as unstable angina, cardiac, pulmonary, hepatic, renal or endocrine disorder.</td>
</tr>
<tr>
<td>V</td>
<td>Collapsed patient who has little chance of survival but has surgery often as a resuscitative measure with little or no anaesthesia, for example, ruptured aortic aneurysm, or severe head injury.</td>
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</tbody>
</table>

(American Society of Anesthesiologists 1991)
because it was deemed inconvenient and 8% cancelling the appointment because it was no longer required. Such cancellations proved disruptive involving a significant amount of rescheduling of dates for surgery (Operating Theatre and Pre-operative Assessment Programme National Team 2002). Although improved pre-operative assessment is having a positive impact on day-surgery efficiency, providing the patient with adequate and appropriate levels of information in such a short space of time remains a challenge for nursing staff (Rhodes et al 2006). Two leaflets have been produced by the Royal College of Anaesthetists and Association of Anaesthetists of Great Britain and Ireland (2003) to help explain anaesthesia.

Pre-operative intervention

The provision of psycho-educational care is one of the main pre-operative nursing issues in modern day surgery, especially following laparoscopic cholecystectomy (Foy and Timmins 2004). The majority of day-case patients are anxious on the day of surgery. An essential element in anxiety management is the provision of the desired level of information before the day of surgery (Stoddard et al 2005). However, management has tended to remain informal, marginalised and largely pharmacological in nature (Mitchell 2005). With the reduced amount of time that patients now spend in hospital, additional aspects of intervention are required including (Mitchell 2007):

- Provision of adequate and appropriate information throughout the day-case surgery experience.
- Enhancement of patient self-control, for example, providing the patient with simple elements of choice such as having relatives present.
- Enhancement of patient self-efficacy via positive encouragement and information provision.
- Therapeutic use of self in the form of social support, optimism enhancement and aiding cognitive coping strategies by using positive phrases such as: “You will be safe because...”. In this way the physical presence of the nurse and calm manner can have a positive effect on the patient’s sense of wellbeing.
- Reduction of the negative impact of the clinical environment and encouraging implicit and explicit messages of safety such as ‘the hospital performs many operations safely’, helps to create a warm, friendly and comfortable environment.

Surgical procedure

Before the surgical procedure patients may be provided with a sedative as part of the anaesthetic protocol to help minimise post-operative pain, nausea and vomiting. A pre-operative sedative such as midazolam, a short-lasting, water-soluble anxiolytic and hypnotic agent suitable for use with an intravenous (IV) infusion has previously been recommended (Damen et al 2004). However, pre-operative sedatives are not commonly used in day surgery for the following reasons (Mitchell 2003):

- Possible delayed discharge as a result of increased drowsiness.
- The need for patients to remember important information on discharge – the sedative may impair the patient’s ability to retain essential information about post-operative management.
- The physical requirement of patients to walk out of the day-surgery facility – the sedative may impair physical function and prevent adequate mobility.
- A large number of patients experience anxiety (Mitchell 2007), so it may prove difficult and time consuming to determine who does and does not require sedation.

In a UK survey of 199 consultant anaesthetists, propofol was determined to be the induction agent of choice (Payne et al 2003). Propofol is an IV anaesthetic agent used for the induction and maintenance of general anaesthesia. A non-steroidal anti-inflammatory drug (NSAID) such as diclofenac is also recommended intra-operatively to assist with post-operative pain management (Damen et al 2004). Once anaesthesia has been established surgery can progress with the insertion of the laparoscopic instruments into the abdomen. Insufflation of the abdomen with carbon dioxide should be undertaken to allow visualisation of the anatomical structures and to avoid injury to the internal organs when inserting the trocars (Woehlck et al 2003). The surgical procedure is then undertaken using various endoscopic instruments which are inserted through the trocars (Figure 2). A four-trocar technique employing low inter-abdominal pressure is widely practised and a local anaesthetic may be used to infiltrate the tissues before insertion of the trocars (Johansson et al 2006). The surgical procedure takes approximately 45–75 minutes. Infiltration of the subcutaneous tissues with a local anaesthetic may also be undertaken to assist post-operative pain management (Raeder 2006).
First phase recovery

The first phase of recovery takes place in the post-anaesthetic room. Patients are monitored closely, which includes observation of vital signs, pain, nausea and vomiting, activity level and wound site(s). Criteria for recovery and discharge from phase one are commonly used to release patients back to the day surgery ward. There have been a number of recommendations concerning discharge criteria. For example, the post-anaesthesia discharge scoring system (PADSS) (Chung 1995) and the Aldrete system (Aldrete 1998). The PADSS concerns the numerical grading of vital signs, activity level, post-operative nausea and vomiting, pain and bleeding (Awad and Chung 2006) (Box 2). The Aldrete recovery assessment inventory (Aldrete 1998) is similar to the PADSS (Chung 1995), although blood oxygen saturation is also considered. However, with strict adherence to identified criteria (a high Aldrete score in operating room), patients can bypass phase one recovery and progress straight to phase two recovery (Awad and Chung 2006).

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**BOX 2**

**Post-anaesthesia discharge scoring system**

<table>
<thead>
<tr>
<th>Vital signs: vital signs must be stable and consistent with age and pre-operative baseline</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood pressure and pulse within 20% of pre-operative baseline</td>
<td>2</td>
</tr>
<tr>
<td>Blood pressure and pulse within 20-40% of pre-operative baseline</td>
<td>1</td>
</tr>
<tr>
<td>Blood pressure and pulse &gt;40% of pre-operative baseline</td>
<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Activity level: patient must be able to ambulate at pre-operative level</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steady gait, no dizziness, or meets pre-operative level</td>
<td>2</td>
</tr>
<tr>
<td>Requires assistance</td>
<td>1</td>
</tr>
<tr>
<td>Unable to ambulate</td>
<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Nausea and vomiting: the patient should have minimal nausea and vomiting</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimal: successfully treated with medication</td>
<td>2</td>
</tr>
<tr>
<td>Moderate: successfully treated with intra-muscular medication</td>
<td>1</td>
</tr>
<tr>
<td>Severe: continues after repeated treatment</td>
<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pain: the patient should have no or minimal pain before discharge. The level of pain that the patient has should be acceptable to the patient. Pain should be controlled by oral analgesia</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>The location, type and intensity of pain should be consistent with anticipated post-operative discomfort</td>
<td>2</td>
</tr>
<tr>
<td>Pain acceptable</td>
<td>1</td>
</tr>
<tr>
<td>Pain not acceptable</td>
<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Surgical bleeding: post-operative bleeding should be consistent with expected blood loss for the procedure</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimal: does not require dressing change</td>
<td>2</td>
</tr>
<tr>
<td>Moderate: up to two dressing changes required</td>
<td>1</td>
</tr>
<tr>
<td>Severe: more than three dressing changes required</td>
<td>0</td>
</tr>
</tbody>
</table>

Maximum score = 10; patients scoring ≥9 are fit for discharge

(Awad and Chung 2006)
Second phase recovery

Patients returning from phase one recovery, or the post-anaesthetic recovery room, will be fully conscious and it has been recommended that patients should be observed for approximately six hours following laparoscopic cholecystectomy (Keulemans et al 1998). They should be encouraged to get out of bed when the anaesthetic has worn off. Drains, if inserted, can usually be removed after four hours depending on the individual surgeon’s criteria (Sharma et al 2004). For all day-surgery patients, post-operative nursing intervention should focus on immediate physical intervention and continued psycho-educational care (Blay and Donoghue 2006).

**Immediate physical intervention** The two most prominent nursing issues during phase two recovery following laparoscopic cholecystectomy are the management of pain and post-operative nausea and vomiting (Ammori et al 2003). Other minor areas of physical care include the removal of a drain, application of a dressing and initial assistance with mobilisation (Burden et al 2000).

**Pain management** Pain management should commence with an assessment of the patient’s pain at regular intervals. For a quick, simple and effective pain assessment the visual analogue scale is recommended (Figure 3) (Coll et al 2004). This should be used frequently throughout phase two recovery and immediately before discharge. The patient should be asked to use the visual analogue scale to indicate his or her personal level of pain. However, before this assessment tool is used, it is important that members of the clinical team determine and agree on the level of discomfort that is acceptable in the immediate post-operative period. For example, the clinical team may determine that an immediate self-assessment pain score greater than five is unacceptable and warrants the use of appropriate analgesia to manage the pain effectively.

‘Referred pain’ is post-operative pain experienced in a different region from where it originates, and may be the result of insufflation of carbon dioxide or diaphragmatic irritation resulting from undissolved carbon dioxide (Woehlck et al 2003). Patients should be advised to take their analgesics and NSAIDs at the prescribed intervals once discharged. The effects of local anaesthetic agents used during surgery can last for up to eight hours (Raeder 2006). Although patients may not experience much pain initially, as the effects of the local anaesthetic wear off pain may become more prevalent. Therefore, day-surgery patients may experience an increase in pain during the first night at home and adherence to the prescribed medication regimen is essential to optimise pain management (Willsher et al 1998).

**Post-operative nausea and vomiting** Nausea and vomiting are frequent complications following day surgery. Some patients, for example, females, patients with a history of post-operative nausea and vomiting or motion sickness, non-smokers and patients who have received peri-operative opioids, may be at a higher risk of post-operative nausea and vomiting (Apfel et al 1999). If two or more of these factors are present, prophylactic anti-emetics should be considered (Apfel et al 1999). The degree of post-operative nausea and vomiting should be assessed using a visual analogue scale or similar semantic assessment scale. It is vital that a protocol for post-operative nausea and vomiting is developed as patients who experience these symptoms before discharge frequently experience an increase in vomiting and nausea once at home (Carroll and Ogg 1995). Experience these symptoms before discharge frequently experience an increase in vomiting and nausea once at home (Carroll and Ogg 1995).

**Psycho-educational intervention** Measures to manage patients’ anxiety should be implemented pre-operatively and continued throughout the post-operative recovery period until discharge (Box 2). This should include the provision of adequate levels of information for patients and carers. Contact with the primary healthcare team following discharge from a day-surgery unit is commonly for pain management advice, wound management, the issuing of a medical certificate or for further information. The provision of suitable information to aid self-recovery once

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**BOX 3**

**Post-discharge nursing intervention**

- Provision of chosen level of information, both verbal and written, throughout the day surgery experience. This may also include comprehensive discharge information relating to practical aspects of self-recovery.
- During pre-assessment patients should be provided with practical information regarding post-operative self-care, activity, dietary advice and the management of common complications.
- Post-operative nurse-initiated telephone support should be provided during the first evening and following morning after discharge.
- Patients should be advised to take prescribed medication accordingly.

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**FIGURE 3**

**Visual analogue scale for pain**

<table>
<thead>
<tr>
<th>No pain</th>
<th>Worst pain imaginable</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>10</td>
</tr>
</tbody>
</table>

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home is a challenging issue. Patients need to be informed of possible complications so that problems can be dealt with accordingly. All surgical patients should be provided with information concerning continued pain management, possible complications, common wound problems, bathing, activity levels, returning to work, driving and advice on sexual matters and diet (Bradshaw et al 1999, Blay and Donoghue 2006) (Box 3). Such practical discharge information aids recovery and improves the individual’s confidence in managing his or her own care. For example, some of the reasons day-surgery patients refuse to go home on the same day include insecurity about the ability to self-care, feelings of vulnerability when leaving

| FIGURE 4 |

### Post-discharge telephone support system

<table>
<thead>
<tr>
<th>Experience of pain</th>
<th>None</th>
<th>Mild</th>
<th>Moderate</th>
<th>Severe</th>
<th>Worst</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experience of nausea and vomiting</td>
<td>None</td>
<td>Mild</td>
<td>Moderate</td>
<td>Severe</td>
<td>Worst</td>
</tr>
<tr>
<td>Wound management</td>
<td>Very good</td>
<td>Good</td>
<td>Uncertain</td>
<td>Poor</td>
<td>Very poor</td>
</tr>
<tr>
<td>Activity level</td>
<td>Very good</td>
<td>Good</td>
<td>Uncertain</td>
<td>Poor</td>
<td>Very poor</td>
</tr>
<tr>
<td>Carer support required</td>
<td>No support</td>
<td>Occasional support</td>
<td>Moderate support</td>
<td>Much support</td>
<td>Great deal of support</td>
</tr>
<tr>
<td>Additional information</td>
<td>None</td>
<td>Some</td>
<td>Medium amount</td>
<td>Much required</td>
<td>Great deal required</td>
</tr>
</tbody>
</table>

(Chung 1995)

References


hospital and the added responsibility for the carer (Hazelgrove and Robins 2000).

Post-operative telephone calls following day surgery may help patients to manage levels of anxiety and pain (Dewar et al 2003). In some rural areas and other European countries a hospital at home service provides patients with regular telephone calls and/or a home visit from a day-surgery nurse the following day (Marin et al 1995). Any telephone conversations between the healthcare professional and the patient should be structured, for example, using the post-discharge telephone support system developed by Chung (1995) (Figure 4). Healthcare professionals will also need to provide the patient with solutions and helpful suggestions.

Conclusion

Elective surgical nursing is undergoing a transformation. In the future a considerable amount of elective surgery will be performed on a day-case, 23-hour or 72-hour basis. Laparoscopic cholecystectomy is a procedure increasingly performed on a day-case basis and this article has focused on the practical and psycho-educational aspects of care required. As modern surgery continues to grow and further developments in minimal access surgery become common, a greater number of laparoscopic cholecystectomies will be undertaken in day-case facilities leading to an even greater demand for appropriate nursing interventions.


