



# PRACTICE

## PRACTICE POINTER

# Management of patients after laparoscopic procedures

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### What you need to know

- The duration of recovery after laparoscopic surgery depends on the procedure performed, and can be as short as 1-2 weeks
- Patients should refrain from driving until they are comfortably able to look in their blind spot and perform an emergency stop
- Worsening postoperative pain suggests a potential abdominal complication, and the patient requires urgent assessment
- Although most wound infections after laparoscopic surgery are superficial, some can involve the deeper tissues and might require assessment in hospital, particularly if prosthetic material has been inserted (eg, mesh)

Laparoscopy has revolutionised abdominal surgery over the past 30 years. Fifteen million laparoscopic surgical operations are performed worldwide every year, of which 10% are performed in the UK.<sup>1</sup> Laparoscopy involves the use of cameras and specially designed instruments that enable surgeons to perform operations without making large abdominal incisions. It has gained worldwide popularity and acceptance by surgeons and patients alike. Better intraoperative visibility, minimal scarring, less pain, shorter hospital stay, and faster recovery are the main advantages of laparoscopic surgery.<sup>2</sup> This practice pointer discusses the considerations around management of patients following laparoscopic surgical procedures. It is predominantly UK focused, although information about wound care, thromboprophylaxis, and complications should equally apply elsewhere.

## Laparoscopy: what's changed?

As well as cholecystectomy, appendectomy, and tubo-ovarian procedures, laparoscopy is now increasingly used for hysterectomy, bariatric procedures, and many gastrointestinal and urological cancer resections, and it is also possible to

perform aortic aneurysm repair laparoscopically.<sup>3-5</sup> Technological advances have resulted in the development of several variations on the “standard” laparoscopic approach. These are described in Boxed Text on page 1 box 1.

### Box 1 Variations on standard laparoscopic techniques

#### Single incision laparoscopic surgery

The surgeon operates almost exclusively through a single entry point, typically the patient's umbilicus, leaving a single scar

#### Natural orifice endoscopic surgery

Performed with an endoscope passed through a natural orifice (eg, mouth or anus) then through an internal incision (eg, stomach or colon), thus avoiding external incisions or scars

#### Robotically assisted laparoscopic surgery

Robotic systems, controlled by surgeons, are used to facilitate operations. The main perceived advantage is articulation beyond normal manipulation, resulting in improved ergonomics

#### Laparo-endoscopic surgery

Combination of laparoscopic and endoscopic surgery (eg, for removal of gastrointestinal polyps), eliminating the need for more major surgery (eg, bowel or stomach resection)

#### Hand assisted laparoscopic surgery

After initial laparoscopic examination and preparation, laparoscopic assisted surgery is performed through a small incision made over the site of the pathology. An appliance is used to maintain pneumoperitoneum, while the operator's hand is inserted through a small incision into the abdomen, to facilitate tactile sensation

Enhanced recovery programmes (Boxed Text on page 2 box 2) are multimodal perioperative care pathways designed to achieve early recovery after surgical procedures. They are increasingly popular and are ideally suited to laparoscopic

surgery. There is evidence to suggest that following these protocols reduces length of hospital stay without increasing postoperative complications, when compared with standard care.<sup>6</sup> Enhanced recovery starts and ends many weeks before and after the surgical procedure itself.

Box 2 The main elements of enhanced recovery programmes

#### Preoperative care

- Preoperative assessment visit
- Lifestyle changes: stop smoking, lose weight, reduce alcohol, increase exercise
- Correct anaemia
- Optimise diabetic care
- Preoperative carbohydrate drinks

#### Admission to hospital

- Admission on the day of surgery
- Carbohydrate drinks and water up to two hours before surgery

#### Perioperative care

- Use of minimally invasive techniques
- Individualised fluid balance therapy
- Prevention of hypothermia
- Minimise use of drains and tubes

#### Postoperative care

- Early mobilisation
- Early return to eating and drinking
- Early discharge planning

## When are patients typically discharged after laparoscopic surgery?

This depends upon the type of surgery that has been performed, and patient factors such as comorbidities. Day case procedures are becoming more common: In the UK, for example, more than 60% of patients undergoing laparoscopic cholecystectomy are now discharged on the same day.<sup>7</sup> Discharge criteria include the ability to mobilise and control pain with simple analgesia. Although desirable, passing urine and oral intake are no longer seen as absolute requirements before discharge, except for patients considered “high risk” (such as those undergoing hernia surgery or with a previous episode of retention).<sup>8</sup> This recommendation is based on a study of 324 participants that stratified patients according to risk of retention and permitted low risk patients to leave without voiding. In high risk patients, bladder volume was monitored by ultrasound, and patients were required to void before discharge. All low risk patients, with one exception, voided spontaneously either before or after discharge with no evidence of urinary retention. Among high risk patients, the rate of retention was 5%.<sup>9</sup>

Patients are usually provided with information leaflets about expected recovery period, emergency contact details, and follow-up schedules, although further appointments (in either primary or secondary care) are often not required after routine procedures. Where appropriate, cancer specialist nurses typically provide patients with an additional channel of communication.

## Which medications are usually prescribed?

Patients are usually discharged from hospital with simple analgesia. Sometimes it is appropriate to provide medication(s) to counteract the side effects of analgesia (such as laxatives, antiemetics, or proton pump inhibitors), and thromboprophylaxis. These are provided by the operating team, and do not generally require involvement of the general practitioner.

### Analgesia

Pain after laparoscopic surgery can cause discomfort, sleep deprivation, and poor mobility, and can result in delayed discharge or readmission to hospital. To control pain at home, encourage patients to take analgesics pre-emptively and regularly. Paracetamol is the most commonly used analgesic because it is effective, cheap, and safe. In the absence of contraindications, non-steroidal anti-inflammatory drugs can be used,<sup>10</sup> and these are often combined with paracetamol and a weak opioid, such as codeine. Stronger opioids (oral morphine, tramadol, or oxycodone) are less frequently required at the point of discharge from hospital. The duration of analgesia regimen depends on the type of operation that has been performed. For appendicectomy or cholecystectomy, patients often require regular analgesia for the first week after surgery, reducing to “as required” after that. Following larger operations (eg, for gastrointestinal cancer), patients might require regular analgesia for longer.

### Thromboprophylaxis

Patients undergoing daycase surgeries do not routinely require thromboprophylaxis, but those staying in hospital overnight or beyond receive daily pharmacological prophylaxis for the duration of their stay. Venous thromboembolism—ie, deep venous thrombosis or pulmonary embolism—is not common after laparoscopic surgery, occurring in less than 1% of patients.<sup>11</sup> The duration of thromboprophylaxis depends on the procedure that has been performed. The National Institute for Health and Care Excellence (NICE) advises using extended pharmacological venous thromboembolism prophylaxis for 28 days following cancer surgery,<sup>12</sup> which might be important to consider if patients present to primary care with falls or bleeding during this period. Although NICE does not specifically provide recommendations for bariatric procedures, obesity is a risk factor for venous thromboembolism, and such patients usually also receive extended prophylaxis.<sup>13</sup> There is no clear evidence to say which type of pharmacological prophylaxis is best; individual units or surgeons might have preferences. Where appropriate, patients are taught to inject themselves with heparin. If anticoagulant therapy was stopped preoperatively, patients are usually able to recommence this before or at the point of discharge.

### Wound care

Subcuticular absorbable sutures are the most commonly used materials for closing laparoscopic wounds, so that suture removal is unnecessary. Total resorption times vary from 40 to 120 days. Simple adhesive dressings are typically applied to each wound, although there is no evidence to suggest that dressings reduce the rate of wound infection.<sup>14</sup> Increasingly, skin glue is being used as a “dressing,” with the advantage that it renders the wound waterproof, meaning patients can shower immediately after surgery.<sup>15</sup> Patients with adhesive dressings

are generally advised to avoid soaking the wounds in water for a few days after surgery. Unless there is excessive discharge of fluid from the wounds, there is generally no need to replace the dressings once they have fallen off. A degree of separation of the wound edges is common and does not require assessment or intervention, unless there is concern about the deeper (muscular) layers.

### Postoperative restrictions

Although the “port site” wounds suggest a modest intervention, the underlying procedure is usually more extensive, and patients need to remember that a period of recovery will be required. The speed at which normal activity is resumed after laparoscopic surgery largely depends on the extent and type of operation that has been performed. Many surgeons use the phrase “if it hurts, don’t do it” and explain to patients that they should notice an almost daily increase in the activities they are able to undertake without experiencing pain or discomfort.

### Driving

The period for which patients are advised to abstain from driving depends on the type of laparoscopic procedure they have had. For example, a patient undergoing laparoscopic cholecystectomy or appendicectomy might be able to drive after one to two weeks,<sup>16</sup> whereas those undergoing groin surgery or larger cancer procedures might need to wait longer. Patients should only be allowed to drive if they are comfortably able to apply an emergency brake, to look in their blind spot, and have sufficient reaction times. Drivers do not need to notify the Driver and Vehicle Licensing Agency of surgical recovery unless it is likely to persist for more than three months.<sup>17</sup>

### Return to work

There are no clear guidelines on when patients should return to work. The decision is personal, and depends on the person’s occupation and the procedure performed. Patients might only require two weeks away from work after smaller procedures (such as cholecystectomy or appendicectomy),<sup>18</sup> but a longer break or a gradual return to work might be advised after cancer surgery.<sup>18</sup> “Sick notes” are provided by the hospital team to cover the anticipated period of absence.

### Heavy lifting

Heavy lifting after laparoscopic surgery is a controversial and under-researched topic. Some sources state that lifting should be avoided for six weeks,<sup>19</sup> but generally, one to two weeks’ avoidance of lifting are thought to be sufficient for smaller procedures, and four weeks for larger surgeries.<sup>18</sup> During this time, patients are advised not to lift anything heavier than a kettle or a shopping bag. They are also advised to avoid pushing and pulling activities, such as vacuuming, scrubbing the bath, hanging up heavy washing, and mowing the lawn.

### Eating and drinking

Restrictions on eating and drinking are dependent on the procedure that has been undertaken. For most patients, there are no restrictions. Operations for morbid obesity, anti-reflux procedures, and oesophagogastric cancer might initially require patients to follow a liquid-only diet.<sup>20</sup>

### Travel

The Civil Aviation Authority advises patients not to fly for 24 hours after laparoscopy, because of the potential for expansion

of retained carbon dioxide in the abdominal cavity.<sup>21</sup> A sensible precaution would be to use thromboembolic stockings if flying within one month of surgery.

## Complications commonly seen in primary care

After “minor” laparoscopic procedures (eg, cholecystectomy, hernia repair, or smaller gynaecological procedures), patients often feel “back to normal” quite quickly. They are often eager to mobilise (although might feel tired more quickly than usual), and their appetite might be unaffected. It is important to bear these features in mind when assessing a patient after laparoscopic surgery, as a failure to improve (or a worsening of symptoms such as pain) might indicate an abdominal complication.<sup>22</sup>

### Pain

Mild pain is common following laparoscopic surgery. Often, the carbon dioxide used to inflate the abdomen can remain inside, causing cramps, bloating, and shoulder tip pain. These symptoms generally subside after 24 hours. If pain worsens after this period, consider the possibility of abdominal complications. Boxed Text on page 3 Box 3 outlines the other symptoms and signs that might suggest an intra-abdominal complication.<sup>22</sup>

Box 3 Symptoms and signs suggesting intra-abdominal complication after laparoscopic surgery

- Worsening abdominal pain
- Anorexia or reluctance to drink
- Reluctance to mobilise
- Nausea or vomiting
- Tachycardia
- Abdominal tenderness or distension
- Poor urine output
- Pyrexia

### Wound infection

Any wound that is red, oozing, hot, swollen, or tender might be infected, and might require antibiotic treatment. For a simple, superficial infection, select an antibiotic such as flucloxacillin that covers Gram positive bacteria, including beta-lactamase organisms such as *Staphylococcus aureus*. This can be prescribed and managed in the community. If there is a concern about deeper infection (and especially where prosthetic material, such as a mesh, was inserted during the laparoscopic procedure), urgently refer the patient to hospital for review by the surgical team.

### Distinguishing between haematoma, abscess, and seroma

These complications all cause swelling at the operative site, and have defining features that help to distinguish one from another (⇓). In cases of diagnostic doubt, ultrasound can be helpful. Seromas are often treated conservatively, while abscesses and (large) haematomas almost always require surgical intervention. Refer patients with worrying symptoms to a specialist for assessment on an urgent basis.

## Other postoperative complications

Laparoscopic surgery offers many advantages; however, abdominal complications can present more subtly than after a traditional “open” operation.<sup>22</sup> Pain might not be a predominant feature, and sometimes the only clinical sign is a slight tachycardia in otherwise normal observations. The complications themselves are almost identical, and largely depend upon the nature of the operation that has been performed. For example, division of adhesions confers the risk of bowel damage, cholecystectomy might result in leakage of bile into the peritoneal cavity, and leakage from staple lines or anastomoses can occur after surgical procedures for morbid obesity or gastrointestinal cancer surgery. The time frame in which the complication is identified and treated is most critical to its resolution. Where there is no clear evidence that the patient’s condition is improving, refer the patient to hospital urgently for further investigation. Imaging and blood tests should be performed quickly at the point of hospital admission, rather than in the community, which could delay treatment. Boxed Text on page 3 Box 3 outlines the symptoms and signs that might raise suspicion of an intra-abdominal complication.

### Education into practice

- After reading this article, how might you better assess patients following laparoscopic surgery?
- What difficulties have you encountered when managing patients who have had laparoscopic surgery?
- How did/could you overcome these?

### Patient involvement

Patients were not involved in the creation of this article.

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## Table

Table 1 | Distinguishing features of abscess, haematoma, and seroma

	Haematoma	Abscess	Seroma
<b>Time of onset</b>	Usually within 24-48 hours of surgery	Usually 3-7 days after surgery	Usually later onset (after a week)
<b>Overlying skin colour</b>	Bruising might be present	Red, might be oozing pus	Normal
<b>Overlying skin temperature</b>	Normal	Higher than normal	Normal
<b>Degree of pain</b>	Can be painful	Often exquisitely tender	Usually only slight discomfort