

Preoperative and Postoperative Care of the Gynaecological Patient

Ishita Das, Sophie Strong, Gabriele Centini and Karolina Afors

1.1 Introduction

In order to optimize a patient for any gynaecological procedure, a plan for preoperative and postoperative care must be put in place. This ensures that an individualized approach is implemented in which patients are appropriately counselled prior to surgery regarding their specific risks; all medical issues are taken into account; and the surgery is carried out safely with all team members being aware of and able to plan for anticipated issues. In terms of postoperative management, a detailed plan with consideration of pain relief, fluid balance, mobilization and thromboprophylaxis will reduce perioperative morbidity and identify and treat any potential complications. Consideration of all the above factors is necessary to achieve a successful procedure for the patient, safe and timely discharge from the hospital and good patient satisfaction [1].

1.2 Preoperative Care

1.2.1 Patient Education and Consent

For any surgical procedure, careful patient selection is crucial. A well-informed patient who has had detailed counselling regarding the procedure itself, indications for the procedure, the implications of not undergoing the procedure, any alternative treatments and the risks and benefits of the procedure will have more realistic expectations of the outcome and recovery. In terms of patient education, often written information in the form of leaflets/diagrams can aid in explanation of complex procedures, and clinicians must involve authorized medical interpreters where necessary. Some patients find it helpful to contact patient support groups where they have the opportunity to meet patients who have had similar procedures for their condition and to take account of their experience.

The process of obtaining valid consent is one in which the professional provides adequate and accurate information concerning a procedure to a patient, which allows them to reach a considered decision [2]. Ensuring the patient has the capacity to consent to the procedure is the first step and requires a patient to be considered competent to consent, to understand the information given and to be able to communicate their decision. It is also advisable that the patient has enough time between the process of consent and the procedure itself to reconsider their decision, clarify any uncertainties and have the chance to discuss these with their surgeon. In particular, it is considered good practice to also discuss the potential for unexpected findings and what might be done intraoperatively if these are encountered. For hysterectomy,

the discussion regarding total or subtotal procedure and the need for unanticipated oophorectomy in the event of bleeding or finding of abnormalities should be discussed well in advance. In addition, should there be mild endometriosis or adhesions seen at laparoscopy, it would be sensible to treat these at the time of a diagnostic procedure as long as this is explained to the patient beforehand and the conversation documented in the notes.

1.2.2 Clinical History and Examination

In modern gynaecological practice, it is not uncommon for the patient to undergo a procedure that is carried out by a surgeon who did not initially list the patient for surgery. This makes it particularly important that the clinical history is reviewed and a clinical examination is performed prior to surgery by the operating surgeon.

Details of previous surgery, reaction to anaesthetics as well as general medical history will have an impact on the planning of surgery. In addition, clarifying the indication for the surgery and reviewing information regarding symptoms as well as a thorough obstetric review will also inform the decision for surgery on the day. Details of menstrual history (cycle length, duration, menstrual flow, dysmenorrhoea, intermenstrual bleeding, postcoital bleeding) or postmenopausal symptoms including bleeding, vasomotor symptoms and hormone replacement are necessary. For those of childbearing age it is important to discuss contraception, any previous fertility treatment, pelvic infection history and fertility wishes, as this will need to be considered in light of surgical findings.

In terms of the physical examination, although the patient requires a full assessment of general wellbeing, a thorough examination of the abdomen and pelvis will inform the surgical procedure.

Depending on the patient's physical status (including BMI), preoperative anaesthetic examination will enable assessment of whether the patient is able to tolerate the risks and duration of the anaesthesia for the planned surgery.

1.2.3 Investigations

Preoperative investigations for surgery will be necessary, depending on the nature of the procedure and the age and medical condition of the patient.

In general, determination of blood group with presence or absence of atypical antibodies, as well as a recent full blood count should be available. This will allow correction of anaemia prior to surgery if needed, including iron supplementation, treatment

of abnormal uterine bleeding and/or blood transfusion. In addition, for patients with relevant medical history or those with advanced age, baseline renal function, liver function and thyroid status should be considered. In diabetics, an assessment of recent diabetic control with HbA1c measurement may impact suitability for surgery.

Results of imaging studies should also be available for review by the operating surgeon, as this may inform the route and nature of the surgery. On the day of surgery, it is important that a pregnancy test is carried out in all women of childbearing age to ensure they are not pregnant prior to proceeding with surgery.

1.2.4 Risk Assessment

Preoperative risk assessment is a combined process between surgical and anaesthetic teams. For assessment of anaesthetic risk, this is based on the evaluation of physical status as created by the American Society of Anesthesiology (ASA), which determines whether a patient is fit for surgery based on ASA groups I–VI, with increasing severity of systemic disease.

With an increase in the number of obese patients being operated on, it has become increasingly important to consider the impact of obesity on surgery. An operation in the obese population comes with added risks in the form of airway implications and tolerance of anaesthetic, but additionally theatre staff will need to consider the potential requirement for modified equipment. This includes consideration of specialist hoists for transfer of patients, theatre tables that are able to handle additional loads and also manual handling considerations for the safety of theatre staff. It may also be necessary to have specialized instruments for the surgery itself in the form of retractors or trocars designed for patients with a high BMI.

1.2.5 Medication Management

A number of medications may have perioperative effects and it is therefore important for a number of measures to be considered prior to surgery. A complete medication history should be obtained and verified by the patient to ensure accuracy of drugs being taken and their dose/frequency. As part of this history, clinicians should also pay attention to any over-the-counter, herbal or illicit drug use [3].

The patient may be taking medications that would be associated with worsening of their health should they be stopped abruptly. Therefore, it may be necessary to taper these medications or continue them during the perioperative process, while also bearing in mind that the metabolism of these medications may be altered by surgery or by interactions of other medications given during and after the procedure.

Specific considerations should be made for patients receiving anticoagulant treatment as the balance between the increased thromboembolic risk of discontinuing medication and the increased risk of bleeding by continuing should be addressed as part of surgical planning. In these cases, seeking the advice of the patient's haematology team and joint discussion between anaesthetist and surgeons will be beneficial in

optimizing the plan for anticoagulation. The indication for anticoagulation and a patient's individualized risk for having a thromboembolic event, as well as the individualized risk of bleeding depending on the nature of the surgery, should be kept in mind. In some cases, if an anticoagulant is withheld, the timing of this will depend on the specific agent used.

Bridging anticoagulation involves the use of a short-acting anticoagulant (most often a low molecular weight heparin (LMWH)) while a longer-acting agent (such as warfarin) is discontinued in order to reduce the risk of perioperative bleeding [4]. The use of this method should be discussed with a haematologist, and a detailed postoperative plan of restarting the anticoagulant treatment should be put in place. Most hospitals will have a well-defined protocol for perioperative anticoagulation.

1.2.6 Antibiotic Prophylaxis

Surgical site infection (SSI) is one of the most common healthcare-associated infections resulting in significant morbidity and mortality.

Studies have shown that the administration of prophylactic antibiotics after wound closure does not reduce infection rates further and can result in harm. Perioperative antibiotics are most effective when given ≤ 30 min before skin is incised and specific recommendations exist with respect to gynaecological procedures [5].

Certain patient groups may have additional risk factors that might predispose them to SSI and therefore require additional consideration for antibiotic treatment. These comprise patient factors and operative factors (Table 1.1).

Administration of antibiotics also increases the prevalence of antibiotic-resistant bacteria and predisposes the patient to infection with organisms such as *Clostridium difficile*, a cause of antibiotic-associated colitis. This risk increases with the duration that antibiotics are given for and is higher in the elderly, immunosuppressed and patients who have a prolonged hospital stay or those who have had gastrointestinal surgery.

Various local treatment policies exist specific to gynaecological surgery. However, in general it is accepted that for patients undergoing hysterectomy (abdominal, laparoscopic or vaginal) a standard single dose of intravenous antibiotics is sufficient. Patients who experience major blood loss (greater than 1500 ml) should have fluid resuscitation, followed by re-dosing with the recommended prophylaxis regimen for that operation [5]. In addition, procedures lasting more than 4 h may require re-dosing [6].

1.3 Postoperative Care

A key component of postoperative care is identifying the deteriorating patient and recognizing early signs/symptoms of postoperative complications. Although there were a number of early warning scores (EWS) in use, the Royal College of Physicians noted a lack of consistency in the detection of and response to acute illness.

The National Early Warning Score (NEWS) was created in 2012 to standardize the process of recording, scoring and

Table 1.1 Risk factors that increase the rate of SSI [6]

Patient factors	Operation factors
<ul style="list-style-type: none"> • Age • Nutritional status • Diabetes • Smoking • Obesity • Coexistent infections at a remote body site • Colonization with microorganism (e.g. <i>Staph. aureus</i>) • Immunosuppression (inc. taking glucocorticoid steroids or immunosuppressant drugs) • Length of preoperative stay • Coexistent severe disease that either limits activity or is incapacitating • Malignancy 	<ul style="list-style-type: none"> • Duration of surgical scrub/skin antisepsis • Preoperative shaving/preoperative skin preparation • Length of operation • Appropriate antimicrobial prophylaxis • Operating room ventilation • Inadequate sterilization of instruments • Foreign material in the surgical site • Surgical drains • Surgical technique inc. haemostasis, poor closure, tissue trauma • Postoperative hypothermia

responding to changes in routinely measured physiological parameters in acutely ill patients. The NEWS was founded on the premise that (1) early detection, (2) timeliness and (3) competency of the clinical response comprise a triad of determinants of clinical outcome in people with acute illness [7]. It is based on a simple aggregate scoring system in which a score is allocated to physiological measurements, already recorded in routine practice, when patients present to or are being monitored in hospital. Six simple physiological parameters form the basis of the scoring system: respiration rate, oxygen saturation, systolic blood pressure, pulse rate, level of consciousness or new confusion, and temperature. In hospitals, the NEWS should be used for initial assessment of acute illness and for continuous monitoring of a patient's wellbeing throughout their stay in hospital. By recording a patient's NEWS score on a regular basis, the trends in their clinical responses can be tracked to provide early warning of potential clinical deterioration and provide a trigger for escalation of clinical care [7]. This is particularly important in the postoperative setting, and it has been noted that recording a patient's NEWS regularly provides guidance about the patient's recovery and return to stability [7].

1.3.1 Pain Management

Pain postoperatively should be anticipated and appropriate analgesia prescribed. The operating and anaesthetic team caring for the patient should decide which type of analgesia should be given. The World Health Organization (WHO) Analgesia Ladder [8] approach should be used: regular paracetamol and non-steroidal anti-inflammatory drugs (NSAIDs) with weak opioids for breakthrough pain, such as codeine, and if needed stronger opioids such as subcutaneous morphine/epidural or patient-controlled analgesia (PCA). A daily review of 'as required' medication should be considered when prescribing further regular analgesia.

Poorly controlled postoperative pain can lead to reduced mobility, thus increasing the risk of venous thromboembolism,

and can have a negative impact on patients' mental wellbeing. It is therefore of the utmost importance that this is not overlooked.

Common side effects of analgesia should be anticipated, such as gastritis for NSAIDs and nausea/constipation for opioids; medication to reduce these side effects should be co-prescribed – for example, proton pump inhibitors, anti-emetics and laxatives.

1.3.2 Fluid Balance

The fluid status of a patient can easily become deranged following surgery. Patients may become dehydrated prior to surgery when asked to fast if they do not receive intravenous (IV) fluid replacement. Conversely, patients who are given too much may become fluid overloaded, resulting in peripheral oedema, and in severe cases pulmonary oedema.

To ensure that a patient has a neutral fluid balance, an input–output chart can be used. Inputs include: IV fluids, oral fluids and medications that have a high fluid volume. Outputs include: urine, stool if diarrhoea, vomit and surgical drainage. Ways in which the fluid status of a patient can be assessed are outlined in Table 1.2.

Blood tests can be performed to assess the renal function and electrolytes (U+Es) for a patient with fluid imbalance. Electrolytes have a narrow window within which they must be maintained. Hyper/hypokalaemia may result from dehydration or over-hydration; similarly, hyponatraemia may also be a result of this or secondary to gynaecological procedures resulting in intravascular absorption with hyposmolar solutions such as glycine (e.g. transcervical resection of fibroids). Patients with electrolyte imbalances should have an electrocardiogram (ECG), IV fluid infusion or fluid restriction and/or electrolyte replacement with close serum monitoring. There may also be a role for diuretic medication in women with fluid overload. The drug chart should also be reviewed to ensure there are no medications that may further contribute to fluid and electrolyte imbalance.

Table 1.2 Assessing hydration status in a surgical patient

- Asking whether the patient is thirsty
- Reviewing mucous membranes – assessing if dry or moist
- Assessing height of jugular venous pulse (JVP)
- Assessing skin turgor
- Auscultating lung bases for fine crackles
- Palpating for peripheral oedema
- Reviewing urine output and colour of urine
- Evaluating drain output
- Measuring the daily weight of a patient if indicated

1.3.3 Hypotension

Hypotension postoperatively is not uncommon and is contributed to by opioid use, dehydration and general anaesthetics. It may, however, also be an indicator of haemorrhage or sepsis, and should therefore always be investigated and managed appropriately. Low blood pressure may also be the result of administration of antihypertensives, and these medications should be reviewed pre- and postoperatively.

A hypotensive patient should prompt a clinical review for signs and symptoms of bleeding and infection. The drug chart and fluid balance should be reviewed, a thorough history taken and a full clinical examination of the patient performed. Blood pressure can often be raised with IV fluids; a fluid challenge of 500 ml of crystalloid solution for 15 min is recommended. In the elderly/those with poor reserve, 250 ml of crystalloid solution for 15 min should be given [9].

1.3.4 Bladder Care

Consideration of whether to leave in the bladder an indwelling catheter should be made at the end of a surgical procedure. The benefits are that it allows for accurate urine output measurement and spares the patient having to mobilize initially after the surgery. A decision to leave a catheter in the bladder should be weighed against the risk of infection, and it should not be left *in situ* for longer than is clinically necessary. However, some catheters may need to remain for a longer period of time if there is concern over bladder injury, for example. These patients should have individualized postoperative bladder care plans with a date for trial without catheter and consideration of involvement of urologists if required. The rate of postoperative urinary retention is high in gynaecological surgery, especially in urogynaecology procedures, and has been quoted in the literature to occur in 2.5–24% of cases [10].

Once a catheter has been removed, it is important that the patient passes urine 4–6 hours later. Failure to do so may result in the need for recatheterization if there is a high residual volume. Residual volume is best checked with a portable bladder scanner. Patients who require recatheterization should also have a mid-stream urine (MSU) sample sent to exclude a urine infection. If negative, a repeat trial without catheter should take place 24 h after the repeat catheter was inserted. If the patient is still unable to pass urine 4–6 h later or there is a post void residual volume of more than 150 ml on two occasions, a catheter should

be inserted for the third time for 1 week, and these patients should be followed up with input from a urogynaecologist.

1.3.5 Feeding

Nutrition is required for postoperative healing. Patients should be encouraged to drink water and to build up their diet as tolerated. When reviewing a patient postoperatively, it is important to ask whether they are eating and drinking, and also to assess for signs of postoperative ileus. Ileus may present as abdominal distension, absence of passing flatus/stool, hyper-resonant abdomen to percussion and reduced bowel sounds.

Patients with a suspected postoperative ileus or bowel obstruction should be made nil by mouth or restricted to clear fluids only, with IV fluid replacement. An abdominal X-ray should be performed and laxatives should be considered. Constipating medications should be ceased (e.g. opioids). If the patient's symptoms are associated with nausea or vomiting, a nasogastric tube may need to be passed and advice should be sought from the general surgeons.

Patients with an unsafe swallow reflex should be assessed by speech and language therapists, and dieticians should consider the need for enteral or parenteral feeding.

1.3.6 Infection

Infections postoperatively commonly present with fever (temperature ≥ 38 °C) and may be associated with systemic signs such as tachycardia, hypotension and a high respiratory rate. All patients presenting like this should have a septic screen and be managed according to the sepsis pathway; that is, blood tests for blood cultures and a serum lactate, as well as full blood count, U+Es and C-reactive protein should be taken. In addition, IV fluids should be given promptly, hourly urine output should be measured with a catheter and a urine sample should be sent for microscopy, culture and sensitivity. Oxygen saturations should be kept $\geq 94\%$ and IV broad-spectrum antibiotics should be administered as per local guidelines within 1 h if no clear source of infection is identified. Paracetamol should also be given to control the pyrexia. Consideration should also be given as to whether a chest X-ray should be performed if there are any chest signs. In patients with severe infections not responding to initial antibiotic therapy, early involvement of microbiology specialists and the intensive care team is essential in successful treatment of postoperative sepsis. Common sources of infection are discussed in the following subsections.

1.3.6.1 Wound Infections and Collections

Erythema, swelling and discharge from a wound are signs of an infection. A wound swab should be sent to microbiology and a line should be drawn to demarcate the area of infection, to assess whether it is worsening or improving with time. A collection may present with a swinging fever and may require further imaging, such as ultrasound or CT scan, if the patient does not respond to antibiotic therapy. Some patients may require radiologically guided drainage of a collection or alternatively may need evacuation of a wound and to allow for it to close by secondary intention. A tissue viability

specialist should be involved in the patient's care to allow for a multidisciplinary approach to providing the best patient care.

1.3.6.2 Urinary Tract Infection

Dysuria, frequency, hesitancy and nocturia may all be signs of a urinary tract infection. Patients should be treated with appropriate antibiotics after an MSU has been sent.

1.3.6.3 Lower Respiratory Tract Infection

A productive cough with associated coarse crackles on auscultation, high respiratory rate or low oxygen saturations are signs of a postoperative chest infection. Postoperative atelectasis may also occur, increasing the risk of a chest infection developing. A chest X-ray, sputum sample, arterial blood gas (ABG) and consideration of flu swabs should be performed and antibiotics ± antivirals should be given. Chest physiotherapists should also be asked to see the patient to aid with their recovery and improving saturations.

1.3.7 Consideration of Intensive Care

Unwell patients requiring further support should be discussed with the relevant medical/surgical teams and, if necessary, should be reviewed by outreach nurses/ICU. These patients require close observation and immediate review.

1.3.8 Venous Thromboembolism and Mobilization

Early mobilization has been shown to reduce the risk of venous thromboembolism (VTE) in postoperative patients. Should patients struggle with their mobility, physiotherapy should be involved in their recovery.

Venous thromboembolism is a serious risk for patients, not just in the immediate postoperative period but also for the months following surgery. A VTE risk assessment should be performed for every patient when they are admitted to hospital and repeated daily if risk factors have changed. Thromboembolic deterrent stockings (TEDS) should be worn by all surgical patients, provided there are no contraindications such as peripheral vascular disease or friable skin conditions. Thromboembolic deterrent stockings should be sized appropriately to ensure they

are not too tight, which could potentially cause more harm. Should TEDs not be suitable, intermittent pneumatic compression devices should be considered. An individualized patient assessment for subcutaneous thromboprophylaxis should be performed and VTE prophylaxis should be prescribed as necessary.

Patients who present with symptoms of a deep vein thrombosis (i.e. red/swollen/painful calf) should have a lower limb ultrasound Doppler. While awaiting imaging if clinical suspicion is high, treatment dose thromboprophylaxis should be prescribed based on the patient's weight and renal clearance.

Similarly, if a patient presents with symptoms of a pulmonary embolism (PE) – that is, pleuritic chest pain/shortness of breath/tachycardia/haemoptysis/low oxygen saturations, particularly on mobilizing, a chest X-ray, an ABG and an ECG should be performed. If no other obvious cause for the symptoms is identified, further imaging such as a CT pulmonary angiography or a ventilation/perfusion scan should be arranged. While awaiting the scan, the patient should be anticoagulated with a therapeutic dose of subcutaneous LMWH.

If the patient is haemodynamically unstable, an ABCDE approach should be taken and an urgent medical review should be sought to assess for thrombolysis.

1.3.9 Discharge

A timely and safe discharge should be the aim for all patients. It is important to ask about home environment and whether the patient will need any additional support. If patients require help, it is important to involve occupational therapists, physiotherapists and the discharge planning team as necessary. All patients should be discharged with the necessary medications, thromboprophylaxis and discharge summary outlining the events of their hospital admission. Patients should also be given 'safety-netting' information of symptoms to look out for and when and where they should seek medical attention if unwell or if they have further queries.

A copy of the discharge letter should remain with the patient for their records, another copy should be kept in the hospital notes and a final one should be sent to the patient's general practitioner.

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