



Minimal Access Surgery & Day Surgery

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Definition

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- Minimal access surgery is a marriage of modern technology & surgical innovation that aims to accomplish surgical therapeutic goals with minimal somatic & psychological trauma.

Advantages

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- Less wound access trauma.
- Less disfiguring than conventional techniques.
- Offers cost-effectiveness by
 - ▣ shortening operating times,
 - ▣ shortening hospital stays &
 - ▣ allowing faster recuperation.

Extent of MAS

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- **Laparoscopy**
 - Hand-assisted laparoscopic surgery
- **Thoracoscopy**
- **Endoluminal endoscopy**
 - NOTES
- **Perivisceral endoscopy**
 - Mediastinoscopy.
 - Retroperitoneoscopy & retroperitoneal approaches to the kidney, aorta & lumbar sympathetic chain.
 - Extraperitoneal approaches to the hernia repair.
 - Subfascial ligation of perforators in varicose vein surgery.
- **Arthroscopy & intra-articular joint surgery**
- **Combined approach**

Open vs. Lap. surgery

Open surgery background

1. Most of the trauma results from a **large wound**, necessary to give adequate exposure.
2. **Wound** is often the cause of morbidity, eg infection, dehiscence, bleeding, herniation & nerve entrapment.
3. **Wound pain** prolongs recovery time.
4. **Reduced mobility** contributes to an increased incidence of pulmonary collapse, chest infection & DVT.
5. Mechanical & human **retractors** cause additional trauma.
6. **Exposure** of body cavity to the atmosphere causes morbidity thru cooling & fluid loss by evaporation.
7. There are also post-surgical **adhesions**.
8. In handling intestinal loops, the surgeon & assistant disturb the peristaltic activity of gut & provoke adynamic **ileus**.

Advantages of laparoscopic surgery

1. Decrease in wound size.
 1. Decreased wound morbidity.
 2. Decrease in wound pain.
 3. Decreased wound trauma.
2. Early recovery & mobilization.
3. Decreased fluid & heat loss.
4. Decreased post-surgical adhesions, & early gut recovery.
5. Improved vision.

Limitations of laparoscopic surgery

1. Reliance on an imaging system that provides a two-dimensional view.
2. Instruments are longer & more complex to use, with significant problems of hand-eye coordination.
3. Loss of tactile feedback.
4. Difficulty with hemostasis.
5. Extraction of large specimens.
6. Reliance on new techniques, eg laparoscopic inguinal hernia repair.
7. Tumor implantation at port sites.

Preoperative evaluation & preparation

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- History
- Examination
- Premedication
- Prophylaxis against thromboembolism
- Urinary catheters & nasogastric tubes
- Informed consent

Surgical principles

- ❑ Meticulous care in creation of pneumoperitoneum.
 - ❑ *Closed method: verres needle*
 - ❑ *Open method : hasson trocar.*
- ❑ Controlled dissection of adhesions.
- ❑ Adequate exposure of operative field.
- ❑ Avoidance & control of bleeding.
- ❑ Avoidance of organ injury.
- ❑ Avoidance of diathermy damage.
- ❑ Vigilance in postoperative period.

Managing preoperative problems

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- *Adhesions from previous abdominal surgery*
- *Obesity*

Managing operative problems

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- *Perforation of the gall bladder*
- *Bleeding*
 - how to avoid bleeding
 - bleeding from a major vessel
 - bleeding from the gall bladder bed
 - bleeding from the trocar sites

Postoperative care

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□ *General rules*

□ *If the patient develops a fever or tachycardia or complains of severe pain at the operation site*

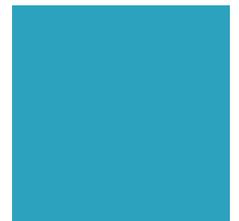
- Blood CP, LFTs, amylase
- Ultrasound of abdomen.
- If bile duct leakage is suspected, ERCP may be needed.
- In cases of doubt, relaparoscopy or laparotomy.

□ *In the absence of problems, patients should be fit for discharge within 24 hours.*

Common problems

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- ❑ Nausea
- ❑ Shoulder pain
- ❑ Abdominal pain
- ❑ Analgesia
- ❑ Nasogastric (NG) tube
- ❑ Oral fluids & feeding
- ❑ Urinary catheter
- ❑ Drains
- ❑ Discharge from hospital
- ❑ Skin sutures
- ❑ Mobility and convalescence



□ **Advantages of laparoscopic cholecystectomy include all, except:**

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- A. Speedy recovery & early return to work.
- B. High cost of equipment used.
- C. Minimum requirement of analgesics used postoperatively.
- D. Good cosmetic results.
- E. Obviates the need for laparotomy.

Answer: B

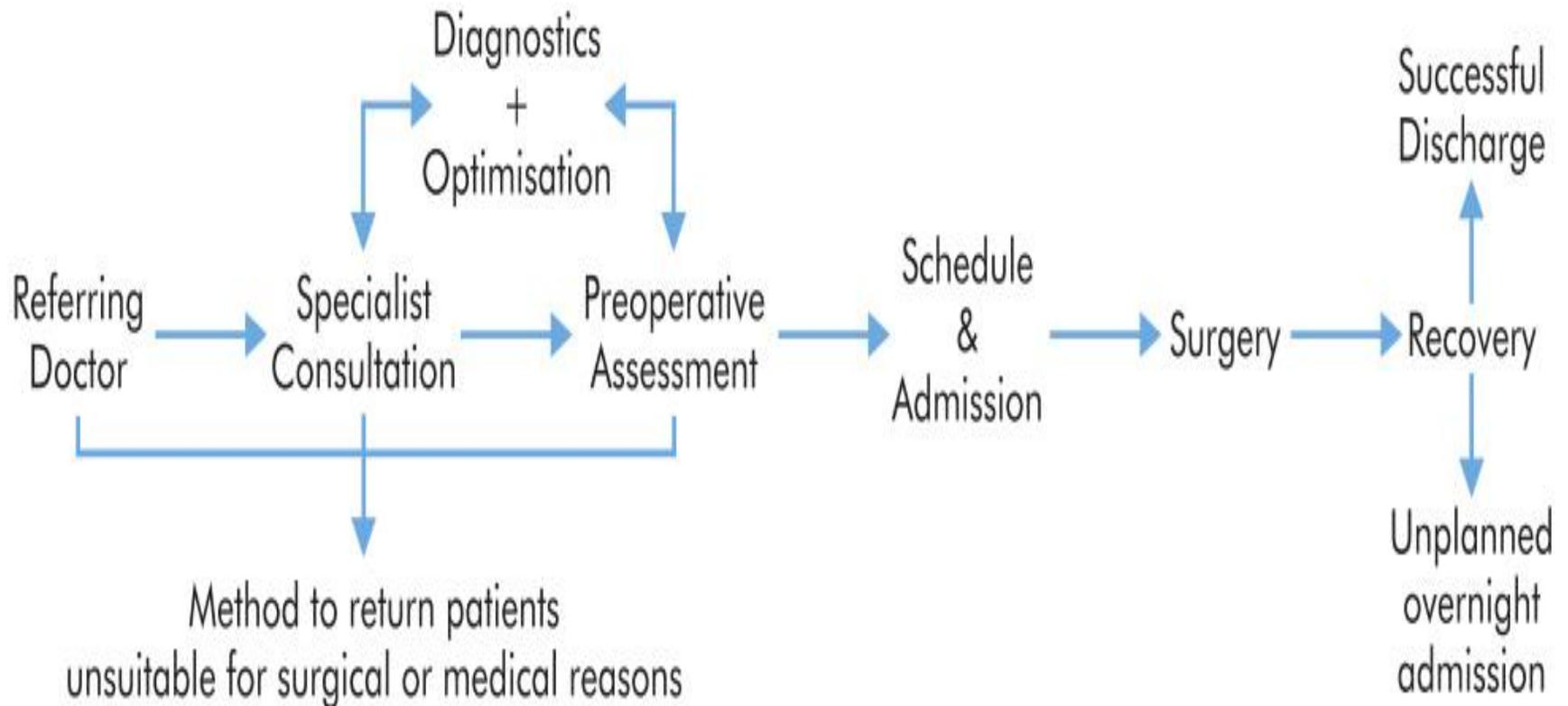
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Day surgery

- Day surgery is a patient pathway, not a surgical procedure and extends from first patient contact to final discharge.
- Types
 - **Outpatient surgery:** not admitted to a ward facility
 - **Procedure room surgery:** surgery not requiring full sterile theatre facilities
 - **Day or same-day surgery:** admitted and discharged within the 12-hour day
 - **Overnight stay:** 23-hour admission with early morning discharge
 - **Short-stay surgery:** admission of up to 72 hours

Day surgery pathway

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Selection Criteria

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Medical criteria

□ *Age*

- ▣ There is no upper age limit.
- ▣ Healthy physiological status is required.

□ *Comorbidity*

American Society of Anesthesiologists (ASA) classification

- ▣ Stand-alone units often confined to **ASA I and II** patients, while ASA III patients are more suitable for hospital-integrated units.
- ▣ Patients with significant respiratory or cardiovascular disease should be reviewed by an anaesthetist before being accepted for day surgery.
 - Many hypertensive pts are incorrectly excluded from day surgery.
 - **BP below 180/110 is safe.**

□ *Obesity*

- BMI is calculated as weight divided by square of height (kg/m²) and obesity is defined as a **BMI >30**.
- Although there is an increased risk of non-serious respiratory complications intraoperatively and in the immediate postoperative period, the course of these patients is otherwise uneventful.
- They should, however, be managed by experienced medical and nursing staff.
- Hypertension, congestive cardiac failure and sleep apnoea are all more common in patients with morbid obesity, but in selected and optimised patients, a **BMI up to 40 for surface procedures and 38 for laparoscopic procedures are acceptable**.

□ **Social criteria**

- A responsible and physically able adult should remain with patient overnight at home.
- Appropriate toilet facilities.
- Means of contacting the hospital should complications occur.
- A comfortable & short journey time to home.

□ **Surgical criteria**

- Procedures up to 2 hours in duration can safely be done as day surgery with modern anaesthetic techniques.
- Degree of surgical trauma determine the success, therefore entry to abdominal and thoracic cavities should be confined to minimal access techniques.
- Appropriate control of pain and the ability to drink and eat in a reasonable timescale.

Preoperative Assessment

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- This should be performed early in the pathway to allow time to optimise any health problems.
- It consists of a basic health screen:
 - BMI, BP, past medical history, current medications.
- Appropriate investigations for fitness.
- The patient and/or their carer should be given verbal and written information regarding admission, operation and discharge.

Perioperative Management

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Scheduling

- With dedicated day surgery lists, major procedures should be scheduled early on morning lists to allow maximum recovery time.
- In the afternoon, use of local or regional anaesthesia helps reduce unplanned overnight admissions (which may follow GA).
- When mixed lists of day and inpatient cases are planned, then day cases should go first.
 - Where complex inpatient surgery is undertaken, the mixing of day and inpatient cases is not advisable.

Anaesthesia and analgesia

- Successful day-surgery anaesthesia requires a multimodal approach to analgesia, with optimal dosages of anaesthetic agent.
 - The agents used matter less than the skill of the anaesthetist.
- **Multimodal analgesia starts in the preoperative period** and unless contraindicated, patients should receive full oral doses of paracetamol and NSAID such as ibuprofen.
- **Intraoperative anaesthesia** can be maintained by any of the inhalational agents.
 - **TIVA** (total intravenous anaesthesia) using propofol offer the advantage of reduced postoperative nausea and vomiting (PONV).
 - **Short-acting opioids** (fentanyl, alfentanil) should be used as these agents can minimise the incidence of PONV.
 - If morphine is needed, this should be used in small doses (under 0.1 mg/kg) to minimise sedation and PONV.
 - Wherever possible, a long-acting local anaesthetic agent, such as **bupivacaine**, should be injected into wounds by the surgeon.
- Pain levels should be routinely assessed in the postoperative recovery area.
 - Further doses of paracetamol, fentanyl or morphine can be used to ensure that patients are comfortable prior to return to the ward.

Postoperative complications

- The fact that the patient will be discharged home within a few hours of surgery requires proactive monitoring after surgery.
- Haemorrhage can occur.
- Nausea and vomiting should be managed actively to maximise successful discharge.
- Inadequate recovery from anaesthesia, uncontrolled nausea and vomiting and inadequate pain control are the most common anaesthetic related causes of postoperative admission.

Surgery

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- For some surgical specialties, over 90% elective procedures can be achieved in day surgery.
- Safe and efficient day surgery demands the competence and skill of an experienced surgeon.
- Some surgeons have concerns regarding patient safety after discharge.
 - Risk of postoperative haemorrhage is often the major reason to keep the patient in hospital overnight.
 - Reactionary haemorrhage commonly occurs in the first 4–6 hours after surgery, but the patient is unlikely to have been discharged home within this time period.
 - It may be caused by slippage of a ligature, displacement of blood clot, cessation of vasospasm, after coughing or increased mobility.
 - Secondary haemorrhage is defined as occurring at least 24 hours after surgery, but usually presents several days later, as it is due to postoperative infection.
 - Thus, even if the patient had stayed overnight, these postoperative bleeds are still likely to occur once the patient has returned home.
- Good surgical technique requires minimal tissue traction or tension and good haemostasis.

- **Abdominal**
 - ▣ Excisional/treatment of anal lesions, haemorrhoidectomy, primary and recurrent inguinal/femoral herniae, laparoscopic cholecystectomy, laparoscopic fundoplication, pilonidal sinus surgery
- **Breast**
 - ▣ Excision/biopsy breast lesion, sentinel node excision
- **Genitourinary**
 - ▣ Laser prostatectomy, orchidectomy, circumcision, excision of hydrocoele/varicocoele
- **Orthopaedic**
 - ▣ Dupuytren's fasciectomy, carpal tunnel release, therapeutic arthroscopy of knee or shoulder, removal of metal-work
- **Vascular**
 - ▣ Varicose vein procedures

Discharge criteria

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- ❑ Vital signs stable for at least 1 hour
- ❑ Correct orientation as to time, place and person
- ❑ Adequate pain control with supply of oral analgesia
 - ❑ Understands how to use oral analgesia supplied
- ❑ Ability to dress and walk, where appropriate
- ❑ Minimal nausea, vomiting or dizziness
- ❑ Has taken oral fluids
- ❑ Minimal bleeding or wound drainage
- ❑ Has passed urine (if appropriate)
- ❑ Has a responsible adult to take them home
 - ❑ Has a carer at home for the next 24 hours
- ❑ Written and verbal instructions given about postoperative care
- ❑ Knows when to come back for follow up (if appropriate)
- ❑ Emergency contact number supplied

THE END!