

SURGERY

RR-8.0

Contents

General Surgery : Part 1	1
General Surgery : Part 2	15
Breast	24
Thyroid, Parathyroid and Adrenal Glands	36
Oral Cancer, Salivary Glands and Neck Swellings	52
Gastrointestinal Surgery : Part 1	61
Gastrointestinal Surgery : Part 2	81
Gastrointestinal Surgery : Part 3	96
Hepatobiliary and Minimally Invasive Surgery	111
Urology : Part 1	135
Urology : Part 2	147
Speciality Surgery	162
Trauma and Burns	172
Hernia, Thorax and Skin	199
Vascular Surgery	212

GENERAL SURGERY : PART 1

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Day Care Surgery

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Definitions :

- **Daycare/Same-day surgery** : Admitted + discharged within **12 hours**.
- **Overnight stay** : 23-hour admission + early morning discharge.
- **Short stay surgery** : Admission up to 72 hours.

Selection Criteria :

medical	Social	Surgical
<ul style="list-style-type: none"> • Physiological > Chronological age. • ASA status > 2 : Careful review (Involve anaesthetist). • BMI < 40 : Surgery not C/I. 	<ul style="list-style-type: none"> • Availability of responsible adult carer for 1st 24 hrs. • Suitable home conditions. • Ability to contact hospital in an emergency. 	Operations up to 2 hrs : Recognized as day care surgeries.

Eligibility based on ASA grade → 1 and 2 : Stand alone day care unit.
 → 3 : Integrated day care surgery centre.

Other criteria :

- **BP < 180/100 mmHg**.
- **In a diabetic** : HbA_{1c} < 8.5 (**Skip morning dose of OHA**).
- **Eligible BMI (kg/m²)** :
 - **< 40** → Surface procedures.
 - **< 38** → Laparoscopic procedures.
- **Well controlled case of epilepsy are eligible**.

Anaesthesia and Analgesia Used :

- **Total intravenous anaesthesia (TIVA)** → **Propofol** (↓ Post-op nausea + vomiting).
- **Post-op analgesia** : Infiltration with **bupivacaine** (Long acting, most **cardiotoxic**).

Post-operative Complications :

- **m/c complication (Post-day care Sx)** : **Nausea + vomiting** (Assessed using Apfel score).
- **m/c complication requiring readmission** : **Hemorrhage**.
- **Pain**.

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Discharge Criteria :

- Vital signs stable (Atleast 1 hour) + oriented to time, place, person.
- Adequate pain control with **oral analgesia** and understands how to use it.
- Has taken oral fluids, has passed urine (If appropriate).
- minimal wound discharge/bleeding.
- Able to dress + walk where appropriate + responsible adult to take them home.

ERAS PROTOCOL

ERAS : Enhanced Recovery After Surgery.

Preoperative	Intra-operative	Post-operative
<ul style="list-style-type: none"> • Counselling. • Avoid mechanical bowel preparation (D/t fluid + electrolyte imbalance). • Permitted to take prior to Sx : <ol style="list-style-type: none"> a. Solids up to 6 hours. b. Clear carbohydrate rich liquids up to 2 hours. (Carbohydrate loading). 	<ul style="list-style-type: none"> • Surgical approach : minimally invasive. • Bupivacaine infiltration. • Keep patient warm. • Nausea + vomiting prophylaxis. (At least 2 classes of medications). 	<ul style="list-style-type: none"> • Use NSAIDs, avoid opioids. • Within 24 hours : <ul style="list-style-type: none"> - Discontinue IV fluids. - Start with liquids f/b regular diet. - Ambulate. • Avoid drains/Plan early removal.

Patient Safety, OT Zones, Surgical Positions

00:07:14

IV Cannulas :

Colour-coding :

Color	Gauge	Maximal Flow Rate (mL/min)
Yellow	24G	13
Blue	22G	30
Pink	20G	67
Green	18G	96
Gray	16G	240
Orange	14G	270



IV cannulas

- Violet : 26G.
- White : 17G.

Superficial thrombophlebitis :

- **m/c complication** of cannula insertion.
- Presentation : **Cord-like tender swelling** at the site and takes few weeks to resolve.
- mx : Topical heparinoids (Thrombophobe).



Superficial thrombophlebitis

Surgical Safety Checklist :


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Sign in	Time out	Sign out
Before induction of anesthesia. (Ward → OT)	Before skin incision.	Before patient leaves OR (At skin closure).
<ul style="list-style-type: none"> • Confirm : Patient identity, site, procedure. • written consent to be taken. • Surgical site marking. • Inquire about allergies. • Confirm pulse oximeter functioning. • Evaluate risk of blood loss. 	<ul style="list-style-type: none"> • Verbal confirmation of : Patient, site & procedure name. • Surgeon confirms : <ul style="list-style-type: none"> - Operative duration. - Anticipated blood loss. • Anaesthetist : Antibiotic prophylaxis (To be given within 60 minutes of the procedure). 	Confirmation : <ul style="list-style-type: none"> • Nurse : Gauze + instrument count. • Surgeon : Specimen labelling. • Anaesthetist : Actual blood loss.




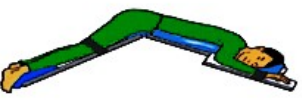
OT Zones :

Protective zone	Clean zone (Connects protective zone to aseptic zone)
<ul style="list-style-type: none"> • Change rooms • Transfer bay • Pre & post op rooms • ICU/ PACU 	<ul style="list-style-type: none"> • Equipment store room • maintenance workshop
Aseptic zone	Aseptic zone
<ul style="list-style-type: none"> • OT 	<ul style="list-style-type: none"> • Waste disposal

OT Positions :

Surgical position	Uses	
1. Supine (m/c used)	Abdominal and breast surgeries.	
2. Trendelenburg	Pelvic surgeries.	
3. Reverse Trendelenburg	Upper abdominal surgeries. (E.g : Laparoscopic cholecystectomy)	
4. Lithotomy	<ul style="list-style-type: none"> • Obstetric, gynaecological, urological procedures. • Common peroneal nerve injury : If legs not properly supported. 	

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Surgical position	uses	
5. Lateral/kidney position	<ul style="list-style-type: none"> Thoracotomy, kidney surgeries. (Eg : Nephrectomy) Brachial plexus injury due to hyperextension of arms. 	
6. Prone	Spinal surgeries and pilonidal sinus surgeries.	
7. Sitting/Fowler's position	<ul style="list-style-type: none"> Posterior cranial fossa procedures. Advantage : <ul style="list-style-type: none"> Better exposure. Bloodless field. Disadvantage : ↑ Risk of air embolism. 	
8. Jack-knife	Not preferred (D/t positional asphyxia)	

Note :

Air embolism :

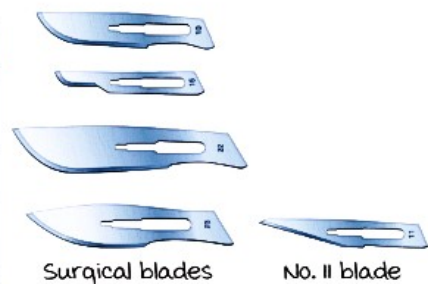
- 50 to 100 cc of air getting sucked into the vein.
- Clinical scenarios :
 - During thyroid/head and neck surgery → Vein nicked
 - While operating in sitting position.
 } Sudden desaturation.
- mx of suspected air embolism : Durant's position/Left lateral (Right side up) + legs up.
- Significance : Air remains in right side of heart → Easy aspiration. (Image guided)

Surgical blades and Energy Sources

00:18:28

SURGICAL BLADES

Surgical blades	uses
No. 11 (Pointed/stab blade)	<ul style="list-style-type: none"> Incision and drainage Arteriotomy
No. 12 (Curved blade)	Suture removal
No. 10, 15, 20, 21, 22, 23 (Blades with a belly)	making incisions



Blade handling :

- Blades passed in a kidney tray to prevent injuries.
- Blades mounted on **BP handle**.
- Incision made from far to near.



Bard Parker (BP) handle

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Note : **Langer's lines**.

- AKA relaxed tension lines.
- Lines are perpendicular to action of underlying muscle.
- Incisions are made **parallel** to the lines (Give **good scars**).



Langers line



ENERGY SOURCES

monopolar v/s Bipolar Cautery :

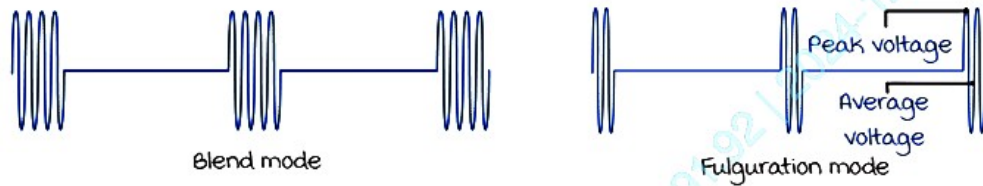
monopolar cautery	Bipolar cautery
Flow of current : Tip → Body → Cautery pad → machine. (To cut/ coagulate)	Flow of current (Locally completed) : Prong 1 → Body → Prong 2
Cautery pad : • Placed over well vascularized area. • Wide area of contact required. • If small → Burns at attachment site.	No cautery pad required
Disadvantages : • Thermal damage to nearby nerves & vital structures. • Interference with cardiac conduction	Advantage : • Safe to use with pacemakers. • Can be used near vital structures, end arteries.
	Surgeries used : Thyroid, parotid, penile, CNS sx, ear lobule.
Can cut and coagulate	Only coagulate
 <div style="border: 1px solid black; padding: 5px; margin-top: 5px;"> <p>Buttons</p> <p>Yellow : Cut</p> <p>Blue : Coagulate</p> </div>	

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modes of currents :

	Cutting	Coagulation
Current	Low voltage, continuous	High voltage, alternating
uses	Cuts the tissue	Stops bleeding
	Cutting mode 	Coagulation mode 

Other modes :

**Harmonic Scalpel :**

- Working principle :
 - Ultrasonic, coagulation without heat production.
 - Oscillatory blade (20,000–50,000 Hz oscillation).
- Advantage :
 - Precise cut.
 - Can cut through scar tissue.
 - Can be used close to vital structures.


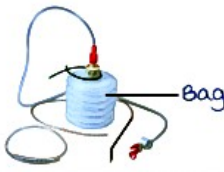



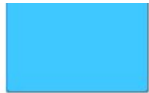
Harmonic scalpel

Drains, Sutures and Knots

00:24:40

DRAINS

	Drains	Significance	
Open drain	Corrugated rubber drain	<ul style="list-style-type: none"> • Used in abscess cavities. • Rarely used. • Disadvantage : Pus drains out, soaks dressing. 	
Closed drains	Romovac suction drain	<ul style="list-style-type: none"> • Negative pressure exerted. • Used after mastectomy, thyroidectomy, neck dissection. 	
	Mini-vac drain	Smaller version of Romovac drain (works on the same principle).	



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	Drains	Significance	
Closed drains	Jackson Pratt drain	<ul style="list-style-type: none"> Works on negative pressure. Flat tubing and a bulb instead of a bag. 	<p>Bulb</p> <p>Flat tube</p>
	Abdominal drain	<ul style="list-style-type: none"> Placed in abdomen. No negative pressure. 	
	Under water seal bag	<p>Connected to chest tubes. (end of tube is submerged under water : Prevents air getting sucked in.)</p>	

Surgical Knots, Sutures

00:27:41

Types of surgical knots :

a. Square/Reef knot :

- Secure knot; does not open up.
- a throws f/b a single throw.

b. Granny's knot/Slip knot : Not secure, opens up (Avoided).

c. Surgeon's knot : a throws f/b single throw.

