

Introduction to Basic Surgical Skills

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Designed as a quick-reference guide for students, trainees, and anyone beginning a career in the operating room.

1. Core Principles of Surgery

Principle	What it Means	Practical Implications
Asepsis & Antisepsis	Prevent contamination of the surgical field.	Hand scrubbing, sterile gloves, gowns, drapes, and proper skin prep.
Hemostasis	Control bleeding to maintain a clear view and reduce blood loss.	Use of clamps, electrocautery, topical agents, and proper vessel ligation.
Tissue Handling	Preserve tissue viability and promote healing.	Gentle traction, minimal crush, use of appropriate instruments.
Anatomical Knowledge	Precise identification of structures.	Pre-operative imaging review, intra-operative landmarks, and “time-out” verification.
Safety Checks	Reduce preventable errors.	WHO Surgical Safety Checklist, instrument counts, and intra-operative monitoring.

2. Essential Instrumentation

Instrument	Primary Use	Key Handling Tips
Scalpel (No. 10, 11, 15)	Incision of skin & soft tissue.	Hold like a pencil; keep blade angled 30–45° to skin.
Metzenbaum Scissors	Fine cutting of delicate tissue.	Open blades fully before cutting; avoid crushing.
Mayo Scissors	Cutting dense tissue (muscle, fascia).	Use with a firm grip; close blades slowly.
Tissue Forceps (Adson, Gerald)	Grasping tissue without trauma.	Tip-to-tip contact; avoid excessive force.
Hemostats (Kelly, Crile)	Clamping vessels, temporary occlusion.	Lock firmly; release after 15 min to prevent necrosis.

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Needle Holders (Mayo, Crile)	Suturing.	Pinch needle 2–3?mm from tip; maintain a 30° angle.
Retractors (Balfour, Richardson)	Exposure of deep fields.	Apply steady, even pressure; avoid slippage.
Electrosurgical Unit (ESU)	Cutting/coagulation.	Use lowest effective power; verify grounding pad.

3. Basic Surgical Techniques

3.1. Incision & Exposure

1. **Mark the incision** – use a sterile skin marker; confirm laterality.
2. **Skin incision** – scalpel with controlled depth; follow natural skin tension lines (Langer's lines) when possible.
3. **Layered dissection** – separate subcutaneous tissue, fascia, and muscle with appropriate instruments (scissors, electrocautery).
4. **Use retractors** – maintain a clear view; adjust tension to avoid tissue ischemia.

3.2. Hemostasis

- **Mechanical**: clamps, ligatures, ties.
- **Thermal**: monopolar/bipolar cautery; keep tip in motion to avoid charring.
- **Topical agents**: oxidized cellulose, gelatin sponge, fibrin sealant.

3.3. Suturing Basics

Suture Type	Indication	Needle & Thread
Simple interrupted	General closure, skin, fascia	3/8?circular needle, absorbable or non? absorbable thread
Running (continuous)	Long, straight wounds	Straight needle, monofilament

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