

Minimal invasive CABG operation room plan

Room Layout and Measurements

1. Room Dimensions: The room should ideally be **6 meters x 7 meters** (600 cm x 700 cm) or larger to accommodate all necessary equipment, staff, and maneuverability.
2. Sterile and Non-Sterile Zones: Designate **sterile areas** around the operating table for the surgery itself and **non-sterile zones** around the perimeter for support equipment and supplies.

Equipment and Machine Placement

1. **Operating Table**:
 - Position: Center of the room, allowing 360-degree access. Orient it with the patient's head toward the anesthetic area.
 - Dimensions: Approximately **200 cm x 70 cm**.
 - Use: Adjustable for positioning the patient optimally for the surgical team.
2. **Anesthesia Machine**:
 - Position: Near the patient's head, slightly angled to the left.
 - Dimensions: Typically, **50 cm x 40 cm**.

- Purpose: Administers anesthesia, monitors vital signs like heart rate, oxygen levels, and blood pressure.

3. **Imaging Monitor**:

- Position: On the upper-left side of the operating table, within easy view of the surgeon.

- Dimensions: Screen size approximately **50 cm x 40 cm**.

- Purpose: Provides real-time imaging for guidance, often used for minimally invasive procedures.

4. **Heart-Lung Machine**:

- Position: On the patient's right side.

- Dimensions: Roughly **70 cm x 60 cm**.

- Purpose: Temporarily takes over heart and lung functions, pumping oxygenated blood while the heart is stopped.

5. **Endoscopic Device**:

- Position: Near the technician's area, typically on the side opposite the surgeon.

- Dimensions: Roughly **50 cm x 50 cm**.

- Purpose: Used to provide visual access for minimally invasive CABG.

Technicians assist in positioning and managing the endoscopic equipment to help the surgeon and resident surgeon.

6. **Surgical Lights**:

- Position: Suspended above the operating table.

- Dimensions: Typically, 2-3 lights, each with a diameter of **40-50 cm**.

- Purpose: High-intensity lighting focused on the operating field to ensure maximum visibility.

7. **Suction Device**:

- Position: Mounted on the wall near the anesthesia machine.
- Purpose: Removes fluids from the operative site to keep it clear for the surgeon.

8. **Monitoring Equipment**:

- Position: This should be located at the head of the table, Near the anesthesia machine or integrated with it.
- Purpose: Tracks ECG, oxygen saturation, and other vitals.

9. **Defibrillator** (for emergencies):

- Position: Mounted on the wall near the entrance or on a mobile cart.
- Dimensions: **45 cm x 30 cm**.
- Purpose: Delivers controlled electric shocks to the heart in case of arrhythmias.

10. **Blood Gas Analysis Equipment**:

- Position: Near the Anesthesia/Monitoring Station or Adjacent to the Operating Table.
- Dimensions: **40 cm x 60 cm**.
- Purpose: for monitoring the patient's oxygenation, acid-base status, and electrolyte balance during surgery.

11. **Sterile Instrument Table**:

- Position: close to the Scrub Nurse (SN), usually on the left side of the operating table, it should be 30-50 cm from the scrub nurse, allowing quick and easy access while maintaining a sterile field.
- Dimensions: **100 cm x 50 cm**.
- Purpose: Holds sterilized instruments, tools, and supplies required for the procedure, which the scrub nurse will pass to the surgeon as needed.

11. **the Endoscopic Table** :

- Position: The endoscopic table should be placed 1–1.5 meters from the operating table, usually on the opposite side of the surgical instrument table.
- Dimensions: **120 cm x 50 cm**.
- Purpose: designed to organize, store, and provide easy access to the tools required for minimally invasive surgery, ensuring smooth workflow, maintaining sterility, and providing proper ergonomics for the surgical team.

12. **Waste Disposal and Linen Bins**:

- Position: Place waste disposal bins and linen bins in non-sterile areas, such as near the door or outside the sterile field, but at least 1-2 meters away from the operating table.
- Dimensions: **60 cm x 40 cm**- **70 cm x 45 cm**.
- Purpose: Minimize contamination risks, maintain a clean and sterile environment, and ensure easy access for non-sterile staff.

12. ** TV Screen**:

- Position: placed 1.5–2 meters from the operating table, usually above or at the side of the table, in a non-sterile zone. It should be clearly visible to the surgical team but not interfere with the sterile field.
- Dimensions: **24–40-inch monitor is typically used for angiogram viewing in the OR**.
- Purpose: To display real-time angiograms, live imaging, and cardiac monitoring during surgery, allowing the surgical team to plan and assess the procedure more effectively.

Staff Positioning

1. **Surgeon (S)**:

- Position: Left side of the operating table.
- Tasks: Performs the procedure, so they need to be closest to the imaging monitor for clear guidance.

2. **Resident Surgeon (RS)**:

- Position: Right side of the operating table.
- Tasks: Assists the surgeon and performs secondary tasks as needed.

3. **Scrub Nurse (SN)**:

- Position: Near the surgeon, to the left of the operating table.
- Tasks: Provides sterilized instruments and supplies to the surgeon during the operation.

4. **Circulation Nurses (C1 and C2)**:

- Positions: Near the corners of the room, close to the entrance.
- Tasks: Manage supplies, get equipment as needed, and handle non-sterile tasks.

5. **Perfusionists (P1 and P2)**:

- Position: Near the Heart-Lung Machine, usually on the right side of the operating table.
- Tasks: Operate and monitor the heart-lung machine, ensuring it functions smoothly throughout the procedure.

6. **Technicians (T1 and T2)**:

- Positions: On either side of the endoscopic machine, near the operating table.
- Tasks: Assist with the endoscopic machine operation, including positioning, adjustments, and management, and support both the surgeon and resident surgeon during the procedure.

Room Dimensions Summary with Recommended Spacing

1. Between Operating Table and Heart-Lung Machine: **50-100 cm**.

2. Between Surgeon and Imaging Monitor: ****20-40 cm**** to ensure easy visibility.
3. Anesthesia Area to Operating Table Head: ****30-50 cm**** for quick access.
4. Perfusionist and Heart-Lung Machine: Within arm's reach, ****30 cm**** or less.
5. Circulation Nurse to Entry and Storage: ****100-150 cm**** for rapid access to supplies.

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