7 Sentinel Lymph Node Biopsy

Steven Perrins, Savannah Moon, and Cassann Blake

Preoperative Preparation

- The morning of the surgery, radioactive colloid (technetium-99m-tagged sulfur colloid) is injected into the breast in a sterile fashion. The sites of injection are deep to biopsy or tumor site, superficial in dermal site over biopsy site or tumor, or superficial around the nipple-areolar complex.
- May obtain preoperative lymphoscintigraphy for locating the sentinel lymph node.
- Once the patient is in the OR suite and after general anesthesia, 5 ml of lymphazurin or methylene blue are injected peri-tumorally (Fig. 7.1). Avoid injecting directly into the tumor site as the tumor may block lymphatic channels.
- The entire breast is massaged in circular motion for a minimum of 5 minutes to ensure flow through lymphatic channels.

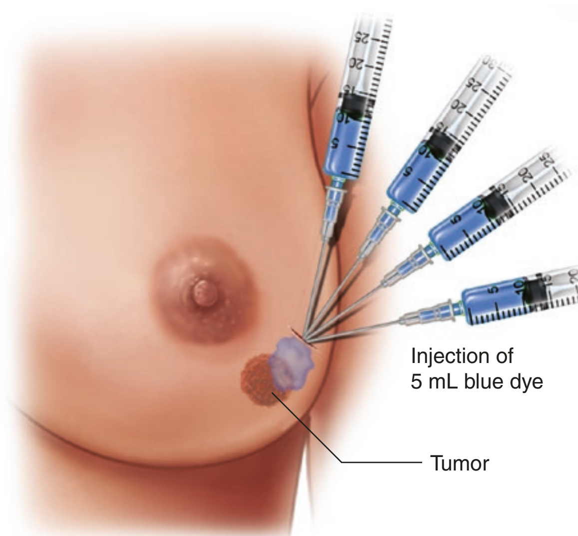

Fig. 7.1 Injection of methylene blue and/or tracer

Preference Card

- Drapes: minor laparotomy sheet, ¾ sheets × 3
- Sutures: 3-0 Vicryl, 4-0 Monocryl
- Medications: 1% and 0.5% Marcaine in a 50/50 mixture, lymphazurin blue or methylene blue
- Equipment: mastectomy set, #15 blade scalpel, electrocautery (set 40/40) and pad, liga clip, minor lap drape, Yankauer suction and suction tubing, 0.25 inch Steri-Strips, surgical glue, surgical bra, Neoprobe and cover, Kerlix

Patient Positioning/Operating Room Setup (See Fig. 5.1)

- Patient is supine with the arm abducted 90°.
- All pressure points are padded, pillow under knees.
- Surgeon stands ipsilateral to dissection site – below arm.
- Surgical assistant stands ipsilateral to dissection site – above arm.

Nodal Points

Incision

- The Neoprobe is used to detect area of highest count in the axillary nodal basin (using increasing scales of detection as needed) (Fig. 7.2a, panel 4).

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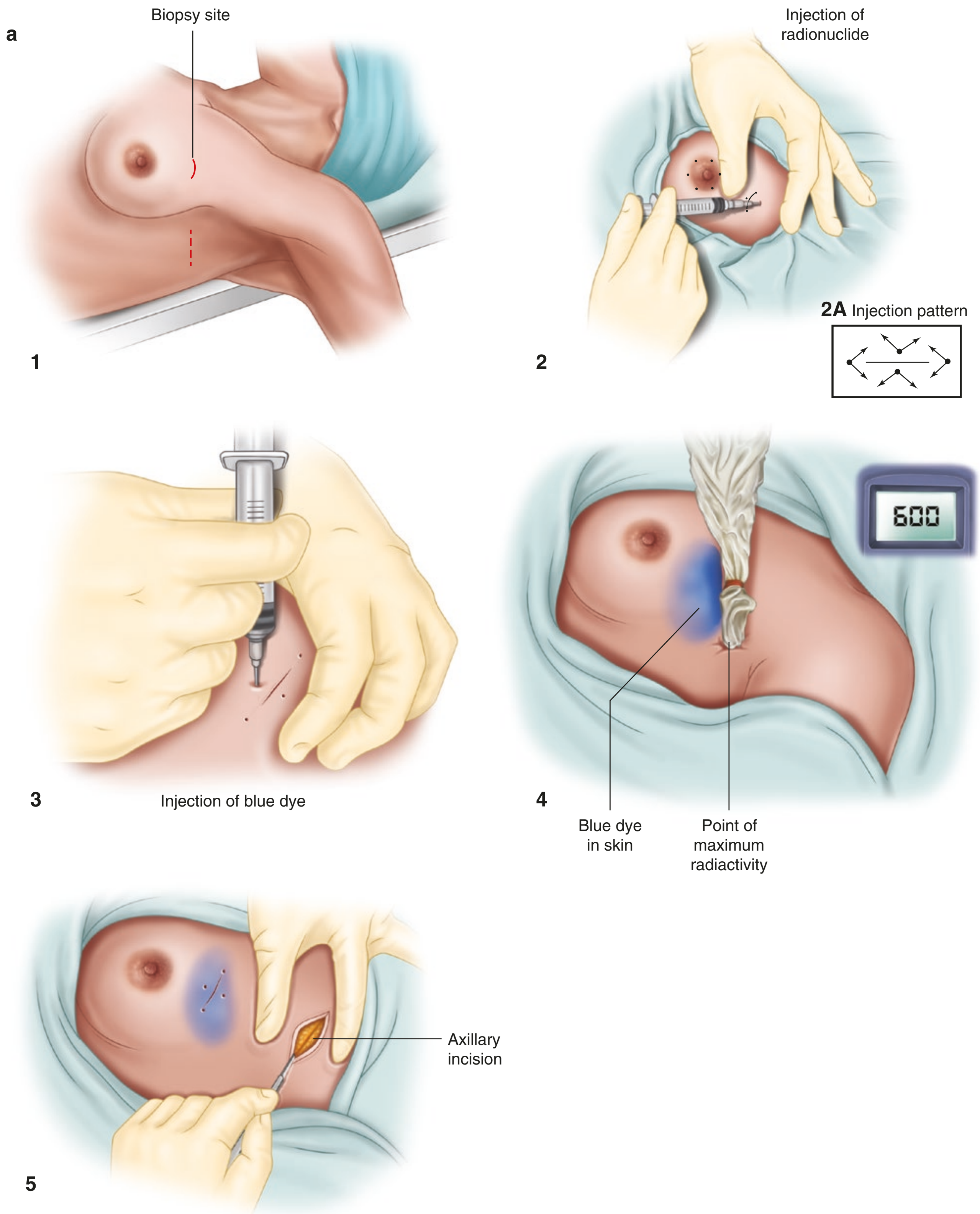

Fig. 7.2 (**a**, **b**) Lymph node biopsy

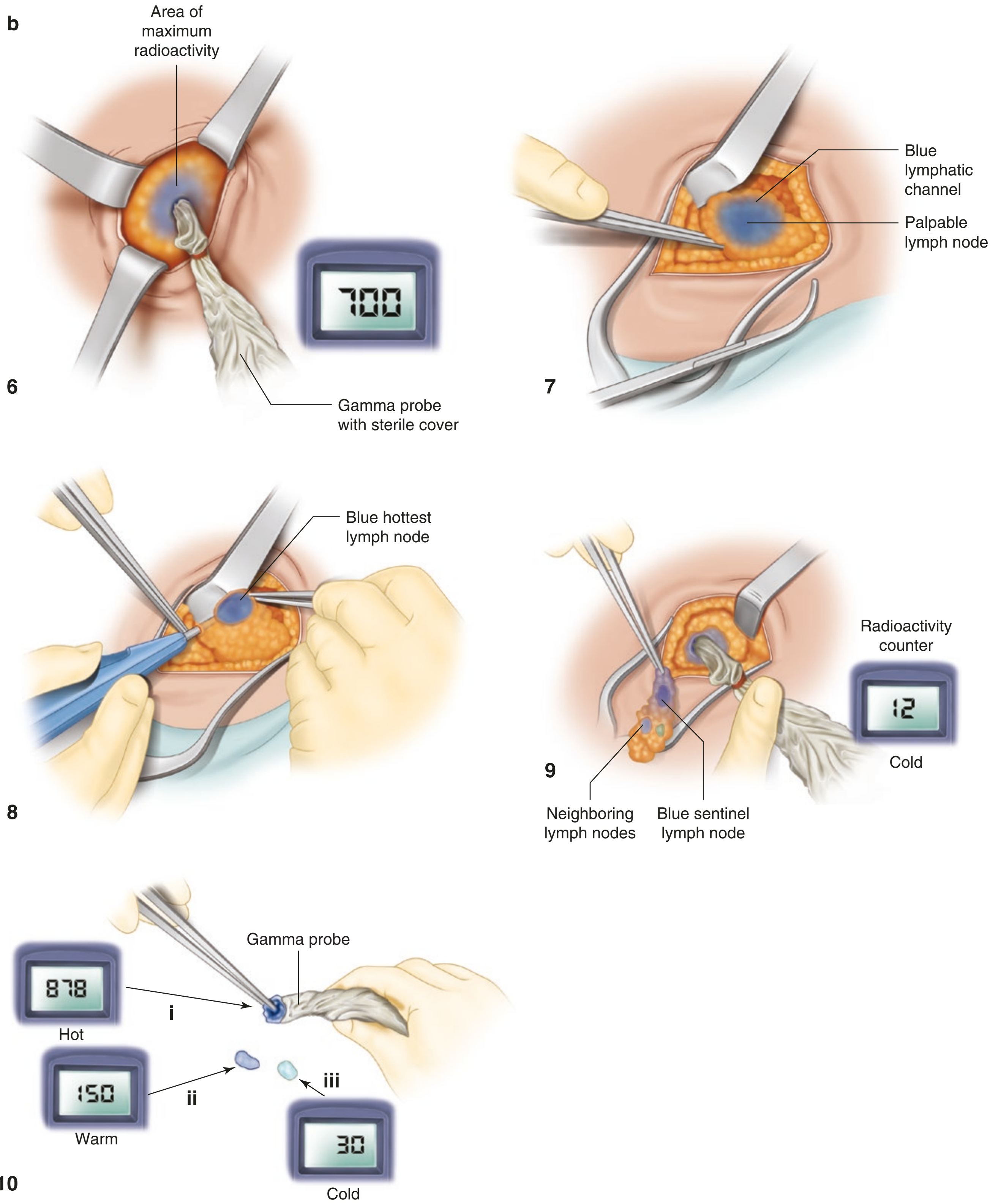

Fig. 7.2 (continued)

- Use the probe with varying angles in axilla away from nipple-areolar complex to maximize localization.
- Once "hottest" site is determined, the site is marked with pen, and a 15 blade scalpel is used to make an incision in transverse fashion (approximately 2 cm incision) (Fig. 7.2a, panel 5).

The Extent of the Sentinel Lymph Node Biopsy

- Dissection continues with sharp or electrocautery down to clavipectoral fascia.
- The gamma probe is used to re-evaluate location of strongest signal as well was direct visualization of blue lymphatics to detect "hot" nodes (Fig. 7.2a, panel 6).
- Remove the "hottest" node and record the count (Fig. 7.2b, panel 7).
- The "10 percent rule" is utilized; remove all sentinel lymph nodes with counts greater than 10% of the most radioactive node.
- Resect all blue, enlarged, firm, or abnormal lymph nodes (Fig. 7.2b, panel 8).
- Perform a final scan in axilla with gamma probe (Fig. 7.2b, panel 9).
- Send all specimens to pathology for permanent evaluation.

Irrigation, Hemostasis, and Closure

- The cavity is then irrigated and proper hemostasis is obtained with electrocautery cautery and direct pressure.
- Approximate the deep dermal layer with simple inverted interrupted stitches using 3-0 Vicryl.
- The dermis is then closed with a 4-0 Monocryl running subcuticular stitch.
- 0.25 inch Steri-Strips are placed along the length of incision (parallel).
- Kerlix fluff placed and surgical bra applied to patient.

Pearls and Pitfalls

Common complications include surgical site infection, seroma, and hematoma. Caution must be made with injection of isosulfan blue or methylene blue. The use of isosulfan blue may be associated with severe anaphylactic reaction. Methylene blue injected interdermally may cause skin necrosis and injected intraparenchymally may cause induration and erythema. Pearls include reviewing preoperative imaging.

Access Reader Checklist Appendix

✓ READER CHECKLIST
Sentinel Lymph Node Biopsy

✓ PREFERENCE CARD

►**Instruments**
__Drapes: laparotomy sheet, ¾ sheets x 3
__Sutures: 3-0 vicryl. 4-0 monocryl
►Medication
__1% and 0.5% Marcaine in 50/50 mixture
__Lymphzurian blue or methylene blue
►**Equipment**
__Mastectomy set
__#15 blade scalpel
__Electrocautery (set 40/40) and pad
__Neoprobe and cover
__Liga clip
__Minor lap drape
__Yankauer suction and tubing
__Kerlix fluff,
__¼ inch steri strips,
__Surgical glue

►**Equipment**
__Surgical bra
__Liga clip
__Minor lap drape
__Yankauer suction and tubing
__Neuroprobe

✓ PATIENT POSITIONING/ OPERATING ROOM SETUP

►**Patient Position**
__Patient is supine with arm abducted 90 degrees
__All pressure points padded, pillow under knees
__Surgeon stands ipsilateral to dissection site - below arm
__Surgical assistant stands ipsilateral to dissection site - above arm

✓ NODAL POINTS

►**Incision**
__Neoprobe used to detect area of highest count in axillary nodal basin (using increasing scales of detection, as needed)
__Use probe with varying angles in axilla away from nipple areolar complex to maximize localization
__Once "hottest" site determined, site marked with pen
__15-blade scalpel used to make an incision in transverse fashion (approximately 2 cm incision)

►**Extent of Sentinel Lymph Node Biopsy**
__Continue dissection with sharp or electrocautery down to clavipectoral fascia
__Gamma probe used to re-evaluate location of strongest signal and direct visualization of blue lympahtics to detect "hot" nodes
__Remove "hottest" node and record count seed
__"10 percent rule" utilized
__Remove all sentinel lymph nodes with counts greater than 10 percent of most radioactive nodes
__Resect all blue, enlarged, firm, or abnormal lymph nodes
__Perform final scan in axilla with gamma probe
__Send all specimens to pathology for permanent evaluation

►**Irrigation, Hemostatis, and Closure**
__Cavity irrigated and proper hemostasis obtained with electrocautery cautery and direct pressure
__Approximate deep dermal layer with simple inverted interrupted 3-0 vicryl sutures
__Dermis closed with a 4-0-monocryl running subcuticular suture
__¼ inch steristrips placed along length of incision (parallel)
__Kerlix fluff placed and surgical bra applied to patient