

Phrenic nerve stimulator

Cervical implantation

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Is Age a Problem?

- Main considerations for timing
 - Airway maturity
 - Topographic anatomy of neck
- 3.3 – 44.6 years old at time of surgery

CCHS (13 pats.)

3.3-18.3 yrs

(2 pats > 10 yrs)

Other (7 pats.)

3.5-44.6 yrs

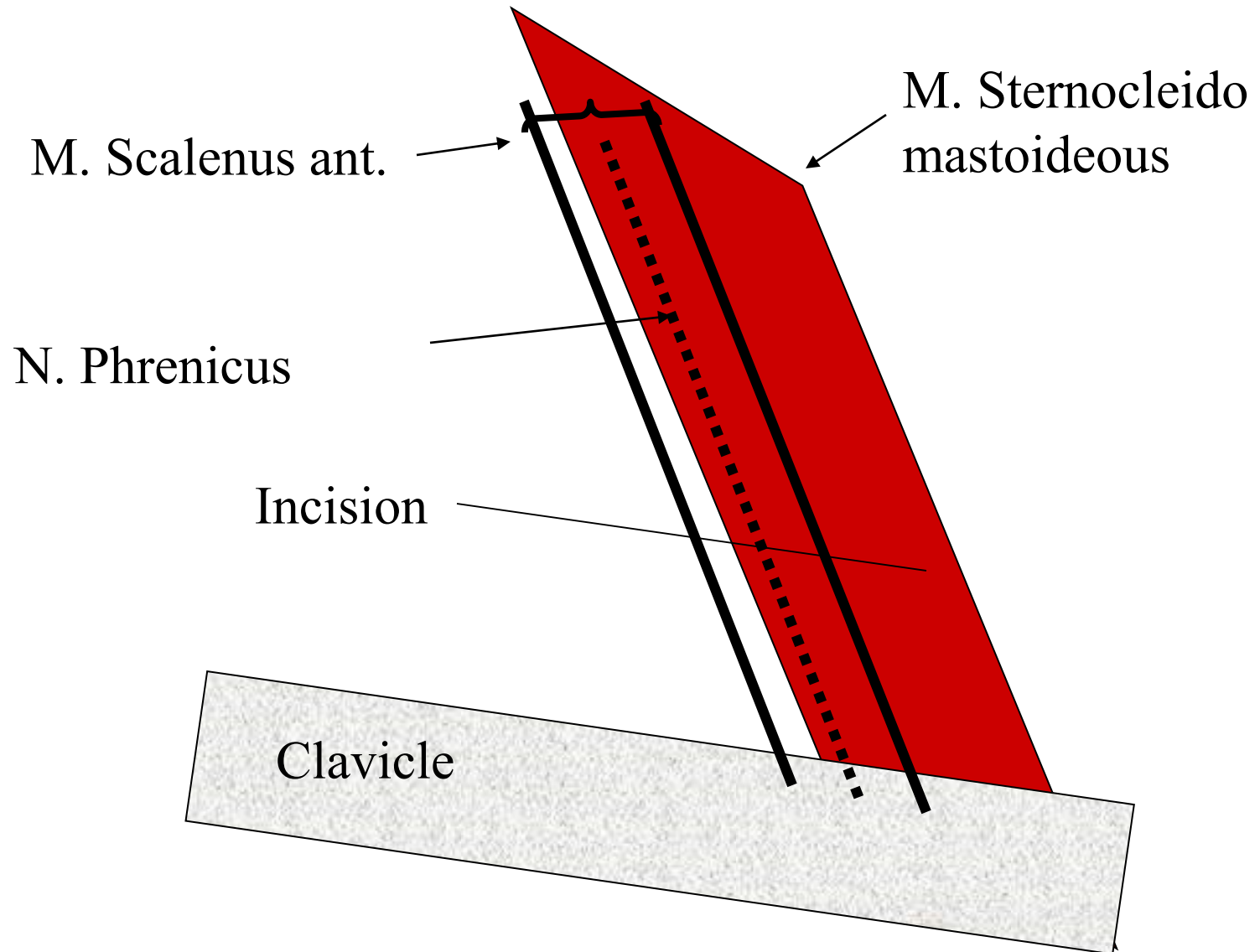
Positioning

- Supine position
- Pillow or thicker, rolled blanket between the shoulder blades
- Head draped and endotracheal tube positioned so that head can be turned to either side.

Procedure (bilateral)

- Incision on neck
 - ~2-3 cm above and parallel to the clavicle
 - ~3 cm in length, with $\frac{1}{2}$ of the incision behind the posterior edge of the m.sternocleidomastoideus (SM).
 - Blunt dissection in the fat behind the SM.
 - Identify m. scalenus ant. with phrenic nerve on its surface.
 - Free ~1 cm of the nerve from the m. scalenus ant.

Cervical part (right)



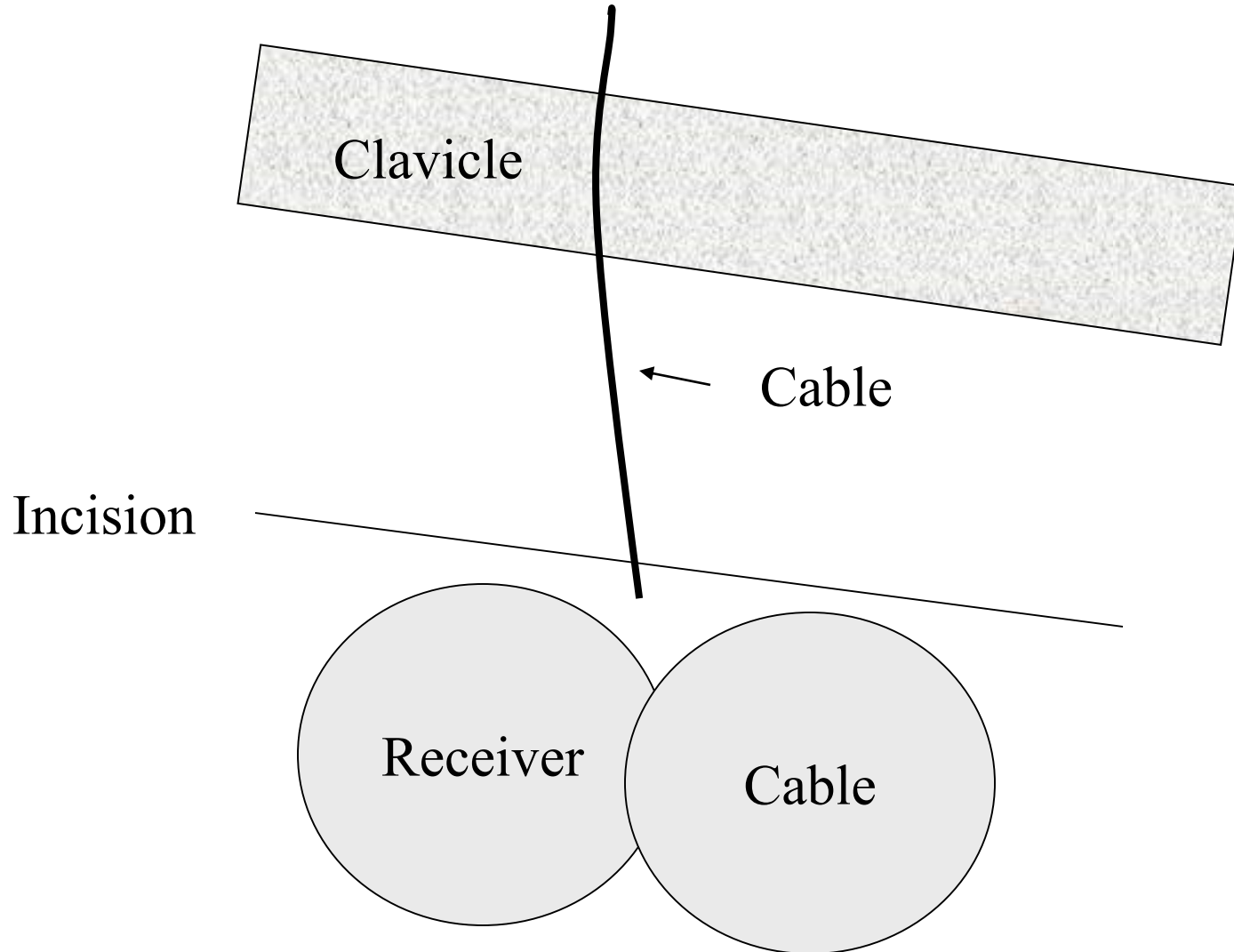
Procedure (bilateral)

Male

- Incision is made ~4 cm in length, below and parallel to the clavicle.
- 2 subcutaneous pouches are made caudal to this (one for cable, one for receiver)
- Forceps used to tunnel cable subcutaneously from cervical incision to chest incision
- Connect system as recommended by Avery.

Chest part (right)

Male



Procedure (bilateral)

Female and Male

- Cervical part identical to male.
- Chest incision, different than male because of future breast development.
- ~4 cm horizontal incision over mid axillary line. Incision is made at the level of the nipple.
- 2 subcutaneous pouches are made caudal to this (one for cable, one for receiver).

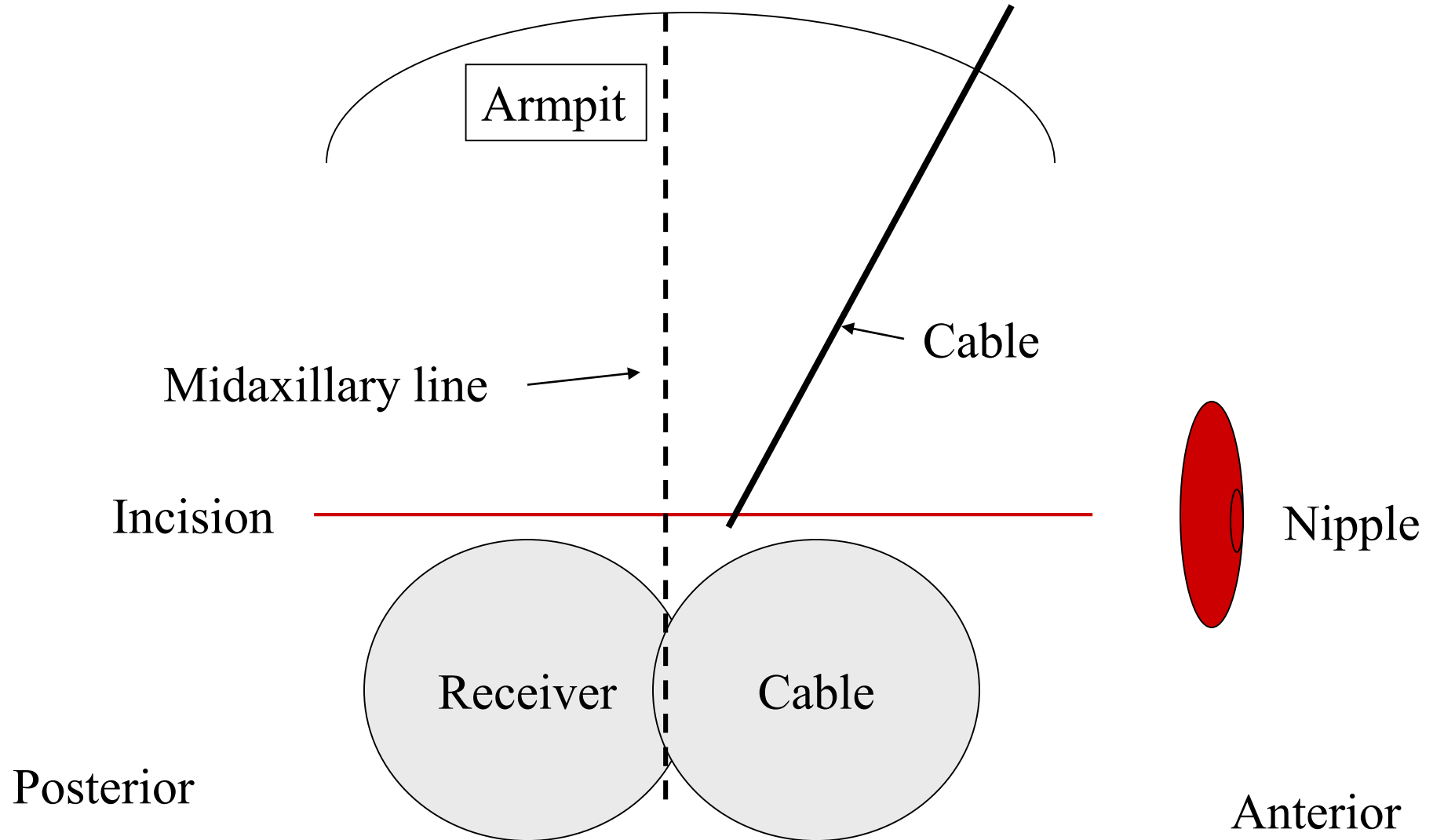
Procedure (bilateral)

Female and Male

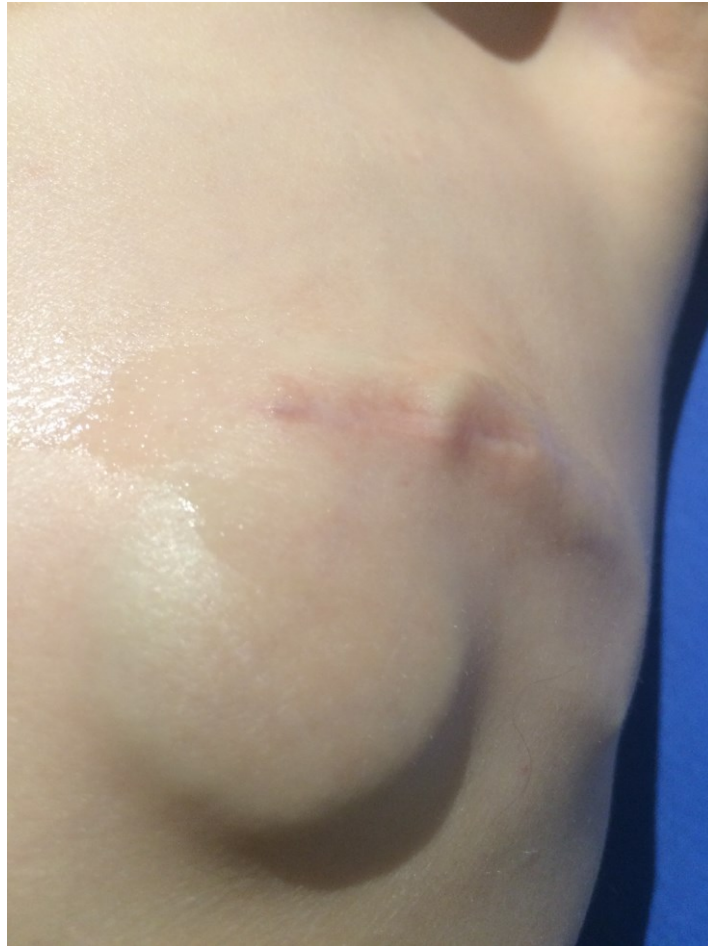
- Cable is tunneled subcutaneously using a trocar. The cable is passed from cervical to chest incision.
- Connect system as recommended by Avery.

Chest part (right)

Female



Complications and Problems



Complications and Problems



Complications and Problems



Day 1



Day 2

Day 3



Complications and Problems

- Contact
- Wiring