Abdominal Incisions Simulation: Pfannenstiel Simulation for Mannequin
Reaffirmed March, 2017

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Pfannenstiel Simulation

- Bedpan
- Glue gun
- Hot glue sticks
- Adhesive spray
- Grommet kit (for two or four grommets)
- Bungee cord
- Birthing mannequin
- One 20” x 20” chamois
- One 1” foam chair pad
- Two 20” x 20” sheets of white suede cloth
- Two 5” x 20” maroon headliner
- One 20” x 20” 4-gauge clear vinyl
- Layers for laparotomy:
  - Peritoneum layer: 4-gauge clear vinyl
  - Rectus muscles: maroon headliner
  - Fascial layer: white suede cloth
  - Subcutaneous fat layer: foam chair pad
  - Skin: chamois

Fig. 7. Box in a mannequin.
1. Lay chamois on a flat surface, spray with adhesive spray, and then center the first foam chair pad on the chamois (Fig. 9). Set aside.

2. Place two 20” x 20” pieces of white suede cloth on the work surface. Mark midline of each with a pencil the length of the fabric and align pieces together (Fig. 10). Fold left side and spray bottom layer with spray adhesive (Fig. 11). Unfold top, press and smooth layers together. Repeat steps for right side.
3. Place a strip of hot glue on the midline of the suede “fascia” in a scribble fashion (Fig. 12). Quickly spray entire midline surface with spray adhesive. Place two 5”x 20” pieces of maroon headliner (maroon side down) onto the glue bead (Fig. 13).

4. Spray adhesive onto surface of the chair pad and place newly completed “rectus and fascia” piece on top, rectus side up (Fig. 14). Press and smooth layers together (Fig. 15).
5. Spray adhesive across the entire piece (Fig. 16). Place 20” x 20” piece of 4-gauge clear vinyl on top and press smooth (Fig. 17).
6. You can attach two grommets per model (red arrows) or you may place four grommets if desired (blue arrows) (Fig. 18). Place entire model onto a firm surface. Place anvil (silver ring) from grommet kit under model (Fig. 19). Be sure that the lipped side faces upward.

7. Hammer the setter (long silver piece) onto the anvil through the fabric model to create a hole (Fig. 20). Disconnect assembly and be sure a hole is left behind (Fig. 21).
8. Drop one washer (toothed brass colored ring) through the hole, and turn edge of model over to expose chamois side and align eyelet (smooth edged brass ring). Place the anvil (silver ring) over the edge of the grommet (Fig. 23) and return edge to chamois side down. Place the setter through the hole of the washer and pound the end of the setter several times to attach the grommet snugly (Fig. 24).
Fig. 25. Model placed on mannequin.

9. Attach the desired abdomen with bungee cords onto the model (Fig. 25).
Box Simulator (see p. 13 for Mannequin Simulator)

1. Position the box simulator in an examination table, patient table, or any other surface that can mimic an operating table. Ensure that the learner and assistant can be on opposite sides of the table.

2. An equipment table can be set up using a whole laparotomy tray or the educator can modify the equipment table to include basic minimum of a scalpel, retractors, Mayo or Metzenbaum scissors, tissue forceps, suture, or stapler.

3. The learner is on the right side of the box simulator and the assistant is on the left side of the box simulator.

4. The learner takes the scalpel and makes a Pfannenstiel incision through the broad cloth (skin) and air bubble packing (subcutaneous fat). The learner continues using the scalpel to open the entire incision down to the level of the duct tape (fascial layer).

5. At this point, it is important for the learner to identify the duct tape as the fascial layer.

6. The learner then incises the duct tape (fascial layer) in the midline.

7. Using a retractor, the assistant retracts the lateral aspect of the incision. The learner uses either Metzenbaum scissors or Mayo scissors, and tissue forceps with teeth to extend the fascial layer laterally. The learner and assistant exchange instruments to perform the same steps on their respective side.

8. At this point, the learner should be able to identify the thicker layer of felt as the rectus muscle and separate it in the midline bluntly and/or sharply with Metzenbaum or Mayo scissors.

9. The learner then identifies the plastic wrap as the peritoneal layer and grasps it with tissue forceps and enters it sharply with Metzenbaum scissors and or bluntly. The peritoneal incision is then extended superiorly and inferiorly with Metzenbaum scissors.

10. The learner should then be able to recognize the thin layers of felt as the layers of the uterus.

11. The learner takes the scalpel and incises the thin layers of felt (the uterus) in the lower uterine segment and extends it either bluntly or with bandage scissors.

12. The learner places his or her hand into the uterus and delivers the head of the “fetus” and subsequently the remainder of the fetus’ body.

13. The educator can “talk through” delivery of the placenta because this particular model does not include a placenta.

14. The learner simulates clearing all clots and debris from the uterus with a laparotomy sponge.

The following steps should be taken to close the laparotomy incision:

15. The learner then calls for appropriate suture to close the uterine incision. A thicker suture like 1-0 or 0- Vicryl on a larger CT or CTX needle is appropriate (educator preference).
16. The learner uses the suture to re-approximate the edges of the thinner felt (uterus) in a running, locked manner.

17. The educator can choose to have the learner perform a single-layer closure or a double layer closure.

18. The educator can choose to “talk through” closure of the bladder flap and peritoneal is he/she so chooses.

19. The learner then using a 2-0 vicryl suture can re-approximate the thicker layer of felt representing the rectus muscle.

20. The learner uses a 0, 1-0, or 2-0 vicryl suture to re-approximate the duct tape layer or the fascial layer in a running manner.

21. The learner can practice using 2-0 or 3-0 plain suture to re-approximate the bubble wrap or the subcutaneous fat layer.

22. The learner uses the stapler to close the incision that was made on the broad cloth (skin) while the assistant re-approximates the edges using Adson forceps.
Mannequin Simulator

1. Position the fetal mannequin in a bedpan similar to the box simulation but instead of a box, use a bedpan. The bedpan then goes into the abdomen of the birthing simulator. The birthing simulator is positioned on an exam table, operating room table, or a regular table.

2. An equipment table can be set up using a whole laparotomy tray or the educator can modify the equipment table to include a scalpel, retractors, Mayo or Metzenbaum scissors, tissue forceps, suture, or stapler.

3. Learner is on the right side of the birthing simulator and the assistant is on the left side of the birthing simulator.

4. The learner takes the scalpel and makes a Pfannenstiel incision through the chamois (skin) and foam chair pad (subcutaneous fat). The learner continues using the scalpel to open the entire incision down to the level of the white suede cloth (fascial layer).

5. At this point, it is important for the learner to identify the white suede cloth as the fascial layer.

6. The learner then incises the white suede cloth (fascial layer) in the midline.

7. Using a retractor, the assistant retracts the lateral aspect of the incision. The learner uses either Metzenbaum scissors or Mayo scissors, and tissue forceps with teeth to extend the fascial layer laterally. The learner and assistant exchange instruments to perform the same steps on their respective side.

8. At this point, the learner should be able to identify the maroon headliner as the rectus muscle and separate it in the midline bluntly and/or sharply with Metzenbaum or Mayo scissors.

9. The learner then identifies the clear vinyl as the peritoneal layer and grasps it with tissue forceps and enters it sharply with Metzenbaum scissors and/or bluntly. The peritoneal incision is then extended superiorly and inferiorly with Metzenbaum scissors.

10. The learner should then be able to recognize the thin layers of felt or cloth as the layers of the uterus.

11. The learner takes the scalpel and incises the thin layers of felt or cloth (the uterus) in the lower uterine segment and extends it either bluntly or with bandage scissors.

12. The learner places his/her hand into the uterus and delivers the head of the fetus (toy baby or commercial baby mannequin) and subsequently the remainder of the fetus’s body.

13. The educator can then “talk through” delivery of the placenta because this particular model does not include a placenta.

14. The learner simulates clearing all clots and debris from the uterus with a laparotomy sponge.
The following steps should be taken to close the laparotomy incision:

15. The learner calls for appropriate suture to close the uterine incision. A thicker suture like 1-0 or 0- Vicryl on a larger CT or CTX needle is appropriate. (Educator preference)
16. The learner uses the suture to re-approximate the edges of the thinner felt or cloth (uterus) in a running, locked manner.
17. The educator can choose to have the learner perform a single-layer closure or a double layer closure.
18. The educator can choose to “talk through” closure of the bladder flap and peritoneal is he/she so chooses
19. The learner using a 2-0 vicryl suture can re-approximate the maroon headliner representing the rectus muscle.
20. The learner uses a 0, 1-0, or 2-0 vicryl suture to re-approximate the white suede cloth layer or the fascial layer in a running manner.
21. The learner can practice using 2-0 or 3-0 plain suture to re-approximate the foam chair pad or the subcutaneous fat layer.
22. The learner uses the stapler to close the incision that was made on the chamois (skin) while the assistant re-approximates the edges using Adson forceps.
The resident conducts a time-out before beginning a laparotomy. The resident then begins the laparotomy and carries it out with the proper steps and technique. The resident identifies the layers of the abdomen in the incision and then completes the closure of the laparotomy. During the process, the resident is calling for and utilizing the correct instruments and surgical technique.