

Verification of Proficiency Module for Bowel Anastomosis SIU Surgical Skills Laboratory

OBJECTIVES: *By the end of this module the resident will meet proficiency standards for the performance of:*

- Two-layer Hand Sewn Bowel Anastomosis

GUIDELINES FOR PRACTICE

- View the videotape of the expert performance of a two-layer hand sewn bowel Anastomosis, *I. Hassan M.D., SIU School of Medicine*
- Prior to beginning practice, request videotaping of your performance of a two-layer hand sewn bowel Anastomosis
- Review the written instructions of practice of a two-layer hand sewn bowel anastomosis
- Using the performance check list as a guide, begin practice with focus on the mechanics of instrument handling and hand movement
- Review and complete the five steps of practice for a two-layer hand sewn bowel anastomosis
 1. Complete 10 repetitions using 3.0 silk approximating two foam edges using a running closure with marked entry points
 2. Complete 10 interrupted Lambert stitches using 3.0 silk on the straight foam model with marked entry point
 3. Complete 10 repetitions using 3.0 silk approximating two foam edges using a running closure without marked entry points
 4. Complete 10 interrupted Lambert stitches using 3.0 silk on the straight foam model without marked entry points (0.5 cm. from each other and 0.5 cm. from the edge)
 5. Complete 2 two-layer hand sewn bowel anastomoses on the pig bowel – record the duration time of each anastomosis
- Practice with focusing on precision of suture placement
- Next, practice with focusing on efficiency and economy of motion by observing the time it takes you to complete each layer
- Request to be video taped for your two-layer hand sewn bowel anastomosis when you have completed the two anastomosis on the pig bowel (step 5) and/or are able to perform the anastomosis in less than 35 minutes.

INSTRUCTIONS FOR VERIFICATION FOR PROFICIENCY TESTING

When your practice sessions have resulted in proficiency in this skill area, and you are able to perform the anastomosis within the listed time of allotment you may request from the skills lab personnel to videotape your verification of proficiency performance. Once this videotape has been completed, it will be submitted to a faculty member for evaluation. Their decision will either verify your proficiency in this skill or recommend further practice.

Two-layer Hand Sewn Bowel Anastomosis Steps of Practice

- Step One** Complete 10 repetitions using 2.0 silk approximating two foam edges using a running closure with marked entry points
- Step Two** Complete 10 interrupted Lambert stitches using 2.0 silk on the straight foam model with marked entry point
- Step Three** Complete 10 repetitions using 2.0 silk approximating two foam edges using a running closure without marked entry points
- Step Four** Complete 10 interrupted Lambert stitches using 2.0 silk on the straight foam model without marked entry points (0.5 cm. from each other and 0.5 cm. from the edge)
- Step Five** Complete 2 two-layer hand sewn bowel anastomoses on the pig bowel – record the duration time of each anastomosis

TECHNIQUE OF HAND SEWN TWO LAYERED BOWEL ANASTOMOSES

1. The two bowel ends that are to be anastomosed are next to each other.
2. Two seromuscular corner sutures are placed 0.5 cm. from the cut edges, each is then tied and tagged with a straight clamp. The needle and suture is cut distal to the clamps.
3. *Posterior (outer) interrupted layer:*
 - Interrupted (seromuscular) Lembert stitches are placed between the corner sutures, enter right bowel segment 0.5 cm. from the cut edge exit 0.1 cm. from the cut edge continue with same suture, enter left bowel segment enter 0.1 cm. tied (four knots). Place sutures approximately 0.5 cm apart.
 - All but the two corner sutures are cut leaving a 0.3 cm tail and leaving the tied corner sutures tagged with clamps.
4. *Posterior (inner) running layer:*
 - Starting in the middle of the posterior wall of the anastomosis, take a bite of the mucosa and submucosa and tie the suture to itself. Start another suture next to it in the same manner.
 - Each running suture goes towards each corner, in an over-and-over manner (0.5 cm below the cut edge and 0.5 cm. apart from each other) incorporating the mucosal and submucosal layers of each lumen to form the posterior inner layer of the anastomosis.
5. *Anterior (inner) running layer:*
 - The running sutures are continued around the corners until the anterior wall is reached at each end.
 - Continue the over-and-over stitch from each corner taking the mucosa and submucosa (0.5 cm below the cut edge and 0.5 cm. apart from each other) coming together anteriorly in the middle and tying the two ends (4 knots) after cutting the needles of each. Cut suture leaving 0.5 cm. long.
 - After the inner layer of the anastomosis has been completed, the non crushing bowel clamps are removed (if used).
6. *Anterior (outer) interrupted layer:*
 - Anterior (seromuscular) Lembert sutures are placed. Enter the right bowel segment 0.5 cm away from cut edge, exiting 0.1 cm away from cut edge, continuing with the same suture to the left bowel segment. Enter the left bowel segment 0.1 cm away from bowel edge, exit 0.5 cm away from cut edge. Place the Lembert sutures 0.5 cm. apart.
 - Sutures are tied (4 knots) as they are placed
 - Once all sutures are placed and tied, they are cut 0.5 cm. distal to the knots

After any anastomosis a close visual inspection of the entire circumference of the anastomosis should be performed. As a rule, if the divided ends appear well apposed, then the anastomosis is probably sound.

One of the most important determinants of outcome after procedures that include intestinal anastomosis is surgical technique. The central importance of meticulous technique means that constant practice and careful attention to detail are essential.