

Bowel Anastomosis Verification of Proficiency

Goal: To implement a simulation-based bowel anastomosis training and assessment that will improve residents' knowledge of, and technique for, this core general surgical skill. Residents will demonstrate proficiency in hand-sewn and staple bowel anastomosis on simulated bowel at the conclusion of this curriculum.

Phase I: Prework: complete and review *prior to hands-on training in skills lab*

- Pre-quiz
- Educational material: powerpoint and video

Phase II: Hands-on Training Session:

- 2 dedicated skills sessions providing hands-on practice with instruction and feedback by faculty mentor utilizing biologic or synthetic bowel for PGY 2-3's
- Residents are advised to practice on their own time prior to testing date

Phase III: Verification of Proficiency Testing:

- Occurs ~1 month after training
- Individual demonstration of hand-sewn and stapled technique on synthetic bowel with real-time evaluation by trained rater using checklist (Appendices 1 and 2)

Requirement:

- *PGY 3s are required to complete and pass this exam in Fall of academic year*

Appendix 1: Hand-sewn Bowel Anastomosis

Resident: _____

Date: _____

		Unsuccessful	Successful
1	Aligns bowel side by side with staple lines together		
2	Confirm that the bowel is not twisted		
3	Stays suture used to maintain alignment – seromuscular layer only – held with clamp		
4	Selects appropriate suture (3-0 or 4-0 silk/prolene) for outer layer		
5	Uses interrupted Lembert stitches to make the posterior outer layer (0.5cm apart)		
6	Creates enterotomy parallel to the bowel that is full thickness		
7	Enterotomy does not go through and through		
8	Uses a continuous over-and-over stitch to form the posterior inner layer (with 3-0 or 4-0 PDS)		
9	Anchors stitch midway of the enterotomy		
10	Uses Connell stitch to come around the corners and to form the anterior inner layer (with 3-0 or 4-0 PDS)		
11	Uses interrupted Lembert stitches to form the anterior outer layer (with 3-0 or 4-0 silk/prolene)		
12	Loads needle 1/2 to 2/3 from tip 80% of the bites		
13	Has needle enter bowel at right angles 80% of bites		
14	Single attempt at needle passage through bowel 90% of bites		
15	Follows through on curve of needle on ENTRANCE on 80% of bites		
16	Follows through on curve of needle on EXIT on 80% of bites		
17	Equal bites on each side 80% of bites		
18	Spaces sutures 3 to 5mm apart		
19	Makes minimal damage with forceps		
20	Uses forceps to handle needle		
21	Minimum three throws on knots		
22	Checks patency of the anastomosis		
			/22

Economy of Time and Motion <table border="1"> <tr><td>1</td><td>Many unnecessary/disorganized movements</td></tr> <tr><td>2</td><td></td></tr> <tr><td>3</td><td>Organized time/motion, some unnecessary movements</td></tr> <tr><td>4</td><td></td></tr> <tr><td>5</td><td>Maximum economy of movement and efficiency</td></tr> </table>		1	Many unnecessary/disorganized movements	2		3	Organized time/motion, some unnecessary movements	4		5	Maximum economy of movement and efficiency	Quality of Final Product <table border="1"> <tr><td>1</td><td>Poor</td></tr> <tr><td>2</td><td></td></tr> <tr><td>3</td><td>Competent</td></tr> <tr><td>4</td><td></td></tr> <tr><td>5</td><td>Clearly Superior</td></tr> </table>		1	Poor	2		3	Competent	4		5	Clearly Superior
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Final Rating Demonstrates Proficiency <input type="checkbox"/> Yes <input type="checkbox"/> No		Other Summative Comments: Evaluator _____																					

Appendix 2: Stapled Bowel Anastomosis

Resident: _____

Date: _____

		Unsuccessful	Successful
1	Aligns bowel side by side with staple lines together		
2	Confirm that the bowel is not twisted		
3	Stays suture used to maintain alignment – seromuscular layer only		
4	Stays held with clamp		
5	Antimesenteric corners are cut/cauterized		
6	Confirm that both cut corners are full-thickness into the lumen		
7	Takes GIA stapler apart		
8	Checks staples in cassette		
9	Insert forks of the linear cutting stapler without damaging bowel		
10	Reassembles stapler without trauma to bowel		
11	Ensures bowel is at hub of stapler prior to closing		
12	Checks that no mesentery is caught in stapler prior to firing		
13	Checks position of stapler at anti-mesenteric border prior to firing		
14	Demonstrates correct firing of linear stapler without damaging tissue		
15	Removes stapler without damaging tissue		
16	Inspect the staple line for bleeding		
17	Uses suitable tissue forcep to hold enterotomy closed (eg. Allis/Babcocks)		
18	Off set suture lines		
19	Apply the TA stapler beneath the tissue forceps ensuring that all parts are properly aligned		
20	Correctly fires stapler		
21	Excises excess bowel flush with stapler		
22	Closes mesenteric defect		
			/22

Economy of Time and Motion

1	Many unnecessary/disorganized movements
2	
3	Organized time/motion, some unnecessary movements
4	
5	Maximum economy of movement and efficiency

Quality of Final Product

1	Poor
2	
3	Competent
4	
5	Clearly Superior

Final Rating
Demonstrates Proficiency

- Yes
- No

Other Summative Comments:

Evaluator _____