A USER’S GUIDE TO LARGE COLON RESECTION:  BE NOT AFRAID
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Despite continued research and clinical efforts to decrease the incidence of colic, the large colon volvulus remains a common finding. This is not to say that our efforts have not been fruitful, although often the results have taught us what does not help as often as they have taught us what does. The big questions persist—predicting viability, and predicting survivability. Closely tied to these questions is the issue of true recurrence rate.

We have learned that we still have great difficulty assessing colonic viability. Diagnostic methods that have produced mixed results include visual assessment, physiologic parameters, and intraluminal pressure. Frozen histopathologic sampling is much more consistent, however limited availability of necessary personnel and equipment has made this method unattainable for many surgeons. Survivability can be defined by various time frames and whether or not the colon was removed. Recurrence rate has be described as 5-30% but this only reflects retrospective work on horses that present for colic and are known to have had a large colon volvulus in the past. It is much more difficult to determine how many horses are found dead on their home premises, or those that were euthanized before referral because additional surgery was not an option.

There are several reasons to consider a large colon resection, but also a few reasons surgeons may shy away from the procedure. The first reason is that with certain lesions, the only option is euthanasia. These are the colons that are unquestionably non-viable by any standard you choose. This is not to say that all obviously non-viable colons should be resected, as some subjective assessment of overall patient status is still required, but there are situations where simple correction or colopexy would not be survivable. The second reason to consider resection is that viability is seriously in question. Most surgeons have had at least one large colon volvulus that underwent simple correction or colopexy and had tissue that looked reasonable at the time only to see necrotic colon on necropsy several days later. The other issue is to prevent recurrence on horses that are repeat offenders. A surgeon is obligated to at least discuss taking some preventative measure at the time of the second or third surgery. Currently only resection and colopexy exist as options for prevention. There is possibly an argument to consider preventative procedures on some first time volvulus patients, but this is still debatable in the realm of doing no harm since increase risks of complications exist for either procedure.

Large colon resection and anastomosis has not become a common procedure since its introduction many years ago. As surgeons, we tend to follow a few learning patterns. One pattern is that we tend to perform the same procedures that our mentors performed. That is what we are exposed to, and that is what we are comfortable with. Another pattern is that if we are doing something that works enough of the time, we keep doing procedures that way. At face value, the large colon resection appears to be a daunting procedure, however, in actuality it is simpler than many other GI resection and anastomosis procedures that we more routinely perform.

THE PROCEDURE

The volvulus is diagnosed and corrected. Some assessment of viability is made before and after correction. The colon is exteriorized as much as possible and appropriate barrier drapes are placed (plastic drape, laparotomy sponges). The colon is curled up on the horse’s inguinal area making sure not to use the weight of the colon to pull it out of the abdomen. A resection site is chosen that is comfortably out of the abdomen. This means that the assistant has enough colon to have a good hold of the colon proximal to the resection site. The colon is turned over so that the mesocolonic vessels are accessible. Closed blunt scissors are used to make a tunnel through the mesocolon under the vessels at the proposed resection site. The index finger is used to follow the scissor tip back out and hold the tunnel open. A TA-90 stapling device is used to follow the index finger back through the tunnel. The staples are discharged. A second cartridge is discharged in exactly the same place over the first staples. A second tunnel is made
6 cm distal to the first. A single staple cartridge is discharged. This limits the back bleeding. The mesocolon is transected between the two staple lines. A ligature is placed around both transected artery ends and both transected venous ends distal to the staple line. This is performed whether or not there is obvious hemorrhage from these ends. The colon is turned back over so that it is in its normal anatomic orientation. The colon is doused with heparinized saline prior to transection. While a finger is held in the mesenteric transection site to help guide the transection plane, blunt scissors are used to transect first the ventral and then the dorsal colon. If possible the dorsal colon is cut along an oblique angle to increase lumen diameter. Any large masses of contamination are removed with gauze sponges. The area of colon in the mesocolon is closed first. Using 0-PDS a full thickness simple continuous pattern is used leaving a long tag at the knot. This is continued to the point that the colons begin to separate from the mesocolon. A knot is tied at this place and the suture is continued back along the previous suture line, placing the second sutures in between the first and then finished by tying to the original knot tag. The remainder of the colon is closed in an end to end manner with 0-PDS in a Connell pattern oversewn with a Lembert pattern. The anastomosis is started at one end of the mesocolon and continued around to the other. Bites are larger in the ventral colon due to its larger diameter and this should be consciously evaluated at several points along the way so that the lumen disparity between dorsal and ventral colons is evened out by the time the other side of the mesocolon is reached. The areas at the mesocolonic attachment are checked for any leakage. Gross contamination is cleaned away with gauze sponges soaked in heparinized saline. Once all visible contamination is removed the anastomosis is lavaged with one liter each of saline, heparinized saline, and saline with 10 ml Neomycin. The mesocolon is checked for any hemorrhage. The table and surgeons gowns are replaced and the abdomen is additionally draped for the remainder of the exploratory.

REFERENCES