What Does Clinical Data tell us about Colic in North Carolina?

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Colic in horses is the second largest cause of death, behind old age. Using a 2009 census, an estimated 30,600 horses in the state of North Carolina likely suffered from colic and an estimated 3,006 horses in North Carolina likely died from colic. The average colic admissions for 2011-2013 were 223, with 122 being successfully treated medically, 50 requiring surgery. 20 horses, on average, were euthanized on the table based on intraoperative information. Common reasons for doing so were financial, old age/quality of life, and inoperative lesions. 35 horses, on average, were euthanized after admission and less than 24 hours of medical management. Common reasons for doing so were financial (general surgical estimates, or tentative small intestinal diagnosis with higher small intestinal estimate), preoperative diagnosis of ruptured viscera, or concerns about systemic health (anesthesia/postoperative management). Trends over the past three years: stable total number of colic admissions, small reduction in numbers of surgical colics, moderate increase in numbers of horses euthanized after initial diagnostics. The NCSU Colic Database was developed out of an interest to facilitate studies of risk factors for colic and postoperative complications after colic surgery, particularly incisional complications. Current statistics: 649 surgical cases, approximately 23% strangulating small intestinal lesions (SSI), 14% strangulating large colon (SLC) (incl small colon) lesions, 16% nonstrangulating small intestinal (NSSI) lesions, 42% nonstrangulating large colon lesions (NSLC), and 5% other lesions (gastric ruptures, zebras). Short term and 6 month survival rates are described in the table below.

<table>
<thead>
<tr>
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<th>Survival at discharge</th>
<th>Survival at 6 months</th>
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<tbody>
<tr>
<td>SSI</td>
<td>81</td>
<td>63</td>
</tr>
<tr>
<td>SLC</td>
<td>79</td>
<td>65</td>
</tr>
<tr>
<td>NSSI</td>
<td>86</td>
<td>76</td>
</tr>
<tr>
<td>NSLC</td>
<td>94</td>
<td>87</td>
</tr>
<tr>
<td>Other</td>
<td>72</td>
<td>60</td>
</tr>
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Several studies from the NCSU Colic population will be discussed. Pertinent results from selected studies are below:

**Surgical and postoperative factors influencing short-term survival of horses following small intestinal resection: 92 cases (1994-2001)**

Morton AJ, Blikslager AT.
Using odds ratios (OR) as an index of risk, feeding Coastal Bermuda hay (OR = 2.9) and failure to administer a pyrantel salt within 3 months of admission (OR = 3.1) placed horses at risk of development of ileal impaction. This study confirms the belief that feeding Coastal Bermuda hay places horses at risk of ileal impaction, although the
quality of the hay may also play a role. Periodic administration of anthelmintics with efficacy against tapeworms should be considered to reduce risk of ileal impaction.

Morton AJ, Blikslager AT.
Thirty-six (81.8%) of the horses that underwent jejunojejunostomy (JJ) and 34 (70.8%) of the horses that underwent jejunocaecostomy (JC) survived to discharge. Multiple logistic analysis indicated that postoperative ileus (OR = 29.7; 95% CI 2.5-354.6), repeat celiotomy (OR = 18; CI 1.7-187.6), and an elevated heart rate of > or = 60 beats/min (OR = 5.6; CI 1.5-20.6) were the principal factors associated with nonsurvival.

Accuracy of Clinicians in Predicting Site and Type of Lesion as well as Outcome in Horses with Colic
Blikslager AT, Roberts MC
Clinicians accurately predicted the surgical lesion at a rate of 83% in their first six months of the program, and at a rate of 91% in their second six months of the program.

Effects of continuous rate intravenous infusion of butorphanol on physiologic and outcome variables in horses after celiotomy
Sellon DC, Roberts MC, Blikslager AT, Ulibarri C, Papich MG.
Treatment horses were significantly delayed in time to first passage of feces (median times of 15 and 4 hours, respectively). Treatment horses had significantly improved behavior scores during the first 24 hours after surgery, consistent with the conclusion that they experienced less pain during that time. Butorphanol CRI during the immediate postoperative period significantly decreased plasma cortisol concentrations and improved recovery characteristics in horses undergoing abdominal surgery.

Predisposing factors for small colon impaction in horses and outcome of medical and surgical treatment: 44 cases (1999-2004).
Frederico LM, Jones SL, Blikslager AT.
Horses with small colon impaction were 10.8 times as likely to have diarrhea at the time of initial examination as were horses with large colon impaction. Abdominal distension was the only factor associated with use of surgical versus medical treatment. Horses with small colon impaction that were treated surgically were 5.2 times as likely to have had abdominal distension at the time of admission as were horses with small colon impaction that were treated medically. Overall, 21 of 23 (91%) horses treated medically and 20 of 21 (95%) horses treated surgically survived to discharge.

Analysis of sodium carboxymethylcellulose administration and related factors associated with postoperative colic and survival in horses with small intestinal disease.
Fogle CA, Gerard MP, Elce YA, Little D, Morton AJ, Correa MT, Blikslager AT.
Seventy-five percent of horses administered CBMC survived to 180 days, whereas 75% of untreated horses survived 8 days (median survival time=18 days). Horses not administered CBMC were twice as likely to die compared with horses administered CBMC. Horses that had postoperative ileus (POI) were 1.4 times more likely to die than horses without ileus. Similarly, horses with signs of colic after surgery were 1.3 times more likely to die than horses without postoperative signs of colic.

**Return to use and performance following exploratory celiotomy for colic in horses: 195 cases (2003-2010).**

Davis W, Fogle CA, Gerard MP, Levine JF, Blikslager AT.

Of patients surviving to 6 months, 133/195 (68%) were performing their intended use and 85/156 (54%) were at or above preoperative performance. At one year, 145/190 (76%) horses were performing their intended use and 101/153 (66%) were at or above preoperative performance. Animals were significantly less likely to return to use/performance if they had a previous celiotomy, stall rest for an orthopaedic condition, a nonstrangulating lesion type, incisional hernia, diarrhoea or laminitis.