London College of Animal Osteopathy

Thesis

Title:

Can Equine Osteopathic Therapy be useful as an adjunct treatment for colic?

With Special emphasis on the emotional connection to colic

Author: Rachel MacNaughton
Date: October 9, 2025

Abstract

Colic is one of the most common and potentially life-threatening conditions affecting horses. It encompasses a broad spectrum of gastrointestinal disturbances, ranging from mild discomfort to severe, fatal cases. Recent studies have shown that stress, emotional dysregulation, and disruptions in the autonomic nervous system can significantly influence digestive health and motility in horses. This paper explores the multifactorial nature of equine colic, emphasizing the role of emotional stress and physiological imbalance, and investigates the potential benefits of Osteopathic manual therapy (OMT) as an adjunctive treatment.

Osteopathy is a manual therapy modality used to treat dysfunction of the neuromusculoskeletal system and body systems. It seeks to identify somatic dysfunction in the equine body that may contribute to a change in physiological function, consequently causing clinical signs and symptoms of disease. The aim of this review is to understand the current pathophysiology of the nervous system associated with colic and understand how Osteopathic treatment may aid the return to healthy physiology and with an emphasis on the mental state to try and diffuse the situation before it escalates.

Table of contents

Conclusion

References

List of Abbreviations

ANS – Autonomic Nervous System

CNS – Central Nervous System

FCMs – Fecal Cortisol Metabolites

GI – Gastrointestinal

HPA axis – Hypothalamic–Pituitary–Adrenal Axis

OAB – Osteopathic Articular Balancing

OMT – Osteopathic Manipulative Treatment

PNS – Parasympathetic Nervous System

SNS – Sympathetic Nervous System

TCM – Traditional Chinese Medicine

`

Introduction

Equine colic refers to abdominal pain that can arise from multiple causes, including gas accumulation, intestinal impaction, displacement, or torsion. While its aetiology is complex and multifaceted, emerging research highlights that emotional and environmental stressors may contribute to gastrointestinal dysfunction. According to Fereig (2023), colic can affect all breeds and ages of horses and is often exacerbated by management practices, feeding regimes, and stress. The sympathetic nervous system's involvement in stress responses may disrupt gastrointestinal motility, predisposing horses to colic. The purpose of this academic thesis is to review existing literature on the potential for osteopathic medicine to be considered in the management of colic as an adjunct treatment to veterinary care. Though there is not a lot of literature published on Osteopathic care of colic and very little on the emotional connections to colic, this review will cover pathophysiology along with current diagnostic and treatment methods available for colic. Furthering the discussion into the relevant physiological effect of Osteopathic care including osteopathic visceral therapy, osteopathic craniosacral therapy, osteopathic lymphatic therapy, and more. With emphasis on how they can be applied to affect the nervous system, digestive system, mental/emotional and physiological regions of the equine to return them to homeostasis from a colicky state.

Chapter I: Introduction to Equine Osteopathy

Osteopathic manual therapy (OMT) focuses on restoring balance and mobility within the body's musculoskeletal, visceral, and craniosacral systems to support homeostasis and optimal function while supporting optimal fluid dynamics. It is based on the principle that structure and function are interdependent. Osteopathy also acknowledges the influence of mental and emotional states

on physical health and seeks to integrate both aspects in treatment. In horses, osteopathic assessment often reveals restrictions in the thoracolumbar, diaphragmatic, and pelvic regions—areas closely associated with visceral motility and autonomic regulation.

The osteopathic principle of treating the body as an integrated unit aligns with veterinary findings that stress and physical restrictions can manifest in gastrointestinal dysfunction (Straticò et al., 2022). Techniques such as visceral manipulation, myofascial release, and craniosacral therapy may promote vagal tone, reduce sympathetic dominance, and enhance peristaltic movement. By supporting parasympathetic activation, OMT can help modulate gut motility and emotional regulation, indirectly reducing the risk of colic recurrence. In the context of colic, Osteopathy may serve not only as a supportive measure during recovery but also as a preventative approach by promoting mobility and optimal physiological function.

Core Osteopathic Techniques Used by Practitioners

Osteopaths may employ various hands-on techniques to support equine health, including:

- Improving mobility and range of motion: Using OAB, functional, and fascial release techniques to restore joint and muscle movement.
- Enhancing circulation and lymphatic drainage: Applying OAB, lymphatic, fascial chain, diaphragm release, and visceral techniques to promote fluid flow.
- Supporting nervous system function and reducing pain: Utilizing craniosacral and cranial nerve therapies, as well as trigger-point release, to calm the nervous system.
- Promoting self-healing and homeostasis: Employing craniosacral, visceral, and OAB techniques to encourage systemic balance.

- Supporting visceral motility and mobility: Applying visceral, fascial, cranial nerve, and diaphragm releases to assist gut motility.
- Restoring craniosacral rhythm and emotional balance: Using craniosacral Osteopathy to support mental and energetic equilibrium.

Chapter II: What is colic, its causes & symptoms?

Colic refers to abdominal pain caused by disrupted peristaltic movement of the visceral smooth muscle. It remains one of the most frequent emergency calls for equine practitioners. In most cases, medical treatment administered at home is sufficient to resolve the condition, while approximately 20% of cases require hospitalization and intensive care (Straticò et al., 2022).

Strictly defined, colic denotes abdominal pain (Fereig, 2023). The condition involves the enteric nervous system—often termed “the second brain”—which regulates muscle contractions, secretions, and blood flow within the gastrointestinal tract. When this system is disrupted, autonomic imbalance occurs: either sympathetic dominance (“fight, flight, or freeze”) or parasympathetic overactivation (“rest and digest”), both of which can worsen gastrointestinal dysfunction.

Severe colic cases carry a poor prognosis. Standard veterinary interventions include clinical examination, transrectal palpation, nasogastric catheterization, and administration of sedatives or antispasmodics, with surgical intervention or euthanasia required in advanced cases (Moore, 2025). Stress-related alterations in gut motility, microbiome composition, feeding behaviour, and environmental management practices can predispose horses to gastrointestinal disturbances.

Common Causes of Colic

- **Anxiety or suppressed emotions:** Horses may retain memories of trauma, injury, or misuse, resulting in chronic emotional stress and nervous system imbalance. Note: Traditional Chinese Medicine (TCM) similarly associates emotional stress with digestive dysfunction.
- **Nervous system dysregulation:** Chronic stress may lead to persistent sympathetic activation and systemic imbalance.
- **Ingestion of foreign material:** Including bale twine, toxic plants, or debris.
- **Consumption of mouldy hay or straw:** Accidental ingestion can cause severe gastrointestinal irritation.
- **High-grain or low-fibre diets:** Often observed in stabled horses with limited grazing opportunities.
- **Abrupt dietary changes:** Sudden transitions between pasture and hay can disrupt gut flora.
- **Parasitic infestation:** Parascaris spp. and Anoplocephala perfoliata are common intestinal parasites implicated in up to 81% of ileal impactions (Fereig, 2023).
- **Sand ingestion:** Common in sandy regions, leading to impaction and decreased motility.\
- **Overuse of NSAIDs:** Prolonged administration inhibits prostaglandin production, reducing mucosal protection.
- **Dental problems:** Poor dentition can result in inadequate mastication and digestive distress.
- **Antibiotic use:** Alters gut microbiota and impairs digestive balance.

- **Stress or trauma:** Relocation, loss of herd mates, or transportation can significantly elevate stress hormones and predispose to colic.

Colic symptoms may include:

- Mild digestive upset or spasmodic colic
- Behavioral changes (withdrawal, irritability, spooking, lethargy, panicking)
- Sensitivity around the girth or abdomen
- Restlessness and lying down frequently
- Lack of bowel sounds and bowel movements
- Loss of appetite
- Pawing at the ground
- Rolling around on the ground
- Biting, looking at or kicking the abdomen
- Lying flat out or stretching
- Grinding the teeth
- Sweating
- Posturing to urinate without actual urination
- “Sawhorse” pose
- Elevated heart rate

 (Courtesy of Dr. Thomas Lane)

Above Picture: Horse in active colic condition standing in the "sawhorse" position.

Chapter III: The Emotional Link to Colic

Equines are highly sensitive animals whose emotional well-being profoundly influences their physiological health. A growing body of research supports the notion that stress and emotional dysregulation can manifest physically, often through gastrointestinal dysfunction such as colic (Fureix et al., 2012; Harlow et al., 2020; Leal et al., 2011).

In the wild, equines rely on strong social bonds and a stable herd hierarchy to maintain safety and emotional regulation. In domestic environments, however, changes in herd composition, confinement, and inconsistent handling can provoke chronic stress. Prolonged activation of the hypothalamic–pituitary–adrenal (HPA) axis leads to elevated cortisol levels, altered digestive motility, and compromised immune responses (Harlow et al., 2020).

Leal et al. (2011) demonstrated that disruptions in cortisol circadian rhythm are strongly correlated with increased susceptibility to colic. Horses experiencing chronic stress displayed

irregular cortisol secretion patterns, impairing their ability to return to physiological homeostasis after stress exposure. Similarly, Fureix et al. (2012) identified behavioural parallels between depressive symptoms in humans and withdrawn postures observed in horses, linking emotional suppression to reduced responsiveness and altered gut physiology.

In this context, the connection between emotional health and digestive integrity is undeniable. Emotional suppression and chronic tension alter visceral motility, contributing to colic predisposition. Osteopaths must therefore consider both the biomechanical and emotional dimensions when assessing equine health.

Emotional Stress and Its Physiological Effects in Horses

Emotional stress in horses can manifest in several interconnected physiological and behavioural ways, influencing both the body and mind. Specifically, emotional stress can lead to:

- **Tension and disorganization** within the fascia, muscles, visceral organs, and craniosacral rhythm, which may alter fluid dynamics and emotional regulation throughout the body.
- **Autonomic nervous system imbalance**, particularly sympathetic overdrive (the "fight-or-flight" response), resulting in heightened arousal and reduced parasympathetic recovery capacity (Fureix, Jego, Henry, Lansade, & Hausberger, 2012).
- **Disruption of gut motility and microbiome activity**, which may compromise digestion and increase susceptibility to colic symptoms (Harlow, Lawrence, Kuhl, & Flythe, 2020).
- **Poor decision-making behaviours**, such as running into fences, rolling excessively, or calling persistently to herd mates—actions that can worsen physical distress and contribute to gastrointestinal dysfunction (Leal, Franklin, & Burford, 2011)

The Role of the Nervous System in Emotional and Digestive Regulation

The enteric nervous system communicates bidirectionally with the central nervous system via the vagus nerve, forming what is known as the gut–brain axis. Emotional distress triggers sympathetic dominance, decreasing gastrointestinal motility and blood flow, thereby predisposing the horse to colic (Harlow et al., 2020).

Conversely, when the parasympathetic system is activated through relaxation or therapeutic intervention, gut motility improves, and peristaltic efficiency increases. Osteopathic treatments that promote craniosacral balance and vagal tone may therefore have a regulatory effect on the gut–brain connection.

Upon interviewing a local horse trainer (who wished to remain anonymous), who has observed numerous colic episodes, she reported that both the horse and the owner often display heightened emotional intensity during such events. As the colic episode progresses, both tend to become physically and emotionally exhausted, which may exacerbate the condition and lead to more severe outcomes. Achieving homeostasis requires substantial energy; therefore, emotional exhaustion complicates recovery and can result in a poorer prognosis.

Fear and stress responses involve complex neurobiological processes that link cognition and physiology. Emotional stimuli—such as a change in environment, new herd members, altered feed, or abrupt weather shifts—activate sensory systems that transmit information to the hypothalamus, which regulates heart rate, blood pressure, and respiratory rate. Concurrently, signals reach the cerebral cortex, creating an integrated physiological and emotional response that can disrupt homeostasis. From a neurobiological standpoint, anxiety and pain share overlapping communication pathways within the limbic system, particularly in the amygdala,

making them difficult to differentiate due to their similar physiological manifestations. The limbic system thus serves as a key integrative centre for processing and expressing emotional and physiological states, primarily through activation of the sympathetic nervous system.

In horses, acute intestinal pain—such as that caused by obstruction or strangulation—often leads to rolling, pawing, or kicking at the abdomen. These behaviours are mediated by the amygdala and associated limbic structures during pain and anxiety, reflecting neural patterns similar to those observed in rodents. Studies in rodent models have demonstrated that stress can induce structural and functional remodelling of amygdala neurons, altering synaptic connectivity with cortical and subcortical regions (Vyas et al., 2002; McEwen et al., 2016; Zhang et al., 2021). This evidence underscores the neurobiological parallels between stress, emotion, and physical dysfunction—providing a scientific foundation for understanding the emotional component of equine colic.

Chapter IV: Can Osteopathy Help Treat Colic as an Adjunct Treatment?

While veterinary medicine remains the first line of intervention for colic, Osteopathic Manual Therapy (OMT) may serve as a valuable adjunct to support recovery and prevent recurrence. The goal of Osteopathic intervention is not to replace veterinary care but to complement it through restoration of mobility, fluid dynamics, and nervous system balance.

Osteopathy addresses the underlying restrictions that may compromise visceral, musculoskeletal, or cranial function. In the case of equine colic, OMT aims to facilitate parasympathetic regulation, support digestion, and relieve somatic dysfunctions that may exacerbate visceral tension.

1. Visceral Manipulation

Visceral Osteopathy involves gentle manual techniques that improve the motility and mobility of internal organs and surrounding fascia. By releasing restrictions in the mesenteric attachments or the diaphragm, the practitioner can enhance circulation and relieve abdominal tension, thereby improving gut motility.

When the intestines regain normal rhythmic motion, peristalsis and fluid flow improve, reducing the likelihood of impaction or gas accumulation. Gentle visceral manipulation may also assist in restoring lymphatic drainage and relieving postoperative adhesions following colic surgery.

2. Craniosacral Therapy

Craniosacral therapy influences the rhythmic fluctuations of cerebrospinal fluid and balances the autonomic nervous system. This approach can calm a horse's heightened sympathetic response, reducing pain perception and stress reactivity. By encouraging parasympathetic dominance, craniosacral techniques support digestive function and emotional release.

Cranial nerve regulation—particularly of the vagus (cranial nerve X)—is crucial for maintaining homeostasis within the enteric system. Dysfunctions along the cranial base or within the occipital region may alter vagal tone, contributing to disrupted gut motility. Osteopathic intervention can help restore balance to this vital neural pathway.

3. Lymphatic and Diaphragmatic Techniques

Osteopathic lymphatic drainage and diaphragm release techniques enhance circulation and fluid exchange within the abdominal cavity. Improved lymphatic flow aids in detoxification and

supports immune resilience, which is particularly beneficial during recovery from colic or surgical intervention.

By normalizing respiratory–diaphragmatic rhythm, the practitioner indirectly supports peristaltic motion and visceral tone, enhancing the horse's ability to maintain internal equilibrium.

4. Addressing Emotional Imbalance

Osteopaths must recognize that emotional trauma and chronic tension often manifest as physical restrictions. Horses that have experienced fear, isolation, or inconsistent handling may exhibit fascial rigidity and somatic dysfunctions that perpetuate nervous system dysregulation.

Through gentle, mindful contact, the Osteopath can help the horse release stored emotional tension. This process encourages a shift from sympathetic to parasympathetic dominance, fostering relaxation, improved digestion, and trust in the therapeutic environment.

Osteopathic Perspectives and Applications

Osteopathic manual therapy (OMT) focuses on restoring balance and mobility within the body's musculoskeletal, visceral, and craniosacral systems to support homeostasis and optimal function. In horses, osteopathic assessment often reveals restrictions in the thoracolumbar, diaphragmatic, and pelvic regions—areas closely associated with visceral motility and autonomic regulation.

The osteopathic principle of treating the body as an integrated unit aligns with veterinary findings that stress and physical restrictions can manifest in gastrointestinal dysfunction (Straticò et al., 2022). Techniques such as visceral manipulation, myofascial release, and craniosacral therapy may promote vagal tone, reduce sympathetic dominance, and enhance peristaltic

movement. By supporting parasympathetic activation, OMT can help modulate gut motility and emotional regulation, indirectly reducing the risk of colic recurrence.

Integrating Osteopathy into Veterinary Care

Osteopathy is not intended to replace conventional veterinary treatment but rather to complement it. Moore (2025) emphasizes that early detection and multimodal intervention are critical in managing colic cases. Integrating osteopathic care alongside veterinary management may improve outcomes by addressing the underlying mechanical and emotional stressors contributing to the condition.

An integrative approach acknowledges the bidirectional relationship between the nervous system and visceral function. OMT, by facilitating physiological and emotional balance, may assist in preventing recurrent colic episodes and improving overall equine well-being.

Important Notes and Osteopathic Limitations

At the first signs of colic, it is essential to consult a licensed veterinarian. Physical forms of colic—such as gas accumulation, impaction, or torsion—constitute medical emergencies that require immediate veterinary attention. Equine osteopathy should therefore be regarded as a complementary therapy, not a replacement for veterinary medicine (Makhlouf Fereig, 2023; Straticò et al., 2022).

Osteopaths must be thoroughly trained in equine anatomy and physiology and should apply gentle, trauma-informed manual techniques within their professional scope of practice. While osteopaths cannot diagnose psychological or emotional conditions, they may support the horse's overall wellbeing through techniques that promote systemic balance and relaxation—provided

such work remains within their legal scope in their country. Any osteopathic intervention in a case of colic must be conducted only as an adjunct to veterinary treatment, never as a primary or independent approach.

Although there is limited research on the emotional connections to colic—and even less on osteopathic treatment of the condition—the interrelationship between emotional and physiological dysfunction is increasingly recognized. In both humans and animals, emotional stress can mimic or exacerbate gastrointestinal disturbances, lending physiological credibility to the concept of emotionally triggered colic (Fureix et al., 2012; Harlow et al., 2020).

Conclusion

Equine colic remains a multifactorial condition influenced by both physiological and psychological components. Emotional stress, environmental factors, and biomechanical restrictions can interact to compromise gut motility and health. Osteopathic manual therapy offers a promising adjunctive treatment by targeting these interconnected systems and promoting equilibrium between the musculoskeletal and visceral domains. Continued interdisciplinary research between veterinarians, osteopaths, and equine behaviourists is essential to better understand and optimize the role of osteopathic care in the prevention and management of equine colic.

References

Fureix, C., Jego, P., Henry, S., Lansade, L., & Hausberger, M. (2012). Towards an ethological animal model of depression? A study on horses. *PLoS ONE, 7*(6), e39280. https://doi.org/10.1371/journal.pone.0039280

Harlow, B. E., Lawrence, L. M., Kuhl, A. J., & Flythe, M. D. (2020). Fecal microbial community structure of horses is impacted by stress and diet. *Frontiers in Microbiology, 11*, 2156. https://doi.org/10.3389/fmicb.2020.02156

Leal, L. N., Franklin, S. H., & Burford, J. H. (2011). Cortisol circadian rhythm ratio: A simple method to detect stressed horses at higher risk of colic? *Journal of Equine Veterinary Science, 31*(4), 188–190. https://doi.org/10.1016/j.jevs.2011.02.003

Makhlouf Fereig, R. (2023). A review on equine colic: Etiology, differential diagnosis, therapy, and prevention. *German Journal of Veterinary Research, 3*(4), 1–12. https://doi.org/10.51585/gjvr.2023.4.0063

Straticò, P., Varasano, V., Palozzo, A., Guerri, G., Celani, G., Revelant, O., & Petrizzi, L. (2022). Retrospective study on risk factors and short-term outcome of horses referred for colic from 2016 to 2022. *Veterinary Sciences, 9*(11), 652. https://doi.org/10.3390/vetsci9110652

Moore, J. N. (2025, June). *Overview of colic in horses.* In *Merck Veterinary Manual* (Rev. & mod.). Merck & Co., Inc. https://www.merckvetmanual.com/digestive-system/colic-in-horses/overview-of-colic-in-horses

Vyas, A., Mitra, R., Shankaranarayana Rao, B. S., & Chattarji, S. (2002). Chronic stress induces contrasting patterns of dendritic remodeling in hippocampal and amygdaloid neurons. *Journal of Neuroscience, 22*(15), 6810–6818. https://doi.org/10.1523/JNEUROSCI.22-15-06810.2002

McEwen, B. S., Nasca, C., & Gray, J. D. (2016). Stress effects on neuronal structure: Hippocampus, amygdala, and prefrontal cortex. *Neuropsychopharmacology, 41*(1), 3–23. https://doi.org/10.1038/npp.2015.171

Zhang, J., Tan, W., Yang, S., & Luo, J. (2021). Stress-induced structural and functional plasticity in the amygdala: Implications for anxiety and depression. *Frontiers in Cellular Neuroscience, 15*, 658929. https://doi.org/10.3389/fncel.2021.658929

Open Veterinary Journal. (n.d.). *A review on equine colic: Etiology, differential diagnosis, therapy, and prevention.* Retrieved from https://openveterinaryjournal.com

Merck & Co., Inc. (2025). *Overview of colic in horses* (Image: "Stretching position, colic," courtesy of Dr. Thomas Lane). In *Merck Veterinary Manual.* Retrieved October 8, 2025, from https://www.merckvetmanual.com/digestive-system/colic-in-horses/overview-of-colic-in-horses