

Abdominal Visceral Manipulation Prevents and Reduces Peritoneal Adhesions

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The Journal of the American Osteopathic Association, January 2013, Vol. 113, 99-100.

Bove GM, Chapelle SL. Visceral mobilization can lyse and prevent peritoneal adhesions in a rat model. *J Bodyw Mov Ther.* 2012;16(1):76-82.

One of the major complications of abdominal surgery is abdominal adhesions, which can negatively impact a patient's quality of life. Unfortunately, the only intervention currently available is further abdominal surgery—adhesiolysis.¹ Diamond et al² noted, “Adhesions are a major health care burden, and their reduction is a significant unmet need in surgical therapeutics.” Additionally, there are limited options for preventing adhesion formation, and none are consistently reliable.³ However, one relatively unexplored option is visceral manual manipulation.

To explore the efficacy of visceral manipulation in preventing and managing abdominal adhesions, Bove and Chapelle assigned 10 rats each to a lysis group, a preventive group, and a control group. All 30 rats were given an abdominal incision followed by cecum and abdominal abrasions to induce abdominal adhesions. Seven days after the procedure, the rats were euthanized, and evaluation and grading of abdominal adhesions were conducted by blinded, trained individuals.

In the lysis group, abdominal visceral manipulation was used to break up adhesions palpated on postoperative day 7, right before the rats were euthanized. In the preventive group, visceral manipulation was used beginning postoperative day 1 and was repeated once per day up until day 7, when they were euthanized. Control group rats received no visceral manipulation. Visceral manipulation consisted of no more than 5 minutes of digital palpation for adhesions, lysis of palpated adhesions, and mobilization of intestines and the abdominal wall on unsedated rats. Adhesions were identified as areas with decreased mobilization on palpation. In brief, palpation consisted of evaluating the abdominal wall's ability to be lifted from its contents, the cecum's ability to be moved in all planes, and the small intestine's ability to be mobilized. When decreased motion was felt, appropriate pinching and stretching methods were used to free the area of the adhesion causing the restriction. The coauthor who applied the palpation and manipulation was a registered massage therapist in British Columbia, Canada. No information was given on her training or experience.

Once the rats were euthanized, a careful abdominal incision was made and pictures were taken of the rats' adhesions. Photographs were sent to 2 blinded investigators for grading, where 0 indicated no adhesions and 4 indicated established adhesions. Four types of adhesions identified postmortem were cecum-cecum, cecum-abdominal wall, cecum-fat, and fat-abdominal wall adhesions. The number of adhesions did not differ between groups; however, the grading severity did. Notably, the lysis group had the highest average at 1.9 lesions, which was significantly higher than the preventive group's average of 0.6 lesions ($P < .01$). The control group had an average of 1.4 lesions.

The investigators also looked for evidence of lysed adhesions, noted as shallow peritoneal defects in the lysis and preventive groups. Within the lysis group, 6 lysed adhesions were identified. The preventive group not only had 4 lysed adhesions, but the resulting peritoneal defect was not inflamed. Lastly, overall healing was improved in the preventive group compared with the lysis and control groups. Although not measured, the parietal peritoneal incisions were noted as being better healed and petechiae on the cecum from the surgical abrasion were notably less in the preventive group.

It was concluded that visceral manipulation has a positive benefit not only of lysing adhesions, but also of preventing them as well. Physiologically, visceral manipulation may decrease the formation of adhesions because it causes disruption of fibrin and inhibits fibroblast migration to the injured area. Additionally, the increase in fluid movement due to manipulation could have caused increased metabolite exchange and, as a result, fibrinolysis. Rats were not sedated during manipulation, and the force needed to mobilize abdominal contents did not elicit flinching or biting. In fact, the investigators noted during manipulation that the rats became calm and allowed deep palpation and treatment. The investigators suggested that visceral manipulation should be used immediately after a surgical procedure because adhesion formation is greatest at this time. Furthermore, the rats in the preventive group were noted to have increased signs of healing, including a general observation of overall improved healing of the abdominal incision site. If more studies explore and confirm the benefits of visceral manipulation, these methods could be used on postoperative patients as an economical and non-invasive means of preventing abdominal adhesions and subsequent health complications.

“The Somatic Connection” highlights and summarizes important contributions to the growing body of literature on the musculoskeletal system's role in health and disease. This section of *The Journal of the American Osteopathic Association (JAOA)* strives to chronicle the significant increase in published research on manipulative methods and treatments in the United States and the renewed interest in manual medicine internationally, especially in Europe.

References

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