In the article that starts on page 7, the authors use imaging evidence to demonstrate the effectiveness of osteopathic manipulative treatment on a patient with bowel pseudo-obstruction.
The American Academy of Osteopathy is your voice...

in teaching, promoting, and researching the science, art, and philosophy of osteopathic medicine, with the goal of integrating osteopathic principles and osteopathic manipulative treatment in patient care.

If you are not already a member of the American Academy of Osteopathy (AAO), the AAO Membership Committee invites you to join the Academy as a 2017-18 member. The AAO is your professional organization. It fosters the core principles that led you to become a doctor of osteopathic medicine.

For $5.54 a week (less than the price of a large specialty coffee at your favorite coffee shop) or just 79 cents a day (less than the cost of a bottle of water), you can become a member of the professional specialty organization dedicated to you and osteopathic manipulative medicine (OMM).

Your membership dues provide you with:

• a national advocate for OMM, both within the profession and with health care policy-makers and third-party payers.
• a champion that is monitoring closely and responding rapidly to the standards being developed for the single accreditation system for graduate medical education.
• referrals of patients through the “Find a Physician” tool both on the AAO website and at the FindOMM.org URL, as well as from calls to the AAO office.
• discounts on continuing medical education at the AAO’s annual Convocation and its weekend courses.
• automatic acceptance of AAO-sponsored courses by the American Osteopathic Board of Neuromusculoskeletal Medicine, the only certifying board for manual medicine in the world today.
• networking opportunities with peers.
• discounts on books in the AAO’s online store.
• complimentary subscription to The AAO Journal, published electronically 4 times annually.
• complimentary subscription to the online AAO Member News, published 8 times annually.
• weekly OsteoBlast e-newsletters, featuring research on manual medicine from peer-reviewed journals around the world.
• practice promotion materials, such as the AAO-supported “American Health Front” segment on OMM.
• discounts on advertising in AAO publications and in materials for the AAO’s Convocation.
• the fellow designation of FAAO, which recognizes DOs for promoting OMM through teaching, writing, and professional service and which is the only earned fellowship in the osteopathic medical profession.
• promotion and grant support of research on the efficacy of OMM.
• support for the future of the profession through the Student American Academy of Osteopathy, the National Undergraduate Fellows Association, and the Postgraduate American Academy of Osteopathy.

If you have any questions regarding membership or membership renewal, contact Bev Searcy, the AAO’s finance and membership assistant, at BSearcy@academyofosteopathy.org or at (317) 879-1881, ext. 212.

AAO at OMED 2017: Using Osteopathic Principles and Philosophy in Specialty Medicine

Leslie M. Ching, DO, program chair
Oct. 7-10, 2017
Philadelphia Convention Center

The AAO’s program will present various viewpoints on incorporating osteopathic principles into the practice of different specialties. The AAO is partnering with several specialty colleges to provide lectures and hands-on instruction from specialists with clinical experience in a variety of specialties. In addition, a workshop on the Stiles-Laughlin technique, a very useful functional approach, will be presented by Harriet H. Shaw, DO, and Edward G. Stiles, DO, FAAO.

Among the speakers are Kendi L. Hensel, DO, PhD; Kimberly J. Wolf, DO, FACOP; Lisa E. Hart, DO; and Ava C. Stanczak, DO, FAAP, FACOP. In addition, Kenneth J. Lossing, DO, will deliver the annual Thomas L. Northup Lecture. Dr. Lossing was the AAO’s 2014-15 president, and he has practiced osteopathic manipulative medicine in northern California for more than 20 years.

The AAO will present joint sessions with the following specialty colleges:

• American College of Osteopathic Family Physicians
• American College of Osteopathic Internists
• American College of Osteopathic Neurologists and Psychiatrists
• American College of Osteopathic Obstetricians and Gynecologists
• American College of Osteopathic Pediatricians
• American Osteopathic Academy of Sports Medicine

Learn more at www.academyofosteopathy.org/OMED.
The AAO Journal

Brian E. Kaufman, DO, FACOI, FACP ............................ Editor-in-chief
Raymond J. Hruby, DO, FAAODist ........................... Scientific editor emeritus
Lauren Good ......................................................... Managing editor

AAO Publications Committee
Edward Keim Goering, DO, chair
William J. Garrity, DO, vice chair
Hans Christian Bruntmyer, DO, MPH
Claire M. Galin, DO
Katherine L. Heineman, DO
Raymond J. Hruby, DO, MS, FAAODist

American Academy of Osteopathy
Michael P. Rowane, DO, MS, FAAO, FAAFP .................. President
Catherine M. Kimball, DO .................................. President-elect
Sherri L. Quarles ........................................ Executive director

The AAO Journal is the official publication of the American Academy of Osteopathy. Issues are published 4 times a year.

The AAO Journal is not responsible for statements made by any contributor. Opinions expressed in The AAO Journal are those of the authors and do not necessarily reflect viewpoints of the editors or official policy of the American Academy of Osteopathy or the institutions with which the authors are affiliated, unless specified.

Although all advertising is expected to conform to ethical medical standards, acceptance does not imply endorsement by this journal or by the American Academy of Osteopathy.

Subscription rate for AAO nonmembers: $60 per year.
To subscribe, contact AAO Communications Specialist Lauren Good at LGood@academyofosteopathy.org.

Send all address changes to BSearcy@academyofosteopathy.org.

ISSN 2375-5717 (online) ISSN 2375-5776 (print)

2017 Advertising Rates per Placement

<table>
<thead>
<tr>
<th>Format</th>
<th>Placed 1 time</th>
<th>Placed 2 times</th>
<th>Placed 4 times</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full page (7.5&quot; x 9.5&quot;)</td>
<td>$600</td>
<td>$570</td>
<td>$540</td>
</tr>
<tr>
<td>One-half page (7.5&quot; x 4.5&quot;)</td>
<td>$400</td>
<td>$380</td>
<td>$360</td>
</tr>
<tr>
<td>One-third page (2.25&quot; x 9.5&quot;)</td>
<td>$300</td>
<td>$285</td>
<td>$270</td>
</tr>
<tr>
<td>Quarter page (3.5&quot; x 4.5&quot;)</td>
<td>$200</td>
<td>$190</td>
<td>$180</td>
</tr>
<tr>
<td>Classified</td>
<td>$1 per 7 characters, spaces not included</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
AAO Calendar of Events

Mark your calendar for these upcoming Academy meetings and educational courses.

2017–18

June 14  Committee on Fellowship in the AAO teleconference—8 p.m. Eastern

July 4    Independence Day—AAO office closed

July 15-16 AAO Board of Trustees’ meeting—AAO office in Indianapolis

Aug. 4-5  AAO Education Committee’s meeting—AAO office in Indianapolis

Aug. 4-5  SAAO Executive Council’s meeting—AAO office in Indianapolis

Aug. 16   Committee on Fellowship in the AAO teleconference—8 p.m. Eastern

Sept. 5   Labor Day—AAO office closed

Oct. 5    AAO Board of Trustees’ meeting—Philadelphia

Oct. 6    AAO Leadership Summit—Philadelphia


Oct. 21   Committee on Fellowship in the AAO’s meeting and exams—8 a.m. to 5 p.m. Eastern—AAO office in Indianapolis

Nov. 10-12 Basic Visceral Course—Richard G. Schuster, DO, course director—Rowan University School of Osteopathic Medicine in Stratford, New Jersey

Nov. 23-24 Thanksgiving holiday—AAO office closed

Dec. 8-10 Evidence-Based Visceral Manipulation: Finding Best Practices for Evaluation and Management—Kenneth J. Lossing, DO, course director—University of North Texas Health Science Center Texas College of Osteopathic Medicine in Fort Worth

Dec. 25   Christmas Day—AAO office closed

Jan. 1    New Years Day—AAO office closed

Jan. 25-28 Introduction to Osteopathic Manipulative Medicine—Lisa Ann DeStefano, DO, course director— University of North Texas Health Science Center Texas College of Osteopathic Medicine in Fort Worth

June TBA  Prolotherapy and Platelet-Rich Plasma—Mark S. Cantieri, DO, FAAO, and George J. Pasquarello, DO, FAAO, course directors—Marian University College of Osteopathic Medicine in Indianapolis

Continuing Medical Education Quiz

The purpose of the continuing medical education quiz is to provide a convenient means of self-assessing your comprehension of the scientific content in the article “Imagining Evidence Demonstrating Effectiveness of Osteopathic Visceral Manipulation Techniques in Treating Pseudo-Obstruction” by Alicja Ignatowicz, DO, and Murray R. Berkowitz, DO, MA, MS, MPH.

To apply for 2 credits of AOA Category 2-B continuing medical education, fill out the form on page 12 and submit it to the American Academy of Osteopathy. The AAO will note that you submitted the form and forward your results to the American Osteopathic Association’s Division of Continuing Medical Education for documentation.

Be sure to answer each question in the quiz. You must score a 75% or higher on the quiz to receive CME credit. The correct answers will be published in the next issue of the AAOJ.

For information on terminology used in The AAO Journal, see the Glossary of Osteopathic Terminology developed by the American Association of Colleges of Osteopathic Medicine’s Educational Council on Osteopathic Principles.
In the June 2016 “View From the Pyramids,” I wrote about the new Centers for Disease Control and Prevention guidelines on chronic pain management. This message will serve as an update of how we have been progressing here in Maine. I wish I could report that my fears and worries were needless but unfortunately the wolf actually showed up at our door.

To recap: In March 2016, the CDC released guidelines for prescribing opioids for chronic pain, providing recommendations for primary care clinicians for prescribing opiates. Despite the title, the goal was clearly to serve as an intervention for reducing overall opioid diversion for use on the street. In Maine, we passed legislation that limits every patient to 100 morphine equivalents. As one colleague who specializes in addiction treatment wrote in the Portland Press Herald, “I should be thrilled.... A glorious new dawn awaits!”

But the recommendations and subsequent legislation revealed a lack of understanding of both chronic pain and substance use disorder management and have served to muddy the waters. From 2010 to 2014 and until today, there has been a significant increase in overdoses and deaths from heroin and fentanyl. This trend has been noted nationally but to an exaggerated degree in Maine. During this same time period, overdoses and deaths from methadone have decreased, and prescribed medications have decreased. The causes are multifactorial but in part due to increased awareness by physicians of substance use disorder and diversion. During the same 4 years, here in Maine, the amount of funding for the treatment of addiction has decreased significantly.

So, what has been accomplished so far? The primary care doctors stopped prescribing controlled meds and congratulate themselves for not contributing to the problem; many legitimate chronic pain patients have had medication doses reduced and have destabilized with some needing to stop working because they can no longer function; pharmacies routinely call my office and yell at my staff and me because “we are breaking the law and don’t know what we are doing;” the legislators pat themselves on the back for doing something about the opiate crisis; and the local hospital pain management center fires patients like crazy because of concerns over exposure risk. In terms of addiction, there are fewer options for patients to get medication treatments, more have turned to heroin or fentanyl, and the overdose rate has risen.

Solutions do exist, but they require a sea change in approach. The CDC’s goal was to decrease opioid exposure and, I surmise, to improve the state of addiction care. Availability of illicit pharmaceuticals has dropped but with a sharp rise in illicit opioid use. To improve addiction care, we need to shift from supply-side intervention, using law enforcement and arrests, and move towards demand-side intervention, providing access to medication-assisted treatment and support.

This change will happen only if our society stops treating addiction as a moral weakness, a shameful secret to be hidden away, and starts viewing it as a medical issue and mental illness.

Additionally, addiction evaluation and treatment is complex, and it is best treated by those with appropriate knowledge and experience. In the end, patients should be able to receive expert, non-judgmental compassionate treatment without being stigmatized. I can think of no better group to lead this change than osteopathic physicians.

References

The AAOJ needs...

- reviewers to participate in blind peer reviews.
- osteopathic clinicians to write up osteopathic techniques, tips or variations they employ that may be published in a developing feature section of the AAOJ.
- specialists to develop osteopathic responses to articles published in non-osteopathic literature. For example, how would the osteopathic approach contribute to studies published in other scientific journals or featured in news articles?

For more information, email AAOJ Editor-in-Chief Brian E. Kaufman, DO, FACOI, FACP, at editoraaoj@gmail.com.
Imaging Evidence Demonstrating Effectiveness of Osteopathic Visceral Manipulation Techniques in Treating Pseudo-Obstruction

Alicja Ignatowicz, DO, and Murray R. Berkowitz, DO, MA, MS, MPH

Abstract
This report describes the case of a 66-year-old afebrile woman seen on the hospital inpatient service with nausea, vomiting, bloating, and constipation for 5 days prior to admission. The patient was diagnosed with idiopathic acute small bowel pseudo-obstruction by gastroenterology.

The epidemiology of acute small-bowel pseudo-obstruction is briefly reviewed. Osteopathic manipulative treatment (OMT) was performed on the patient using mostly abdominal and visceral manipulation techniques.

This case represents the first report of imaging evidence that demonstrates the effectiveness of osteopathic visceral manipulation techniques in successfully treating patients who have acute intestinal pseudo-obstruction.

Introduction
Problems with defecation in adults increase over 65 years of age. Reasons for absence of bowel movements include neurologic disorders (e.g., multiple sclerosis, autonomic neuropathy, etc.), endocrine or metabolic disorders (e.g., hypothyroidism, hyperthyroidism, diabetes mellitus, etc.), malignancies, and dietary issues. Common reasons include obstruction of the small intestines or colon or constipation.1,2 McEntee and associates found the incidence rates for obstruction due to adhesions, malignancies, and strangulated hernias to be 32%, 26%, and 25%, respectively.1 Carrerio states that plain abdominal x-rays can usually rule out obstruction.2 The value of computed tomography (CT) as a diagnostic tool in evaluating small-bowel disorders has been reported in the medical literature.3,4 Obstruction and pseudo-obstruction have been reported in patients with Crohn’s disease; the reasons for this are not understood.5

Garrigues and associates found the prevalence of constipation (“infrequent passage of hard, dry stools”6(p1282)) among Spanish adults to vary between 14% and 19%.7 A systematic review of the epidemiology of constipation in North American adults published by Higgins and Johanson found the prevalence to vary similarly between 12% and 19%; they also found a gender prevalence female-to-male ratio of 2.2:1.8 In an epidemiologic study of chronic constipation,6(p1286) Pinto-Sanchez and Bercik cited a Canadian study that found not even one-half of the patients met the diagnostic criteria for functional constipation.9

Another differential diagnosis to be considered for these symptoms is pseudo-obstruction vs constipation. McEntee and associates found the incidence rates for pseudo-obstruction vs constipation (fecal impaction) to be 2% vs 3%, respectively.1 Carrerio stated, “Pseudo-obstruction occurs in cases of dysmotility and may be secondary to a systemic disease process.”2 Pseudo-obstruction may be either acute or chronic and may be found in either the small intestine or the colon. Chronic pseudo-obstruction of the intestine is extremely rare, with prevalence approximately 1 case per 100,000 population.10 Acute pseudo-obstruction of the colon (Ogilvie syndrome) is usually accompanied by dilatation of the colon without evidence of mechanical obstruction.11,12,13 After analyzing 400 cases,
Vanek and Al-Sulti found 49% were postoperative, 45% were associated with medical co-morbidities, and 6% were idiopathic.  

Stephens first published a case series reporting acute obstruction of the intestines but without any findings of mechanical obstruction; this condition came to be known as acute pseudo-obstruction of the intestines. Legge and associates reported 8 cases associating acute pseudo-obstruction of the intestines with amyloidosis. A case report by Koppelman and associates at the Mayo Clinic more recently affirmed these findings. Tada and associates reported different sites of amyloid deposits depended upon the protein type.

Case Report

A 66-year-old woman presented to the emergency department with nausea, vomiting, bloating, and constipation and was admitted to the inpatient service. The patient had been having these symptoms for 5 days prior to admission.

The patient was afebrile and had no history of recent surgeries, malignancies, neurologic, endocrine or metabolic disorders, or amyloidosis. Laboratory studies were negative.

CT imaging performed on Day 1 revealed the presence of stool in the small intestine but not in the colon (Figures 1-3). No dilatation of either the small or large bowel was appreciated.

Gastroenterology consult diagnosed the patient with idiopathic small bowel pseudo-obstruction. Nasogastric tube was placed and suction revealed dark green fluid. Nasogastric suction was continued and monitored with plain x-ray imaging for 7 days (see Figures 4-9), at which time it was noted that there was no change in the patient.

On the seventh day post-admission, the decision was made to perform exploratory surgery and intervention. The evening prior to surgery, the first author performed osteopathic manipulative treatment (OMT) on the patient using mostly abdominal and visceral manipulation techniques.

Abdominal myofascial techniques, visceral techniques (including mesenteric release), as well as sub-occipital release, thoracic myofascial, and lumbar myofascial techniques were performed.

The time spent treating the patient’s neck and back was less than 5 minutes total; her tissues released very quickly. Approximately 50 minutes was spent performing very gentle myofascial work on her abdomen to help free up her bowels, open up her sphincters, release her diaphragm, and calm down her celiac, superior mesenteric, and inferior mesenteric ganglions. The patient’s bowels started moving pretty quickly, indicated by audible abdominal sounds that were rapid in onset and appreciated without auscultation with a stethoscope.

The following morning, the patient was no longer vomiting, her nasogastric tube was no longer pumping out dark green fluid (it}
was now a very light brown/yellow), the volume of fluid being pumped out had significantly decreased, and the patient stated she was “feeling much more comfortable.”

X-ray imaging revealed movement of the stool into the colon. No stool was appreciated in the small bowel (Figure 10). The patient hadn’t had a bowel movement yet, but the surgery was cancelled.

**Figures 4-9.** Nasogastric suction was continued and monitored with plain x-ray imaging for 7 days. There was no movement in the bowels during that time.

Unfortunately, the patient’s family decided to have her taken to a different hospital after the medical team met with her that morning, so she was lost to follow up.

**Discussion**

The decisions to initially treat this patient with medication and decompression and then to perform surgery were fully consistent with the National Institutes of Health health information published by the National Institute of Digestive and Kidney Diseases. Mann and associates reported that pharmacologic therapy is usually not effective in treating idiopathic intestinal pseudo-obstruction and that the efficacy of surgical intervention is unclear. The role of osteopathic visceral manipulation has been previously documented, especially with respect to disorders of the lower gastrointestinal tract. The visceral techniques performed in this case included those standard techniques taught in osteopathic medical schools.

The temporal relationship regarding the movement of stool from the small intestines to the colon with the performance of the osteopathic visceral manipulation supports the effectiveness of treating idiopathic intestinal pseudo-obstruction.
the patient with idiopathic acute intestinal pseudo-obstruction with OMT.

The imaging evidence further supports the effectiveness of treating this patient with OMT.

Comment
This case shows how osteopathic management, specifically the application of visceral manipulation, provides a unique perspective for patient care.

The patient's symptoms were consistent with idiopathic acute small-bowel pseudo-obstruction. Visceral manipulation may have been responsible for resolving any visceral somatic dysfunction; the rapid resolution of the patient's symptoms and the imaging demonstrating movement of stool from the small intestine to the colon supports this.

This case represents the first report of imaging evidence that demonstrates the effectiveness of osteopathic visceral manipulation techniques in successfully treating acute intestinal pseudo-obstruction.

References
CONTINUING MEDICAL EDUCATION

This CME Certification of Home Study is intended to document your review of the CME article in this issue of The AAO Journal under the criteria for AOA Category 2-B continuing medical education credit.

CME Certification of Home Study

This is to certify that I, ____________________________,
(type or print name)
read the following article for AOA CME credit.

Name of article: “Imaging Evidence Demonstrating Effectiveness of Osteopathic Visceral Manipulation Techniques in Treating Pseudo-Obstruction”

Authors: Alicja Ignatowicz, DO, and Murray R. Berkowitz, DO, MA, MS, MPH

Publication: The AAO Journal, Vol. 27, No. 1, Spring/Summer 2017, pages 7-10

AOA Category 2-B credit may be granted for this article.

00____________
(AOA number)

Full name: ____________________________
(type or print name)

Street address: ____________________________

City: ____________________________

State and ZIP code: ____________________________

Signature: ____________________________

Complete the quiz to the right by circling the correct answers. Send your completed answer sheet to the American Academy of Osteopathy. The AAO will forward your results to the American Osteopathic Association. You must answer 75% of the quiz questions correctly to receive CME credit.

Below are the answers to The AAO Journal’s December 2016 quiz on the article titled “Utilizing Muscle Energy Technique of the Shoulder Girdle to Correct Somatic Dysfunction of the Thoracic Inlet” by Jose Figueroa, DO, FAOCPT, and Garth Kellogg Summers, OMS V.

1. a. Using the technique illustrated in the article is that it avoids painful guarding.

2. d. According to the article, venous and lymphatic congestion in the tissues can cause upper extremity paresthesia.

3. b. The technique in the article may be performed by clinicians who are not licensed osteopathic physicians.

4. b. Per the article, an infrequent number of patients developed ipsilateral latissimus dorsi counterstrain point.
Osteopathic Manipulative Treatment for Nausea and Vomiting Following Fine Needle Aspiration of the Neck

Nicklaus J. Hess, DO

Abstract
A 47-year-old woman underwent ultrasound-guided fine needle aspiration of an enlarged lymph node located in the right side of her neck. During this procedure, she began to experience nausea with vomiting, and later, she was hospitalized for intractable symptoms.

Upon discharge, the patient required scopolamine to control her symptoms. She followed up with her primary care provider in an outpatient family medicine clinic, and somatic dysfunction was appreciated on her osteopathic structural exam. It was postulated that the patient’s symptoms had originated from vagal irritation sustained during the biopsy. Following osteopathic manipulative treatment (OMT), her nausea and vomiting resolved 4 days later, and she no longer required pharmacologic therapy for symptom management.

This case report suggests a potential role for somatic dysfunction and the application of OMT in suspected vagally mediated nausea and vomiting.

Case Presentation

Patient History
A 47-year-old Caucasian woman underwent an ultrasound-guided fine needle aspiration of an enlarged lymph node in the right side of her neck, which was later found to be benign. Lidocaine was injected as a local anesthetic. During the biopsy, the patient experienced intense nausea followed by vomiting. She presented to the hospital 2 days later, and she was admitted for 4 days.

The patient’s notable medical history included gastroesophageal reflux disease, dysphagia with regurgitation related to stricture and resolved with dilation, asthma, sleep apnea, and endometriosis. Her surgical history included gastric bypass surgery, cholecystectomy, abdominal hernia repair, and laparoscopy for endometriosis. The patient also had a history of smoking one half to a full pack of cigarettes daily for 20 years.

Upon admission, the patient was given intravenous promethazine (12.5 mg every 4 to 6 hours as needed) and pantoprazole (40 mg every 12 hours). She also was prescribed polyethylene glycol (17 g daily) and docusate sodium-sennosides (50/8.6 mg, 1 or 2 tablets by mouth, 1 or 2 times per day as needed) for constipation.

The patient demonstrated an inability to tolerate oral intake, and she underwent gastrointestinal endoscopy on day 4 of admission using IV sedation via a monitored anesthesia care protocol. A small hiatal hernia and a 1.5 cm–deep clean-based gastric ulcer in the anastomosis that was not actively bleeding were revealed. A 56-French Maloney dilator was used to dilate the esophagus. The patient was then discharged home on pantoprazole (40 mg by mouth 2 times per day for 30 days), which she continued, and ondansetron (4 mg rapid dissolving tablet every 6 hours as needed), which she discontinued due to ineffectiveness.

This patient was established with an ambulatory residency training facility, and she was seen 1 day after discharge by an osteopathic family medicine resident. She was provided with scopolamine 1.5 mg transdermal patches, and she was instructed to apply 1 patch every 3 days as needed for persistent symptoms.

(continued on page 13)
(continued from page 12)

The patient was seen 11 days later at the same facility by her primary care provider, who is an osteopathic family physician and attending with the family medicine residency. The scopolamine patches had controlled her symptoms, but she was unable to stop the medication without her symptoms returning. Her osteopathic structural exam revealed somatic dysfunctions, and she was treated with osteopathic manipulation as presented in the Table.

**Osteopathic Manipulative Treatment**
Somatic dysfunctions present on structural examination and pertinent osteopathic considerations were used to determine an appropriate patient-centered treatment plan.

### Table. Osteopathic structural exam and treatment

<table>
<thead>
<tr>
<th>Region</th>
<th>Description of dysfunction(s)</th>
<th>Description of treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head</td>
<td>Restriction of the occipital condyles and occipital sinus</td>
<td>Occipital sinus drainage: Fingers were placed from the inion to the suboccipital tissues with steady pressure until a release was felt.¹</td>
</tr>
<tr>
<td></td>
<td>Right suboccipital muscular tension</td>
<td>Condylar decompression: Condylar processes were approximated with index and middle fingers while cephalad and lateral force was used at the base of the occiput to facilitate a release.¹</td>
</tr>
<tr>
<td></td>
<td>Decreased cranial motion</td>
<td>Occipitoatlantal articulation: Middle finger contact was made with the posterior tubercle of the atlas while the head was maintained in flexion to allow intrinsic forces to correct any strain present.³</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Compression of the fourth ventricle: Thenar eminences contacted the lateral angles of the occiput medially to the occipitomastoid sutures; medially directed compression was applied during the extension phase of primary respiration while the flexion phase was resisted; a still point was reached; and flexion and extension phase were equally supported once cranial motion was restored.³</td>
</tr>
<tr>
<td>Neck</td>
<td>Right cervical paraspinal muscle tightness</td>
<td>Cervical spine soft tissue: Hands were placed on the neck to assess for paravertebral tension; pressure was applied in an attempt to restore balanced motion of cervical tissues; and force was held until relaxation was appreciated.¹</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cervical spine ligamentous articular release: Anterior and superior pressure were applied to the dysfunctional segments with finger pads; compression was provided by the thenar eminences at the occiput and tentorium cerebelli; a release occurred; and there was balance between the positions of monitoring.³</td>
</tr>
<tr>
<td>Thoracic</td>
<td>Bilateral thoracic paraspinal muscle tightness</td>
<td>Thoracic spine soft tissue: Finger pads and thenar and hypothenar eminences were used to contact and balance hypertonic thoracic paraspinal musculature bilaterally by engaging local tissue forces and adapting contact based on individual freedom of motion at each level.¹</td>
</tr>
<tr>
<td>Rib</td>
<td>Sternum restriction</td>
<td>Sternum ligamentous articular release: Using the heel of the hand, the manubrium was contacted and shifted posteriorly and inferiorly until a point of balanced tension was achieved.³</td>
</tr>
<tr>
<td></td>
<td>Thoracic inlet restriction</td>
<td>Thoracic inlet myofascial release: One hand was placed beneath the patient and the other hand on the patient’s chest in a transverse fashion at the level of the first and second ribs; and anterior and posterior translation, superior and inferior translation, rotation, and sidebending tissue preference was used to treat indirectly.³</td>
</tr>
<tr>
<td></td>
<td>Thoracoabdominal diaphragm restriction</td>
<td>Rib-raising: Rib angles were contacted with finger pads, and traction was applied until ease within the tissue was appreciated.³</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Thoracoabdominal diaphragm release: Hands were placed on the thorax at the level of the diaphragm with thumbs angled toward the xiphoid process; restriction was addressed indirectly using respiration as an activating force until a release was felt and balanced diaphragmatic excursion was appreciated.³</td>
</tr>
<tr>
<td>Abdomen</td>
<td>Celiac, superior mesenteric, and inferior mesenteric ganglion tissue texture abnormalities</td>
<td>Linea alba myofascial release: Fingers were placed perpendicular to the abdomen, bridging the xiphoid process and the umbilicus, and tissue tension was exaggerated until the region satisfactorily released.³</td>
</tr>
</tbody>
</table>
the jugular foramen, which could have been impacted by suboccipital restriction. Lastly, compression of the fourth ventricle was executed to provide balance to the cerebrospinal fluid circulation.

The patient may have been particularly affected by this treatment because the vagus dorsal motor nucleus is located on the floor of the fourth ventricle as is the chemoreceptor trigger zone.

It also was crucial to address the psychosocial barriers to health relevant to this patient’s experience, including her frustration with her recent hospitalization and the inability of the treatment team to discover the cause of her symptoms, the loss of wages from her time spent hospitalized, and her continued symptoms seemingly unresolved by medical therapy. These factors were managed by partnering with the patient and participating in shared decision-making as health was pursued.

Results
After a single session of OMT, the patient returned for a follow-up appointment 14 days later. She reported that her nausea and vomiting resolved 4 days after the treatment. She had discontinued the scopolamine patches, but she continued the pantoprazole, as it had been prescribed previously and was one of her chronic medications.

Comment
The first consideration made when approaching this clinical case from an osteopathic perspective was to determine the role of somatic dysfunctions in affecting the body’s capacity to react to the disease state. This was accomplished by assessing the tissue for an osteopathic diagnosis, providing individualized treatment, and following the response of the patient’s body to the treatment and the impact it had on the disease.

Evaluation of somatic dysfunctions was significantly enhanced by recognizing parasympathetic, sympathetic, lymphatic, biomechanical, and psychosocial factors pertinent to this case.

Particular attention was paid to the parasympathetic autonomic nervous system, for it innervates visceral organs and blood vessels of the head, neck, thorax, abdomen, and pelvis. Cranial nerve X, the vagus nerve, is responsible for parasympathetic innervation of the gastrointestinal tract to the level of the splenic flexure within the transverse colon.

The vagus, which comes from the Latin word vagari and means wandering, originates from 8-10 rootlets located in the ventrolateral medulla, exits the cranium through the jugular foramen, and

(continued from page 13)
extends throughout the body. Fibers originating in the nucleus ambiguous of the medulla innervate the pharynx, larynx, and skeletal muscle of the esophagus, while other fibers travel into the superior mediatinum along the mediastinal wall and course posteriorly to the lung, where branches innervate the cardiac, pulmonary and esophageal plexuses. Affenter fibers can contribute to vomiting by way of mechanoreceptors and chemoreceptors present in the oropharynx, esophagus, stomach, and upper part of the small intestine. Once activated, these receptors initiate the vomiting response by stimulating the chemoreceptor trigger zone present in the area postrema, which is situated along the caudal wall of the fourth ventricle within the medulla.

In addition to understanding relevant parasympathetic innervation, sympathetic, lymphatic, and biomechanical factors were evaluated. It was important to recognize that esophageal and stomach sympathetic innervation exists from T1 to T9 and T5 to T9 respectively. Additionally, it was valuable to identify that the celiac, superior mesenteric, and inferior mesenteric plexuses, which are interconnected abdominal autonomic plexuses, contain both sympathetic and parasympathetic fibers.

Considering that somatic dysfunctions can impair lymphatic circulation in a patient presenting with nausea and vomiting, the following regions were assessed: thoracoabdominal diaphragm, thoracic inlet, suboccipital triangle, tentorium cerebelli, and diaphragma sellae. Somatic dysfunctions of postural and spinal elements were analyzed, particularly within the cervical and thoracic spine, because restriction in these regions can limit overall range of motion and impair normal body functioning.

Psychosocial factors were addressed due to the direct influence they can have on the health of an individual. Furthermore, osteopathic physicians are uniquely trained and qualified to address such psychosocial factors when it comes to patient care as demonstrated by Carey and associates. Osteopathic physicians display distinguishing approaches to communication especially with regard to psychosocial considerations, which can potentially contribute to a more complete, comprehensive, and holistic patient experience focused on a strong patient-physician relationship that respects patient emotions.

It is recognized that there could have been other factors impacting the patient’s presentation and symptoms. For example, lidocaine administered prior to the patient’s biopsy could have triggered her nausea and vomiting, and healing of her ulcer discovered on endoscopy with the assistance of medication could have impacted her recovery. However, considering the proximity of the procedure site to the anatomical course of the vagus nerve, and the timing of symptom onset, it was hypothesized that the etiology of the patient’s nausea and vomiting was influenced by somatic dysfunction originating from vagal irritation sustained during an ultrasound-guided fine needle aspiration.

It is accepted that trauma to the neck causing injury to the vagus nerve can result in symptoms such as dysphagia, hoarseness, dysphonlia, or even aphonia and inspiratory stridor. Unfortunately, there is limited literature available that reports the incidence and treatment of nausea and vomiting after ultrasound-guided biopsy of the lateral neck. Therefore, this case report suggests the potential benefit of recognizing somatic dysfunctions and utilizing osteopathic manipulative treatment in the setting of nausea and vomiting following fine needle aspiration of the neck.

**Conclusion**

This case report presents a patient who developed intractable nausea and vomiting soon after undergoing ultrasound-guided fine needle aspiration of the neck and whose symptoms resolved 4 days after the somatic dysfunctions were resolved.

The patient’s symptoms resolved completely, and scopolamine was no longer required. It was suggested that vagal irritation resulting in somatic dysfunction contributed to the maintenance of the patient’s symptoms until osteopathic manipulation was provided.

The results of this case report propose a role for somatic dysfunctions and the implementation of OMT in the evaluation and management of suspected vagally mediated nausea and vomiting.

**References**


(continued on page 25)
Management of Non-Tropical Sprue: Medical vs Osteopathic

Doran A. Farnum, DO

Among the mysteries occasionally confronting a busy general practitioner, one of the most baffling is non-tropical sprue. It is also known as celiac disease, idiopathic steatorrhea, malabsorption syndrome and steatorrhea syndrome.

According to Cecil and Loeb: “The term sprue apparently derives from the Dutch word ‘sprouw,’ meaning aphthous stomatitis which was first used by Katelaer in 1669 to designate an illness characterized by sore mouth and voluminous stools. The first description of sprue in 1766 is credited to an Englishman, William Hillary, in the Barbados, but it was not until 1880 that the publications of Sir Patrick Manson in China and Van der Burg in Batavia clearly identified sprue and awakened widespread scientific interest in the disease. The extensive studies of Thaysen in 1932 led to more frequent recognition of sprue in temperate climates and pointed to the underlying identity of tropical sprue, non-tropical sprue and celiac disease.”

According to Wollaeger and Green: “The essential features of this syndrome are the signs and symptoms of abnormal intestinal function, such as diarrhea, flatulence and loss of weight, plus the manifestations of associated nutritional-deficiency states that are usually present, such as anemia, hypoproteinemia with edema and osteomalacia. There is good evidence to show that non-tropical sprue in adult patients is the same as celiac disease in infants and children. Probably also tropical and non-tropical sprue are closely related. The term ‘non-tropical sprue’ seems preferable to ‘idiopathic steatorrhea’ or ‘malabsorption syndrome’ as a designation for this disease.”

But according to Comfort and Wollaeger: “The impairment of absorption in non-tropical sprue, contrary to early beliefs, affects all nutrients, including fat, protein, carbohydrates, vitamins, minerals and even water. Although steatorrhea is an easily recognized characteristic feature of this disease, the fecal content of nutrients other than fat is also increased. For this reason the terms ‘idiopathic steatorrhea’ and ‘steatorrhea syndrome’ are not satisfactory designations for non-tropical sprue.”

The essential features of non-tropical sprue are the signs and symptoms of abnormal intestinal function, such as diarrhea, flatulence, loss of weight and muscular weakness, plus the manifestations of associated nutritional-deficiency states that are usually present, such as microcytic or macrocytic anemia, hypoproteinemia with edema, glossitis and osteomalacia. This disease is not only of malnutrition but also a disease of malabsorption.

(continued on page 17)
Diagnosis
The standard medical diagnosis of non-tropical sprue is made by clinical signs and symptoms, x-ray examination of small intestines and stool examinations. In the x-ray examination, it is found that the small bowel is dilated; the mucosal markings are thickened; the contours of the lumen are smooth; the usual markings of the valvulae conniventes are obliterated; barium is clumped in elongated masses, and after the bulk of the opaque meal has passed, remnants of barium adhere to the walls, giving it a peculiar flecked appearance.

Non-tropical sprue must be differentiated from pancreatic steatorrhea, nonspecific granulomatous gastroenteritis (regional enteritis), Whipple disease, steatorrhea complicating diabetes mellitus with neuropathy, amyloidosis and scleroderma, lymphosarcoma and other tumors involving the small intestines and tropical sprue.

Pancreatic Steatorrhea
The steatorrhea usually develops after years of recurring attacks of abdominal pain characteristic of recurrent acute or subacute pancreatitis. It is a late development which indicates extensive destruction of the pancreas. Concomitantly with the development of steatorrhea, pancreatic calcification or diabetes, or both, appear and serve to locate the pathologic process in the pancreas.

Nonspecific Granulomatous Gastroenteritis (Regional Enteritis)
Careful roentgenologic examination of the small bowel usually will establish the diagnosis and should be carried out in every case of sprue-like syndrome. Fever, abdominal pain, tender masses and fistulas also serve to distinguish regional enteritis from non-tropical sprue. Other types of chronic enteritis, particularly tuberculosis, may produce steatorrhea and must be considered in the diagnosis.

Whipple Disease
Whipple disease is a rare condition which produces a sprue-like syndrome. The principal findings are voluminous fatty stools, pigmentation, arthritis and loss of weight. It may be suspected as the cause of the syndrome when arthritis is associated and in some instances when an abdominal mass is present. The diagnosis of Whipple disease may be proved by demonstration of the characteristic microscopic pathologic findings on biopsy of the wall of the small intestine and mesenteric lymph nodes.

Steatorrhea Complicating Diabetes Mellitus With Neuropathy
Severe, long-standing diabetes mellitus associated with neuropathy sometimes produces a sprue-like syndrome presumably by involvement of the nervous mechanism of control of the intestinal tract. The simultaneous occurrence of lesions of the autonomic and peripheral nerves in a case of long-standing severe diabetes mellitus with fatty diarrhea permits a ready diagnosis.

Amyloidosis and Scleroderma
Amyloidosis occasionally involves the small bowel and produces a sprue-like syndrome. It is suspected when the disease involves multiple organs (heart, liver, skin, intestinal tract, kidneys and others) and is proved by the Paunz test or biopsy of an involved organ with demonstration of amyloid by the appropriate staining procedures.

Scleroderma is another widespread disease which may occasionally involve the small intestine and cause steatorrhea. Because of the skin and joint manifestations as well as the evidence of anatomic and functional change in the esophagus, this disease usually is not difficult to recognize.

Lymphosarcoma and Other Tumors Involving the Small Intestine
Lesions of this type may produce a clinical picture closely simulating sprue and are not always detectable even on careful roentgenologic examination of the small bowel. The clinical course of the patients with such lesions is likely to be more progressive and the response to treatment not as satisfactory as that of most patients with non-tropical sprue.
(continued from page 17)

Tropical Sprue
It is possible, as some observers believe, that tropical and nontropical sprue are the same disease occurring in different climatic belts of the world. Reports in the medical literature indicate that certain differences exist between them, however, among these are the following differences:

1. Tropical sprue in some parts of the world has a seasonal incidence and tends to occur in certain geographic regions in the tropics where it may affect many inhabitants at the same time. It often develops in a relatively abrupt manner and runs a rapid course. Non-tropical sprue, on the other hand, is less common, occurs sporadically, has no seasonal or geographic incidence, and is usually a chronic and insidious disease.

2. In most cases of tropical sprue reported, a macrocytic anemia indistinguishable from pernicious anemia is present and is associated with megaloblastic bone marrow. Although, macrocytic anemia is found commonly in non-tropical sprue, it only occasionally presents the characteristics of pernicious anemia and may not be associated with megaloblastic marrow.

3. Most patients with tropical sprue give a history of inadequate ingestion of food, particularly of protein. Among patients with non-tropical sprue such a history is the exception rather than the rule.

4. Evidences of vitamin D deficiency such as osteomalacia and tetany are rarely reported among patients with tropical sprue but are common in the non-tropical variety.

According to Comfort and Wollaeger, the complete medical treatment of non-tropical sprue consists of:

Treatment of non-tropical sprue over the years has proved difficult. Although some patients who adhere closely to a careful program of treatment may get along satisfactorily for many months or years, intake-excretion studies carried out when they are in remission seldom if ever disclose entirely normal absorption of fat. Also, any deviations from the regimen of treatment, particularly dietary indiscretions, are likely to cause a flare up of symptoms. … Dependence should not be placed on a single therapeutic measure. Instead, in the absence of a specific remedy, a regimen should be chosen which is based on knowledge of the pathologic physiology of the disease and is designed to avoid irritating or overburdening the malfunctioning bowel, as well as to compensate for malabsorption and to overcome deficiency states. One general measure is avoidance of over expenditure of nervous and physical energy. A period of rest in bed during exacerbations of the disease is often helpful in bringing about a remission.

The objective of dietary management is to overcome and avoid malnutrition and the protein, mineral and vitamin deficiencies. The diet should contain calories, protein, minerals, and vitamins in quantities larger than needed by the normal person to allow for losses in the feces. … It should be low in fat to avoid the irritating effects which even moderate amounts of fat produce on the gastrointestinal tracts of patients with this disease.

The foundation diet provides 130 g of protein, 55 g of fat, and 370 g of carbohydrates with 2500 calories. It also contains 1780 mg of calcium, 18 mg of iron and meets the recommended daily allowance of the National Research Council for all vitamins except vitamin A. The full diet provides 130 g of protein, 70 g of fat, 400 g of carbohydrates and 2750 calories and meets the recommended allowances in every respect. In general, the diet is low in fat and high in protein, carbohydrates and calories, and the amount of residue is restricted.
A large proportion of the carbohydrates used are those from fruits and simple sugar, fructose and glucose. The diet is varied with the person; in some cases even the foundation diet will require alteration. In others, the physician may order additions to increase the calories by increasing the fat and starch allowed, especially during remissions. In general, patients use the foundation diet during exacerbation of their disease, and additions to the diet can be made one at a time as clinical improvement occurs until a full sprue diet is being taken.

The observation ... in 1950, that children with celiac disease improved when wheat flour and rye flour were excluded from their diets, and ... that fecal fat decreased when these flours were excluded from the diet have altered the therapy of celiac disease. The clinical similarity, if not actual identity, of celiac disease and non-tropical sprue induced workers in 1954 to treat non-tropical sprue similarly. They reported that 5 of 12 patients with non-tropical sprue apparently returned to normal health on a wheat-free diet in two months. ... Encouraging results have been obtained in a few patients treated at the ... clinic, but there have also been failures. These experiences suggest the need for a critical trial of the gluten-free diet. In a disease like non-tropical sprue which has spontaneous remissions and which usually responds satisfactorily to the time-tested sprue diet outlined, it may not be easy to evaluate this new diet or to demonstrate its superiority over diets now commonly in use. Since the gluten-free diet imposes considerable restriction on the patient and entails the use of special recipes for wheat and rye substitutes, superiority must be clearly demonstrated before the diet can be prescribed routinely for all patients with non-tropical sprue. It may be found useful in the treatment of certain patients who do not respond favorably to the usual measures.

Each patient should receive at least one multiple vitamin capsule daily. If evidence of vitamin deficiencies exists, large additional doses of the several vitamins may be given.

Because of the frequency with which osteomalacia develops in non-tropical sprue, the oral administration of calcium lactate in doses of 4 g (1 dram) 3 times per day along with suitable prophylactic doses of vitamin D is recommended for all patients. For patients with known osteomalacia, larger doses of calcium lactate, as high as 12 g (3 drams) 3 times per day and even higher, and also larger doses of vitamin D are necessary. For the treatment of active tetany the intravenous use of calcium gluconate is helpful.

The frequency of potassium deficiency and the probability that hypokalemia is one of the common causes of death in non-tropical sprue emphasize the need for adequate replacement therapy by the oral, and if necessary, by the intravenous route during episodes of diarrhea. Intravenous infusions of 5% dextrose in isotonic saline solution are helpful in the management of patients with water and electrolyte imbalance associated with exacerbations of the disease.

Iron deficiency anemias when present can sometimes be corrected by the oral administration of ferrous sulfate or other iron-containing compounds. However, many patients do not tolerate such medication, and in those who do, the response of the anemia to their administration is often disappointing. Even when iron is administered parenterally, the anemia of some patients thought to be due to iron deficiency is not corrected. On occasions blood transfusions are helpful in controlling intractable anemia and severe hypoproteinemia or in rehabilitating seriously ill patients. Although the effects are often temporary, the administration of serum albumin in some instances has seemed to improve the patient’s general condition and bring about a remission of symptoms which have persisted for long periods. This type of therapy has also been of use in the control of severe and persistent tetany which does not respond readily to the administration of large doses of calcium and vitamin D.

Cortisone, hydrocortisone, and their analogues, prednisone and prednisolone, as well as corticotropin (ACTH) exert a beneficial effect when administered to patients with non-tropical sprue in relapse. Both subjective and objective improvement are observed. Stools decrease in number and become more normal in consistency; appetite and strength improve, and symptoms of abdominal cramping and distention become less marked or even disappear. The amounts of solids, water, fat, and nitrogen in the feces decrease, and the prothrombin time returns to normal. Fecal loss of potassium is decreased, but its urinary excretion is increased, and the serum level may be further depressed. Sodium and chloride are retained at least initially during treatment with cortisone with increased positive balances and elevation of serum values. Rebound occurs when the use of cortisone is discontinued. Values for serum calcium may increase toward normal; fecal losses may decrease, and positive balance may be exhibited, but in some cases hypocalcemia has become more marked in spite of treatment with hormones, indicating the necessity of continuing administration of calcium and vitamin D as an adjunct to cortisone.
(continued from page 19)

therapy. Untoward symptoms, including hypertension and edema, occur when the hormone is given in large doses.

The authors’ experience with steroid therapy in non-tropical sprue has been confined almost exclusively to the use of cortisone acetate administered orally—a route which has been found more effective than parenteral injection. Cortisone is not used to replace the usual methods of treatment, such as diet, rest, and the administration of vitamins and minerals, but rather to supplement them and help establish a remission in patients who are severely ill and whose symptoms do not respond readily to ordinary measures.5

In my opinion, non-tropical sprue is more a disease of malabsorption rather than one of malnutrition. The body does not only fail to digest fats but also fails to digest proteins. Stool examinations show an excessive loss of protein as well as fat. Even though the patient has a normal ingestion of proteins, there is loss of muscle tone and muscle strength, as well as loss of weight. I feel that many cases of non-tropical sprue are subclinical in nature and are not diagnosed. One step further in their development and they could be diagnosed as such. I believe this disease exists in a pre-clinical state, asymptomatic except from occasional isolated symptoms not referable to a specific syndrome. The patient may have only the flatulence and loss of weight with an occasional diarrhea, but not of the voluminous, frothy type; or he may have weakness and loss of weight with an increase in the number of bowel movements per day without diarrhea. Osteopathic management of both classical and subclinical non-tropical sprue provides the physician with the only effective approach to these conditions. Classical medical management is, for the most part, symptomatic, palliative and temporary. To exemplify this opinion, I shall present a detailed case history which was treated both medically and osteopathically.

Case History

In April 1959, a white, asthenic, 44-year-old female consulted me because of a condition that has been diagnosed as non-tropical sprue. She was 5 feet, 2 inches tall, weighed 116 pounds, and looked worried and apprehensive. She had had this condition for about 4 years.

In February 1954, the patient had gone to a doctor complaining of voluminous, frothy stools once a day, but occasionally 2 to 4 times a day. She had constant pain across the lower abdomen, similar to intestinal flu. She had had a loss of weight from approximately 118 pounds to below 100. She was hospitalized for 3 days for a complete examination in March 1954. A complete blood and urine examination was made; various liver tests were done, as well as an x-ray examination including GI, colon, and gall bladder series. These 2 studies were inconclusive.

In April 1954, the patient was hospitalized in a second hospital where a complete blood and urine examination, as well as a stool examination and liver tests were made. Another complete x-ray examination was also made. Her condition was diagnosed as non-tropical sprue.

Conventional Medical Treatment

The treatment prescribed consisted of liquid vitamin B complex, a vitamin-mineral tablet, high protein concentrate and vitamin B12 injections.

A rigid diet was prescribed consisting of beef, chicken, lamb and liver, and baked potatoes (no skins, butter or gravy). Vegetables allowed were beets, carrots, peas, green beans, and squash. No fats, wheat products, cabbage or vegetables from the cabbage family, onions, melons, raw fruits—except bananas, strawberries and peaches—no pork and no coffee were permitted. Tea and Sanka were allowed.

The patient improved over a 2 1/2-year period, with some remissions. During this time, she had periodic examinations.

In March 1957, the patient suffered a severe flare-up of the bowel condition and was re-hospitalized, and another complete examination was made, including gastric analysis. She was found to have a non-functioning pancreas and achlorhydria. Pancreatin and hydrochloric acid were given. She was also instructed to stay on her other medication and diet. She was much improved for 1 week and then, suddenly, became much worse.

The patient was sent to Mayo Clinic for a complete examination and evaluation. They found that the pancreas was functioning normally and she had normal gastric acidity. From a very complete x-ray examination of the small bowel, where every inch of the small intestine was fluoroscopyed and x-rayed, they found nothing except an extremely overactive digestive tract. She was told it was due entirely to nerves and was given a prescription of Belladonal and vitamin K. She improved to some extent but still had recurrences of the bowel condition, where the bowel movement was voluminous, frothy and liquid, and left her with extreme weakness.

In March 1958, the patient developed a swelling and rash of both legs. She was again hospitalized, and a diagnosis of drug allergy, *Information gained from lecture by Mitchell.
probably due to the Belladenal, was made. The Belladenal was withdrawn, and she was given an antihistamine and cortisone. She improved slowly, and returned home after 4 days, but was instructed to stay off her feet for at least 2 weeks. The swelling and rash disappeared completely, with time, and she continued to improve slightly, but had flare-ups of the bowel symptoms. All this time she continued vitamin B complex, vitamin K and the prescribed diet. She complained of an empty, weak feeling, having to eat 5 times a day, and having to rest an hour and a half every afternoon in order to do the barest of her house work. Heart, lungs, blood pressure, pulse, CBC and urinalysis were normal.

**Osteopathic Treatment**

Osteopathic structural examination revealed pelvic imbalance, a combination of symphyseal, sacroiliac and iliosacral lesions.

In this case, the pelvis was balanced first, using Mitchell’s technique as described in the Academy of Applied Osteopathy Yearbook 1958. Care was taken to correct the lesions in their proper order: symphyseal, sacroiliac, and iliosacral. The imbalance of all 6 groups of the thigh muscles was equalized—adductors, abductors, hamstring, external and internal rotators, and quadriceps. Intermittent muscle resistance, according to Ruddy, was used to reestablish them to a state of bilateral balance so the muscles were of equal length and strength. Since the iliosacral lesion is caused by forces from below upward into the sacroiliac joint, it is quite logical that when the leg muscles are not equal in length they do not exert equal pull on both sides of the pelvis to which they attach. I’ve found this lesion to occur more frequently than the others.

Attention was given next to the lumbar curve which was a lateral curve to the left with the bodies of the vertebrae rotating into the convexity. The bottom of the curve began to break over at the level of L4 and L5. In examining this part of the problem, the body of L4 was found both laterally flexed and rotated to the left. Correction was made with the patient sitting in forward bending and the spine was both laterally flexed and rotated to the right, carrying L4 into the corrective position until the restrictive barrier was reached. The patient was then instructed to push back and up for 3 intermittent efforts; each time lateral flexion and rotation were increased as the tissues released. Fryette’s principles were used for the easy-normal correction. However, the method of application was one of guiding with the use of muscular energy as the initiating force. The lower lumbar lesion is important, as it is at the level of the posterior colon reflex (3-5L).

The accommodative scoliosis apexed at T9, T5 and C7. Derotation of these curves was accomplished with the same type of technique as was used in the lumbar curve apex.

In the lower cervical area, C7 was rotated posteriorly to the right in easy normal. There was involvement in the upper cervical spine with lesions of C1, C2, and C3 which I felt could possibly have been interfering with the vagus distribution to the small intestines.

The vagus arises from the medulla oblongata and passes down through this area. Contraction and congestion of tissues in the upper cervical area could conceivably interfere with its normal function. I feel that it did, as the small intestine function improved with cervical functional improvement.

The paravertebral tissues along with the entire spine were contracted. These structures were given attention, bilaterally, with direct fascial technique as described by Ida P. Rolf.*

The 4th, 10th, 11th and 12th ribs on the left were lesioned in inspiration, as was the 1st rib on the right. These were corrected with a guiding type of technique using respiration as the intrinsic force.

The viscerosomatic reflexes of the colon were palpable, as were those of the small intestines. The colon reflex centers are on the

(continued on page 22)
(continued from page 21)

anterolateral aspect of both thighs, and extend from the greater trochanter down to approximately 1½ inches above the knee. An interesting point is that these reflexes are located in inverse position. The ascending colon reflex center starts at the right greater trochanter, and, as you go down the thigh, the reflex influence moves up toward the hepatic flexure and the right transverse colon. On the left side, the same is true of the descending colon moving up to the splenic flexure and the left side of the transverse colon as you go down the left thigh. Shotty plaques were felt along the anterolateral border of each thigh. These plaques vary in size and shape. They may be small, the size of a pea, or they may be stringy masses 1 to 5 or 6 inches long. These plaques were extremely tender and painful to touch. Of interest was the fact that as symptomatic changes of improvement occurred (fewer stools and less discomfort) there was notably palpatory change in the anterior colon reflexes. They decreased in size and tenderness.

The anterior reflex centers of the small intestines are located at the anterior end of the 9th, 10th, and 11th intercostal spaces. The posterior reflex centers of the small intestines are between the tip of the spinous process and the transverse process on both sides of the 9th, 10th and 11th vertebral. The anterior small intestine reflexes were palpable bilaterally, and were extremely tender. Posteriorly there seemed to be a thickening of the tissues in the reflex area, which were very sensitive. By steady pressure and slow rotary motion of the index or middle finger, I was able to break through the somatic manifestations in the tissues and interrupt the flow of sensory impulse. Usually the anterior reflex centers are used to diagnose as well as treat; while the posterior centers are for treating only. As improvement occurred, similar change was noted in the small intestine reflexes, as in the colon reflexes. Due to the extreme tenderness in both the small intestine and colon reflexes, very light pressure was used. As tolerance allowed, deeper pressure was exerted, until all palpable and tender reflexes were obliterated. There was steady improvement throughout the treatment program.

Complete understanding of the osteopathic lesion complex has not been comprehended, and the possibility that it will be understood soon is doubtful. We do know that the closer we can come to establishing total functional integrity, the greater the chance of achieving the goal of health. We must evaluate and treat the patient as a whole if we are to return it to normal function.

Discussion
The research work being carried on at Kirksville, and reported by Korr, sheds some light on the relationship between the somatic and autonomic nervous system. Correlation has been shown between what is clinically known as the “osteopathic lesion” and demonstrable “physiologic lesions.” The basic triad of nervous function (sensory, motor, and autonomic) has been under study. Related patterns of variation in sensory, motor, and autonomic activity were discernible in various segmental levels. Some understanding of the nature of the process by which organized related patterns of the sensory, motor, and autonomic systems was developed. In order to further understand mechanisms, patterns and pathway processes, and pathways of interchange between somatic and autonomic, anatomic studies have been set up. That the eventual finding will prove the somatovisceral reflex, I have no doubt; for clinically it has been proven thousands of times.

An excellent article by Allan Eggleston entitled “Differential Diagnosis of the Cervical and Upper Thoracic Area” brings out in its preliminary remarks the futility of thinking of disease by eponyms, and the many other names that in no way indicate the physiologic disturbance. Eggleston quotes Korr frequently, such as these shining examples: non-tropical sprue, arthritis, “flu,” lumbago, slipped disc, labyrinthitis, et cetera, et cetera, to emphasize his points, both as to diagnosis and effectiveness of the biomechanical approach.

“Familiarity with the segmental relationships and their variations provides a tool for accurate differential diagnosis on a remarkably broader basis than that provided through the concept of the single etiologic factor.

“The great splanchnic nerve is formed by the preganglionic fibers of the fifth, sixth, seventh, eighth, and ninth white rami, which in conjunction with the vagus forms the celiac plexus. The balance of influence of the sympathetic and parasympathetic effects through the celiac plexus determines the activity of the gastrointestinal tract, the liver, pancreas, spleen, kidney and bladder. The adrenal medulla receives innervation through a preganglionic sympathetic fiber.

“Lesioning of a spinal segment causes excessive activity of the sweat glands supplied by the sympathetics of that segment. This was clearly demonstrated in the Kirksville Laboratory when a subject under climate-controlled conditions, at physiologic and physiologic [sic] rest was shown to have over ten times as many active sweat glands in a dermatome supplied from a lesioned segment as in a dermatome supplied from a non-lesioned segment. Any stimulation of the subject by pain, pressure, thermal or psychic stimuli caused an explosive response in the facilitated dermatone while

(continued on page 23)

*Owens’ terminology for tissue change at reflex center.
the non-facilitated paralleled area showed but minimal increase of activity.

“It is logical to assume that the same excessive stimulation or excessive inhibition (depending on the sympathetic function in the involved tissue) will follow in the viscera and endocrines in the presence of biochemical stress. If this be so, a careful analysis of the spinal pattern, evaluated by knowledge of the sympathetic distribution and effect, provides a means of differential diagnosis peculiar to this profession alone.”

At the level of T9 and T10 through the celiac ganglion comes the sympathetic nerve supply to the small intestine. From the floor of the 4th ventricle comes the 10th cranial nerve which also enters the celiac plexus to supply the parasympathetic nerves to the small intestines. From the sacral division come the parasympathetic nerve supply to the colon. With disturbance of the small intestines, how else can you approach the management but by treating the whole patient?

From these anatomical considerations it becomes obvious that pelvic imbalance related to faulty lower extremity mechanics not only acts as a primary source of disturbed autonomic function, but also provides the basis for an accommodative scoliosis (apexing, for example, at T9 or T10, again at T5, C6 or C7, and eventually influencing articular function at the base of the skull or higher).

As the spinal biomechanical state returns to normal, the following was observed by Louisa Burns: “Normal tone and elasticity return after the lesions have been corrected. … As the normal spinal relations are maintained, the digestive tracts return more and more rapidly to normal.”

The treatment of Chapman’s Reflexes proved to be an important factor in speeding the recovery of the patient with non-tropical sprue. Their use would be an important factor in treating the whole patient in many conditions. To better understand a viscerosomatic reflex, I will quote from a lecture by Mitchell on this subject:

“Viscerosomatic reflexes were first described by Chapman in the early 1920s and later by Owens, who wrote the book An Endocrine Interpretation of Chapman’s Reflexes in 1927.

“Viscerosomatic reflexes deal with the circuit movements in the autonomic nervous system. There are definite areas of the body that influence the viscera of the body. These areas are not only used in making a diagnosis but are also used in treatment.

“A reflex arc is still one of the marvels of biology. It is a two-way street and may operate in one direction on one occasion and in the opposite direction, or both directions at another time. The purpose of viscerosomatic reflex treatment is the breaking of the reflex arc circuit movement. This is one of the major premises of medicine today through drugs. We are trying to do the same thing through manipulation rather than by medication.

“The anatomical basis of Chapman’s Reflexes is that the cells of origin are connected with the white rami communicantes and go to the lateral chain ganglia which are at the sides of the vertebrae and are distributed to all smooth muscle, to all tissue, all cardiac muscle and go via the main nerves, such as the cardiac, splanchnic, etc. They also go over the gray rami communicantes and then through the central division of the autonomic nervous system. It is at termination of these nerves, at the intercostal spaces and..."
other areas, where we pick up the ganglioform contractions. Chapman’s Reflex is called a receptor organ in the lymphoid tissue. The conclusion reached is that the visceral pathology sets off a flow of sensory impulses via the sensory autonomic to the related segments of the spinal cord. The synapse to the lateral horn cells have motor impulses to both the viscus and somatic part relayed by the gray rami communicantes.”

**Conclusion**

Since this paper is a discussion of the treatment of a case of non-tropical sprue, both medically and osteopathically, I feel it should be repeated that the patient recovered completely under osteopathic care and received only temporary symptomatic relief under medical care.

There are many and varied ideas as to exactly what non-tropical sprue is, what causes it, and how it should be treated. I feel that non-tropical sprue is a separate and distinct entity with definite clinical signs and symptoms except as set forth earlier in this paper. As non-tropical sprue, in my opinion, is a disease of malabsorption of proteins and fats, and probably carbohydrates, vitamins, minerals, and water as well, inquiry must be made into the causes of such disordered intestinal function. The means whereby intestinal homeostasis was disturbed is clearly indicated by the researches of Korr, and others, which we have previously considered in this paper. The manifestations of the disease follow logically, once the basic pathology is grasped. Thus, the stresses of daily physical fatigue, emotional affective states, and generalized inanition took their toll on the neurological segments which were “facilitated” by the postural strain pattern which the patient manifested.

This idea is substantiated by investigations at the Kirksville College and reported by Korr. "Investigations conducted at the Kirksville College have indicated that the musculoskeletal stress initiates, or is associated with, unbalanced streams of impulses entering the central nervous system, and that these have the effect of upsetting the delicate balance of that part of the nervous system with which the lesioned part is most directly connected. This was first demonstrated for the muscular or motor component by Denslow and his colleagues in the early 1940s. He demonstrated that the segments which are in lesion, as determined by subjective clinical criteria commonly utilized by him and many other osteopathic physicians (tissue-texture abnormality and deep hyperalgesia), were objectively distinguished by physiologic criteria of motor activity.

“Segmental motor reflex thresholds were determined by measuring, in kilograms, the amount of pressure applied to the spinous process of each segment which just evokes contraction of the para-vertebral muscles at that segmental level. Muscular contractions were detected and evaluated by electromyographic recording. Lesioned segments invariably required weaker stimuli than did non-lesioned segments. The lesioned segment was therefore said to be characterized by lowered motor reflex thresholds—the more severe the lesion the lower the threshold.

“In a later study, Denslow, Korr and Krems demonstrated the diffuse and remote stimuli, including those from the higher centers, and stimuli that occur in normal life, preferentially excited the pathways to para-vertebral muscles of the lesioned segments. Responses occurred in these segments, to impulses from many sources, while at the same time non-lesioned segments remained quiescent. Under conditions in which there was generalized muscular contraction, the activity in the lesioned segments was relatively exaggerated. The easier opening of the motor pathways in lesioned segments suggested that this was a sustained form of the phenomenon of facilitation under study in numerous neurophysiologic laboratories and that, like the experimentally induced form, it too had its origin in a sustained afferent bombardment by impulses from some segmentally located source.”

Non-tropical sprue is treated medically by a low fat, high protein diet, as well as by the use of a general vitamin-mineral product, natural B complex and vitamin B12. While this is considered a medical treatment, it is in fact only an attempt at incomplete nutritional management and not truly medicinal care. Comprehensive osteopathic management includes nutrition, both supportive and corrective, manipulative therapy to restore biomechanical integrity, and correction of the viscerosomatic component with Chapman’s Reflexes.

To summarize: Non-tropical sprue is in fact a disease of tissue starvation, secondary to the body’s reaction to disturbed biomechanics; a clinical manifestation demonstrating tissue breakdown or malfunction; a part of the greater osteopathic lesion complex.

Management is primarily one of re-establishing total body mechanics by manipulative methods, including the use of viscerosomatic (Chapman’s) reflexes to re-balance the sympathetic and parasympathetic influence on the gastrointestinal tract. Adjunctive measures are correction of dietary habits with addition of therapeutic B complex, B12 and a balanced vitamin-mineral formulation.

In conclusion, an effort has been made in this article to differentiate between non-tropical sprue and other nutritional diseases. The different methods used in diagnosing this disease have been used to show that treating only clinical signs and symptoms of non-tropical

*(continued on page 25)*
sprue, or any disease, cannot fully eradicate the ailment. With osteopathic care, the body is treated in its entirety to fully eliminate the condition. There is no other treatment for non-tropical sprue except by osteopathic means. Eggleston states most appropriately my feelings in the following quote: "I repeat my belief that there is no field of therapy in which the intelligent application of the science of osteopathy will not improve the results obtained by any other method of treatment.”

References
1. Cecil and Loeb.
4. Refer to No. 3, pp. 10-14.
7. Refer to No. 6, p. 22.
8. Refer to No. 6, pp. 22-23.

Additional Resources
Course Description
This is a basic course in visceral manipulation. Attendees will explore traditional osteopathic concepts of ventral technique, modern concepts of visceral motion, “normalization” of visceral motion through fascial planes, and treating visceral mobility and motility. Emphasis will be placed on physical examination, functional anatomy, and the anatomical relationships between the diaphragms, viscera, autonomic nervous system, vascular flow and lymphatic drainage. Attendees will come away with improved confidence in physical examination, direct and indirect approaches to visceral manipulation, and an ability to integrate visceral (ventral) techniques with spinal (dorsal) and cranial approaches.

This is an intermediate level course.

Course Times
Friday and Saturday from 8 a.m. to 5 p.m.
Sunday from 8 a.m. to noon.

Continuing Medical Education
20 credits of AOA Category 1-A CME anticipated.

Meal Information
Morning coffee, tea and juice will be provided. Lunch will be provided Friday and Saturday. If you have any special dietary needs, contact AAO Event Planner Gennie Watts before Nov. 3.

Course Location
Rowan University School of Osteopathic Medicine
42 E. Lauren Rd., Stratford, NJ 08804

Travel Arrangements
Contact Tina Callahan of Globally Yours Travel at (800) 274-5975 or globallyyourstravel@cox.net.

Registration Fees

<table>
<thead>
<tr>
<th>Registration Fees</th>
<th>On or before Sept. 5</th>
<th>Sept. 6 through Nov. 5</th>
<th>On or after Nov. 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academy member in practice*</td>
<td>$750</td>
<td>$800</td>
<td>$1,000</td>
</tr>
<tr>
<td>Resident or intern member</td>
<td>$650</td>
<td>$600</td>
<td>$800</td>
</tr>
<tr>
<td>Student member</td>
<td>$350</td>
<td>$400</td>
<td>$600</td>
</tr>
<tr>
<td>Nonmember practicing DO or other health care professional</td>
<td>$1,050</td>
<td>$1,100</td>
<td>$1,300</td>
</tr>
<tr>
<td>Nonmember resident or intern</td>
<td>$850</td>
<td>$900</td>
<td>$1,100</td>
</tr>
<tr>
<td>Nonmember student</td>
<td>$650</td>
<td>$700</td>
<td>$900</td>
</tr>
</tbody>
</table>

* The AAO’s associate members, international affiliates and supporter members are entitled to register at the same fees as full members.

Registration Form

Basic Visceral Course
Nov. 10-12, 2017

Name: ____________________________ AOA No.: ____________

Nickname for badge: ____________________________

Street address: ____________________________

City: ____________________________ State: ______ ZIP: ____________

Phone: ____________ Fax: ____________

Email: ____________________________

Credit card No.: ____________________________

Cardholder’s name: ____________________________

Expiration date: ____________ 3-digit CVV No.: ____________

Billing address (if different): ____________________________

I hereby authorize the American Academy of Osteopathy to charge the above credit card for the amount of the course registration.

Signature: ____________________________

View the AAO’s cancellation and refund policy.

Register online at www.academyofosteopathy.org, or submit this registration form and your payment by email to GWatts@academyofosteopathy.org; by mail to the American Academy of Osteopathy, 3500 DePauw Blvd., Suite 1100, Indianapolis, IN 46268-1136; or by fax at (317) 879-0563.
During this course, attendees of all experience levels will learn techniques for palpating, diagnosing and treating patients with a variety of visceral dysfunctions.

Radiological research conducted in England, France and Germany during the last 20 years provides a basis for knowing what is normal, what is common, and what is pathological in the viscera. Studies using magnetic resonance imaging, computed tomography, ultrasound, x-ray and fluoroscopy have shown that dysfunctional viscera move less than healthy viscera. Studies are just beginning to cross-correlate osteopathic diagnosis, medical diagnosis, ultrasound diagnosis pre- and post-treatment.

Attendees will learn how to diagnose and treat dysfunctions in the thorax, abdomen and pelvis using motion testing, motility, arterial and venous systems, neurological systems, the lymphatic system and emotional connections.

**Continuing Medical Education**
22 credits of NMM-specific AOA Category 1-A CME anticipated.

**Course Times**
Friday and Saturday from 8:30 a.m. to 5:30 p.m.
Sunday from 8:30 a.m. to 3:30 p.m.

**Meal Information**
Morning coffee, tea and juice will be provided each day as will lunch. Notify AAO Event Planner Gennie Watts of any special dietary needs no fewer than seven days in advance.

**Course Location**
University of North Texas Health Science Center
Texas College of Osteopathic Medicine
3500 Camp Bowie Blvd., MET – 470 Lab
Fort Worth, TX 76107

**Travel Arrangements**
Contact Tina Callahan of Globally Yours Travel at (800) 274-5975 or globallyyourstravel@cox.net.

**Course Director**
A 1994 graduate of what is now the A.T. Still University–Kirksville College of Osteopathic Medicine, Kenneth J. Lossing, DO, served an internship and combined residency in neuromusculoskeletal medicine and family practice through the Ohio University Heritage College of Osteopathic Medicine in Athens. He is board certified in both neuromusculoskeletal medicine and family medicine.

Dr. Lossing contributed to the second and third editions of the American Osteopathic Association’s *Foundations of Osteopathic Medicine* textbook as well as the upcoming fourth edition. As the AAO’s 2014-15 president, Dr. Lossing was featured in a segment of “American Health Front!” that focused on osteopathic manipulative medicine.

Dr. Lossing and his wife, Margret Klein, OA, run a private practice in San Rafael, California.

**Registration Fees**

<table>
<thead>
<tr>
<th></th>
<th>On or before Oct. 24</th>
<th>Oct. 25 through Nov. 26</th>
<th>On or after Nov. 27</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academy member in practice*</td>
<td>$874</td>
<td>$924</td>
<td>$1,074</td>
</tr>
<tr>
<td>Resident or intern member</td>
<td>$774</td>
<td>$824</td>
<td>$974</td>
</tr>
<tr>
<td>Student member</td>
<td>$574</td>
<td>$624</td>
<td>$774</td>
</tr>
<tr>
<td>Nonmember practicing DO or other health care professional</td>
<td>$1,174</td>
<td>$1,224</td>
<td>$1,374</td>
</tr>
<tr>
<td>Nonmember resident or intern</td>
<td>$874</td>
<td>$924</td>
<td>$1,074</td>
</tr>
<tr>
<td>Nonmember student</td>
<td>$674</td>
<td>$724</td>
<td>$874</td>
</tr>
</tbody>
</table>

* The AAO’s associate members, international affiliates and supporter members are entitled to register at the same fees as full members.

I hereby authorize the American Academy of Osteopathy to charge the above credit card for the amount of the course registration.

Signature: ________________________________

☐ I am a practicing health care professional.
☐ I am a resident or intern.
☐ I am an osteopathic or allopathic medical student.

The AAO accepts check, Visa, MasterCard and Discover payments in U.S. dollars. The AAO does not accept American Express.

Credit card No.: ________________________________

Cardholder’s name: ________________________________

Expiration date: ____________ 3-digit CVV No.: ____________

Billing address (if different): ________________________________

Click here to view the AAO’s cancellation and refund policy.

Register online at www.academyofosteopathy.org, or submit this registration form and your payment by email to GWatts@academyofosteopathy.org; by mail to the American Academy of Osteopathy, 3500 DePauw Blvd., Suite 1100, Indianapolis, IN 46268-1136; or by fax at (317) 879-0563.

Click here to view the AAO’s photo release statement.
This is the first in a series of courses that the American Academy of Osteopathy (AAO) will be conducting to help MD students and graduates obtain the prerequisites for entering osteopathic-recognized residencies accredited by the Accreditation Council for Graduate Medical Education (ACGME). This course will also be valuable for DO and MD faculty in these residency programs.

In addition, osteopathic physicians who do not use osteopathic manipulative treatment (OMT) daily will find this course useful, as will other health care professionals with limited or no experience with manipulative techniques.

Through a combination of lectures and hands-on workshops, attendees will learn the basics of osteopathic manipulative medicine, which encompasses osteopathic tenets, palpatory diagnosis and OMT.

The curriculum includes lessons on muscle energy technique; thoracic spine technique; articulatory techniques; functional techniques; myofascial release; and high-velocity, low-amplitude thrust.

Course registration includes one copy of Greenman’s Principles of Manual Medicine, 5th edition.

**Course Times**

Thursday from 1 to 6 p.m.
Friday and Saturday from 8 a.m. to 6 p.m.
Sunday from 8 a.m. to 4 p.m.

**Continuing Medical Education**

28 credits of AOA Category 1-A CME anticipated.

**Meal Information**

Morning coffee, tea and juice will be provided Friday through Sunday, as will lunch. Notify AAO Event Planner Gennie Watts of any special dietary needs no fewer than seven days in advance.

**Course Location**

University of North Texas Health Science Center
Texas College of Osteopathic Medicine
3500 Camp Bowie Blvd., MET – 470 Lab
Fort Worth, TX 76107

**Registration Form**

Introduction to Osteopathic Manipulative Medicine
Jan. 25-28, 2018

Name: ___________________________ AOA No.: ____________

Nickname for badge: ____________________________

Street address: ____________________________________________

________________________________________________________

City: ___________________________ State: _____ ZIP: __________

Phone: __________________________ Fax: ______________________

Email: ___________________________

Click here to view the AAO’s cancellation and refund policy.

Click here to view the AAO’s photo release statement.

Register online at www.academyofosteopathy.org, or submit this registration form and your payment by email to GWatts@academyofosteopathy.org; by mail to the American Academy of Osteopathy, 3500 DePauw Blvd., Suite 1100, Indianapolis, IN 46268-1136; or by fax at (317) 879-0563.
Why Does It Hurt presents a whole new viewpoint on the way our bodies work using FDM, the Fascial Distortion Model. Fascia is the fibrous connective tissue that permeates our bodies and holds everything together. Distorted fascia is often the cause of pain that may not respond to traditional treatments of physical therapy or anti-inflammatory drugs.

Thanks to FDM, patients stooped over from chronic back pain now stand straight, and athletes sidelined with sprains quickly return to the game and perform as if nothing happened.

Why Does It Hurt explains how, in case after case, FDM dramatically shortens healing time, reduces the need for tests and drugs, and restores movement and well-being to patients who had given up hope.

by Todd A. Capistrant, DO, MHA, with Steve LeBeau, paperback, 160 pages, $17.95

Osteopathy for the Over 50s is intended to provide a study of the biomechanics and physiology of somatic dysfunction as it relates to individuals over the age of 50.

The main body of the text considers the relevance of somatic function and dysfunction in multiple clinical areas including cardiology, pulmonology, gastroenterology, urology, neurology and rheumatology.

The diagnostic approach to the patient over the age of 50 and osteopathic manipulative treatment is thoroughly described. This book provides information on the biomechanics and physiology of somatic dysfunction for the osteopathic treatment of older adults in a thorough, yet easy to approach, fashion for practitioners of osteopathy and osteopathic medicine.

by Nicette Sergueef and Kenneth Nelson, hardcover, 416 pages, $90

Fundamentals of Diagnostic Musculoskeletal Ultrasound is a professionally recorded and produced DVD series by two of the country’s leading MSKUS teachers. This DVD set will help viewers learn proper probe placement and standard scanning sequences and technique for each body area. Over five hours of content will focus on the normal sonographic anatomy and sequencing for scanning each region.

The authors focus on demonstrating how to obtain proper probe placement and the content within these images. As opposed to just teaching certain slices of the anatomy of a region, they attempt to teach a multi-dimensional approach to sonographic anatomy so that your diagnostic evaluations will completely evaluate each structure.

by Paul Tortland, DO, FAOASM, R-MSK, and Albert J. Kozar, DO, FAOASM, R-MSK, 2 DVD, 5.5 hours, $399.99

AAO members receive a 10% discount off listed prices.

Download the Academy’s book order form or visit www.academyofosteopathy.org to place your order.
Melicien A. Tettambel, DO, FAAO, a leader in osteopathic obstetrics and gynecology, passed away on September 11, 2013, at far too young an age. She has, however, left a grand legacy for the osteopathic profession, and in particular, for the American Academy of Osteopathy (AAO). This selection of her published writings, carefully curated by Raymond J. Hruby, DO, MS, FAAODist., represents some of her best work.

Raymond J. Hruby, DO, MS, FAAODist, editor
88 pages

E-book at Amazon.com
Paperback at www.academyofosteopathy.org

Members are entitled to one complimentary paperback copy before July 31, 2017. Get your copy now.

---

In 1892, Andrew Taylor Still did the unimaginable when he accepted women and men equally in his newly opened American School of Osteopathy. Thomas A. Quinn, DO, showcases some of the valiant women who rose above adversity to become osteopathic doctors in those early years, and includes prominent women osteopathic physicians up to the present time. The stories of their fight against the inequality of the sexes in medicine are intertwined with the struggles of Osteopathy to be accepted as a valid scientific practice, illuminating the innovative and determined individuals who helped osteopathic medicine develop into the flourishing profession it is today.

Thomas A. Quinn, DO
194 pages, paperback

AAO members save 10 percent at www.academyofosteopathy.org.

---

The Feminine Touch: Women in Osteopathic Medicine

Now a PBS documentary!

Selected Works
of Melicien A. Tettambel

Melicien A. Tettambel, DO, FAAO, a leader in osteopathic obstetrics and gynecology, passed away on September 11, 2013, at far too young an age. She has, however, left a grand legacy for the osteopathic profession, and in particular, for the American Academy of Osteopathy (AAO). This selection of her published writings, carefully curated by Raymond J. Hruby, DO, MS, FAAODist., represents some of her best work.

Raymond J. Hruby, DO, MS, FAAODist, editor
88 pages

E-book at Amazon.com
Paperback at www.academyofosteopathy.org

Members are entitled to one complimentary paperback copy before July 31, 2017. Get your copy now.
AAOJ Submission Checklist

Manuscript Submission
☐ Submission emailed to editoraoj@gmail.com or mailed on a flash drive or CD to the AAOJ managing editor, American Academy of Osteopathy, 3500 DePauw Blvd, Suite 1100, Indianapolis, IN 46268-1136
☐ Manuscript formatted in Microsoft Word for Windows (.doc, .docx), text document format (.txt), or rich text format (.rtf)

Manuscript Components
☐ Cover letter addressed to the AAOJ’s editor-in-chief with any special requests (eg, rapid review) noted and justified
☐ Title page, including the authors’ full names, financial and other affiliations, and disclosure of financial support related to the original research or other scholarly endeavor described in the manuscript
☐ “Abstract” (see “Abstract” section in “AAOJ Instructions for Contributors” for additional information)
☐ “Methods” section
• the name of the public registry in which the trial is listed, if applicable
• ethical standards, therapeutic agents or devices, and statistical methods defined
☐ Four multiple-choice questions for the continuing medical education quiz and brief discussions of the correct answers
☐ Editorial conventions adhered to
• terms related to osteopathic medicine used in accordance with the Glossary of Osteopathic Terminology
• units of measure given with all laboratory values
• on first mention, all abbreviations other than measurements placed in parentheses after the full names of the terms, as in “American Academy of Osteopathy (AAO)”
☐ Numbered references, tables, and figures cited sequentially in the text
• journal articles and other material cited in the “References” section follow the guidelines described in the most current edition of the AMA Manual of Style: A Guide for Authors and Editors
• references include direct, open-access URLs to posted, full-text versions of the documents, preferably to digital object identifiers (DOIs) or to the original sources
• photocopies provided for referenced documents not accessible through URLs
☐ “Acknowledgments” section with a concise, comprehensive list of the contributions made by individuals who do not merit authorship credit, as well as permission from each individual to be named
☐ For manuscripts based on survey data, a copy of the original validated survey and cover letter

Graphic Elements
☐ Graphics formatted as specified in the “Graphic Elements” section of “AAOJ Instructions for Contributors”
☐ Graphics as separate graphic files (eg, jpg, tiff, pdf), not included with text
☐ Each graphic element cited in numerical order (eg, Table 1, Table 2 and Figure 1, Figure 2) with corresponding numerical captions provided in the manuscript
☐ For reprinted or adapted tables, figures, and illustrations, a full bibliographic citation given, providing appropriate attribution

Required Legal Documentation
☐ For reprinted or adapted tables, figures, and illustrations, copyright holders’ permission to reprint in the AAOJ’s online and print versions, accompanied by photocopies of the original published graphic designs
☐ For photographs in which patients are featured, signed and dated patient model release forms
☐ For named sources of unpublished data and individuals listed in the “Acknowledgments” section, written permission to publish their names in the AAOJ
☐ For authors serving in the US military, the armed forces’ written approval of the manuscript, as well as military or other institutional disclaimers

Financial Disclosure and Conflict of Interest
Authors are required to disclose all financial and nonfinancial relationships related to the submission’s subject matter. All disclosures should be included in the manuscript’s title page. See the “Title Page” section of “AAOJ Instructions to Contributors” for examples of relationships and affiliations that must be disclosed. Those authors who have no financial or other relationships to disclose must indicate that on the manuscript’s title page (eg, “Dr Jones has no conflict of interest or financial disclosure relevant to the topic of the submitted manuscript”).

Publication in the JAOA
Please include permission to forward the manuscript to The Journal of the American Osteopathic Association if the AAOJ’s editor-in-chief determines that the manuscript would likely benefit osteopathic medicine more if the JAOA agreed to publish it.

Questions? Contact editoraoj@gmail.com.
Component Societies and Affiliated Organizations
Calendar of Upcoming Events

June 18-25, 2017
American Fascial Distortion Model Association
FDM at Sea
Course director: Todd A. Capistrant, DO, MHA
8 days, 7 nights aboard Royal Caribbean’s Liberty of the Seas
Ports of call: Galveston, Texas; Cozumel, Mexico; George Town, Grand Cayman; Falmouth, Jamaica
15 credits of AOA Category 1-A CME anticipated
Learn more and register at www.afdma.com.

July 12-16, 2017
Osteopathy’s Promise to Children
Foundations of Osteopathic Cranial Manipulative Medicine
Course director: R. Mitchell Hiserote, DO
Osteopathic Center San Diego
40 credits of AOA Category 1-A CME anticipated
Learn more and register at the-promise.org/cme/.

Aug. 17-20, 2017
Osteopathy’s Promise to Children
Advanced and Innovative Healing Approaches to Support Rapid Transformation in the Child
Course director: Shawn K. Centers, DO, MH, FACOP
Osteopathic Center San Diego
24 credits of AOA Category 1-A CME anticipated
Learn more and register at the-promise.org/cme/.

Aug. 19-20, 2017
Rocky Mountain American Academy of Osteopathy
An Osteopathic Approach to the Eyes
Course director: Daniel Lopez, DO
Rocky Vista University College of Osteopathic Medicine
Parker, Colorado
12 credits of AOA Category 1-A CME anticipated
Learn more and register at rockymountainaaa.wixsite.com.

Sept. 8-10, 2017
Michigan State University College of Osteopathic Medicine
Indirect, Functional Approach to Manual Medicine
Course directors: Harriet H. Shaw, DO, and Marcy Schlinger, DO
East Lansing, Michigan
22.5 credits of AOA Category 1-A CME anticipated
Learn more and register at www.com.msu.edu.

Sept. 9, 2017
Osteopathy’s Promise to Children
OMT for Systemic Disorders and Physiologic Functions: Cardiopulmonary & Immune Systems
Course director: Hollis H. King, DO, PhD, FAAO
Osteopathic Center San Diego
8 credits of AOA Category 1-A CME anticipated
Learn more and register at the-promise.org/cme/.

Sept. 15-16, 2017
Philadelphia College of Osteopathic Medicine
Still Techniques for the Spine, Ribs and Pelvis: Addressing Key Dysfunctions and Diagnosing and Treating With Still Technique
Course director: David B. Fuller, DO, FAAO
Course faculty: Richard L. Van Buskirk, DO, PhD, FAAO
Philadelphia
12 credits of AOA Category 1-A CME anticipated
Learn more and register at www.pcom.edu.

Sept. 22-26, 2017
Michigan State University College of Osteopathic Medicine
Craniosacral Techniques, Part II
Course director: Barbara J. Briner, DO
East Lansing, Michigan
35 credits of AOA Category 1-A CME anticipated
Learn more and register at www.com.msu.edu.

Oct. 7, 2017
Osteopathy’s Promise to Children
OMT for Systemic Disorders and Physiological Functions: Gastrointestinal & Nervous Systems
Course director: Hollis H. King, DO, PhD, FAAO
Osteopathic Center San Diego
40 credits of AOA Category 1-A CME anticipated
Learn more and register at the-promise.org/cme/.

Oct. 13-14, 2017
Osteopathy’s Promise to Children
Sequential Approach to Pediatric Osteopathy
Course directors: Mary Anne Morelli Haskell, DO, FACOP, and Julie Mai, DO
Osteopathic Center San Diego
16 credits of AOA Category 1-A CME anticipated
Learn more and register at the-promise.org/cme/.

Visit www.academyofosteopathy.org for additional listings.