

COILS

Clinical
Osteopathically
Integrated
Learning
Scenarios

Patient with a **Headache**

Prepared by: AACOM's Educational Council on Osteopathic Principles

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AMERICAN ASSOCIATION OF
COLLEGES OF OSTEOPATHIC MEDICINE

Part 1: Chapter 1

Systemic Clinical Osteopathically Integrated Learning Scenario:

Patient With a Headache



Description

This Clinical Osteopathically Integrated Learning Scenario (COILS) focuses primarily on the palpatory evaluation and supportive osteopathic manipulative treatment for a patient with a severe headache.

The COILS is divided into two sections:

Section One

The **Roundtable Discussion Workshop** includes a discussion and evaluation of the patient's case history, diagnosis, pathophysiology, osteopathic principles involved, functional anatomy, treatment options, contraindications, and (if time permits) a demonstration of manipulative treatment techniques applicable to the patient's homeostatic needs.

Section Two

The **Patient-Based Application Workshop** is the supervised application of manipulative treatment techniques for a patient with this diagnosis. This workshop is designed to evaluate the student's or physician's diagnostic and psychomotor skills when providing an osteopathic manipulative treatment for an actual (or simulated) patient.

If time permits, the instructor may deliver this entire two-section program at one time. Ideally, however, Section One should be taught several days before Section Two to allow the student or physician to review and practice appropriate techniques. If an actual patient is not available for Section Two, a simulated patient may be used.

Section: Roundtable Discussion Workshop

I. Description

This section is a roundtable-type presentation and discussion regarding the osteopathic approach to the treatment of a patient with a headache.

II. Cognitive Components

A. Case Presentation

As the house officer, you are called at 1:00 am to the bedside of a 50-year-old post-menopausal woman with a severe headache that is preventing her from sleeping. She was admitted to the ICU through the ER three days ago for an acute GI bleed, which was stabilized after an endoscopically guided cautery of a bleeding gastric ulcer and a transfusion of 4 units of packed RBCs. The patient was transferred earlier in the day to the general medical floor.

The headache, which has been steadily increasing all evening, is described as a steady, dull pain punctuated by a fast, sharp, and stabbing pain located at the base of the cranium and radiating to the right eye. The pain occasionally extends across the forehead. The patient denies that light sensitivity, nausea, vomiting, visual changes, or sinus congestion. She reports having had similar symptoms in the past, particularly at the end of a “stressful day.” She first developed these headaches when she was in her twenties. She gets them at least once a month. In the past these headaches can last anywhere from minutes to days. She usually self-treats these headaches with over the counter Ibuprofen.

Medications at time of admission were Simvastatin 20 mg daily, Calcium 600 mg twice a day, Vitamin D 800 mg twice a day, periodic over the counter Ranitidine 75 mg twice a day, and periodic Ibuprofen 600 mg three times a day.

The patient’s past medical history is significant for osteopenia and hyperlipidemia. She had a cholecystectomy at the age of 31. She is G2P2 with 2 vaginal deliveries. Her mother is 75 and still living. Her mother has hypertension, osteoporosis, and hyperlipidemia. Her father died at the age of 70 from an MI. She has one sister who is treated for hypertension. The patient is employed as a telephone marketer. She does not regularly use alcohol, tobacco, or caffeine.

Physical Examination

Vital signs:	Temperature, 98.4; Heart Rate: 84; Respiratory Rate: 18; Blood Pressure: 124/78; no orthostatic blood pressure or pulse changes; Height: 5'4"; Weight: 150 lbs
General:	Appears tired
Head:	Normocephalic; atraumatic without any lesions
Ears:	Tympanic membrane intact without erythema
Eyes:	Pupils equal, round, reactive to light, and accommodation; external ocular muscles intact; funduscopic exam without papilledema, hemorrhages, or exudates
Nose:	Without drainage
Throat:	No erythema, exudate, or edema, no cervical bruits; thyroid not palpably enlarged
Lungs:	Clear to auscultation bilaterally
Cardiac:	Regular rate and rhythm; no rubs, clicks, or gallops
Abdominal:	Soft, mildly tender in the left upper quadrant without guarding or rebound, nomasses, no organomegaly, bowel sounds are present in all 4 quadrants
Extremities:	No cyanosis, clubbing or edema, capillary refill less than 3 seconds
Lymph:	Cervical nodes nonpalpable; supraclavicular region full, boggy, and tender
Neuro:	Cranial nerves II-XII grossly intact; negative Romberg's; no dysdiadochokinesia; no motor or sensory deficit; DTRs intact and symmetric; Babinski's test elicits plantar flexion and down-going toes bilaterally
Genitourinary:	Deferred
Rectal:	Deferred

Osteopathic Structural Examination

- Tenderness, muscular tension, and fullness in the suboccipital region (R > L)
- Occiput extended, side bent right, and rotated left in relation to C1
- C2 extended, rotated, and side bent to the right in relation to C3
- Deep palpation at the right C2-C3; facet joint radiates pain to the area of the right orbit
- Palpation of the cranial vault demonstrates a right sidebending-rotation sphenobasilar strain pattern and a 5 cycle per minute cranial rhythmic impulse with decreased amplitude
- No significant somatic dysfunctions of the thoracic spine and ribs were note

Diagnostics

- CBC with hemoglobin and hematocrit in the normal range, BUN and creatinine not elevated
- EKG shows normal sinus rhythm, no signs of ischemia, no pvc's
- CT of head without any shift or signs of bleeding

B. Diagnosis

1. Tension headache
2. Somatic dysfunction of the head
3. Somatic dysfunction of the cervical region
4. Differential diagnosis would include migraine without aura, temporomandibular joint syndrome, acute sinusitis, occipital neuralgia, and trigeminal neuralgia

C. Pathophysiology

1. The exact mechanism of tension headaches are not completely understood. Both muscular and psychogenic factors are believed to be associated with tension-type headache.⁶
2. Physical or emotional stress increases sympathetic tone and can increase muscle tension.^{7,9}
3. Postural imbalance, especially in the sagittal plane (e.g., the presence of a “dowager’s hump”), can result in the cranium positioned forward of the weight-bearing line. This position can result in the presence of increased tone of the posterior cervical muscles. Somato-somatic reflexes in the cervical and OA regions resulting from compensatory postural changes from a short-leg syndrome can result in, or contribute to, a headache.⁵
4. The mechanisms of migraine headaches are also not completely understood. It was previously considered to be a vascular phenomenon that resulted from intracranial vasoconstriction followed by rebound vasodilation. This view is no longer viable. Currently, migraines are thought to be a primarily neuronal dysfunction that can lead to a sequence of changes both intracranially and extracranially.¹

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D. Functional Anatomy

Includes knowledge of structure and physiology necessary to properly carry out the osteopathic manipulative treatment support.

1. Effective treatment includes addressing the underlying cause that is resulting in somatic dysfunction.
2. There are no predetermined anatomical areas to examine when looking for somatic dysfunctions associated with headaches. It is important to be aware of the patient’s entire body. However, based on the involvement of the head, neck, thoracic spine and ribs in the generation of headaches, these areas may be more appropriate to focus in on.²
3. Somatic dysfunction of the sphenoid, temporal, and occiput may also be involved in trigeminal dysfunctions and headaches. The trigeminal ganglion provides sensory nerves from the forehead and upper and lower jaw.⁴

E. Goals for Osteopathic Manipulative Management

Includes a review of treatment pearls; a general plan for manipulative treatment of the patient; and a discussion of treatment options, contraindications, and plans for follow-up evaluation and treatment.

1. Identify and diagnose significant somatic component.
2. At a minimum evaluate the upper thoracic spine, ribs, cervical spine and head for significant somatic dysfunctions.
3. It may be difficult to treat a patient during an acute migraine attack. Medication is the immediate recommended treatment.³
4. The goal of OMM/OMT is to reduce the severity and/or frequency of the patient's headaches.³
5. OMM/OMT may enable the patient to either reduce the dosage or frequency of the medication they use for headaches.³

F. Contraindications and Cautions Regarding Treatment

See contraindications to treatment, Foundations of Osteopathic Medicine, pp. 943

1. An acute neurologic event such as a cerebrovascular accident due to a ruptured berry aneurysm or arteriovenous malformation should be ruled out prior to treatment.
2. A headache that wakes a patient from sleep must be fully evaluated before manipulation can be safely preformed.
3. Commonly accepted relative contraindications to manual medical treatment include vertebral or carotid artery dissection, acute fracture of the area being treated, metabolic or neoplastic bone disease, and acute trauma to the head or neck without established diagnosis.⁶
4. Patient refusal of treatment is an absolute contraindication.²

G. Instructor's Notes

Personal clinical pearls and lessons learned from previous COILS presentations.

1. Most headaches can be diagnosed with an adequate history and physical exam. Imaging and laboratory studies are not usually required.⁸
2. Sympathetic innervation to the cranium and cervical area is from T1-T4. Increased sympathetic tone intensifications muscle irritability.
3. It is common to find suboccipital dysfunction related to upper thoracic and rib somatic dysfunction. Treatment with counterstrain or myofascial release techniques to these areas improves tissue texture abnormality.

III. Psychomotor Components

If time permits, this part can be carried out on a simulated patient.

1. Practice palpatory diagnosis. (See techniques under Section D above.) Diagnostic procedures include cervical; upper thoracic region and ribs; thoracic inlet; anterior chest wall; and forearm, wrist, and hand.
2. Demonstrate key treatment techniques in the body regions involved. These techniques include release for the upper thoracics and ribs, OA myofascial release or indirect, cervical, counterstrain, and myofascial and muscle energy for the forearm.
3. Evaluate the plan for treating the patient in the appropriate positions, localization of gentle forces, and activation.

IV. References

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V. Examination Questions

These multiple-choice questions involve treatment for a patient with a headache. (denotes answer)*

- 1. Which of the following structures is most likely to result in a muscle-referral pain pattern consistent with this patient?**
 - A. Levator scapula
 - B. Cervical facet joint
 - C. Trapezius
 - D. Temporal bone
 - E. Sternocleidomastoid

- 2. Which of the following structures is most likely to play a role in the maintenance of this patient's headache?**
 - A. Facial and trochlear nerve
 - B. Spinal accessory and trochlear nerve
 - C. Vagus nerve and superior cervical chain ganglia
 - D. Vestibulocochlear and vagus nerve
 - E. Superior cervical chain ganglia and vestibulocochlear nerve

- 3. Current treatment for headache often includes use of anti-inflammatory medication. Most medication from this class would be contraindicated in this case because of a risk of:**
 - A. Diplopia
 - B. Gastric bleeding and melena
 - C. Ringing in the ears
 - D. Tenderness and fullness in the subxiphoid space
 - E. Tissue texture changes in the mid-thoracic paraspinal region

- 4. Your attending has ordered rib raising for this patient. What is the rationale for this treatment?**
 - A. It will improve VQ function.
 - B. It will reduce cardiac output.
 - C. It will reduce sympathetic hypertonicity to the cranial vasculature.
 - D. It will stimulate the diaphragm and improve lymphatic flow.
 - E. It should not have been ordered, because it is contraindicated in a person with an acute GI bleed.

5. **he following morning you recheck this patient. She reports that her headache has resolved and she was able to get some rest after your treatment. Which of the following best indicates follow-up care?**
- A. Since symptoms have resolved, no follow-up is necessary.
 - B. Re-evaluate your patient and determine if further intervention is necessary .
 - C. Repeat the same treatment two more times to insure adequate resolution of somatic dysfunction.
 - D. Refer to physical therapy for initiating heat/cold (contrast) therapy.
 - E. Consult neurology service.

Section Two: Patient-based Application Workshop

I. Description:

This is the practical application of osteopathic treatment techniques to support the patient with a headache.

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II. Psychomotor Components

(Refer to Section One for regions of the body that are involved.)

1. Examination of the patient using TART, including postural screen, palpation, segmental motion testing and diagnosis of somatic dysfunction.
2. Application of the osteopathic philosophy and at least one treatment technique.
3. Re-evaluation of the patient after treatment is completed to assess result. If a simulated patient is used, then the student/physician should verbalize length of treatment and future treatment goals.

III. Cognitive Components

1. Documentation in the medical record
2. Post-treatment discussion

Note: It is recommended to use the standardized outpatient form included in each of these chapters for documentation.

Physician: _____ Date: _____

Title: Resident (Specialty) _____
 Intern OMS III OMS IV

**Critical Actions Evaluation Checklist of Osteopathic Principals
 Applicable to a Patient with a Headache**

CRITICAL ACTION	COMPLETED		COMMENTS
	Yes	No	
Become familiar with the patient's history physical examination findings, laboratory and other diagnostic findings.			
Perform an osteopathic structural examination.			
Determine significant areas of somatic dysfunction.			
Determine body region(s) to be treated with OMT.			
Apply OMT to at least the body region determined to be the most in need of treatment at present time.			
Treat other significant somatic dysfunctions if feasible.			
Document treatment and immediately observable effects.			

Trainer: _____

Osteopathic Musculoskeletal Examination

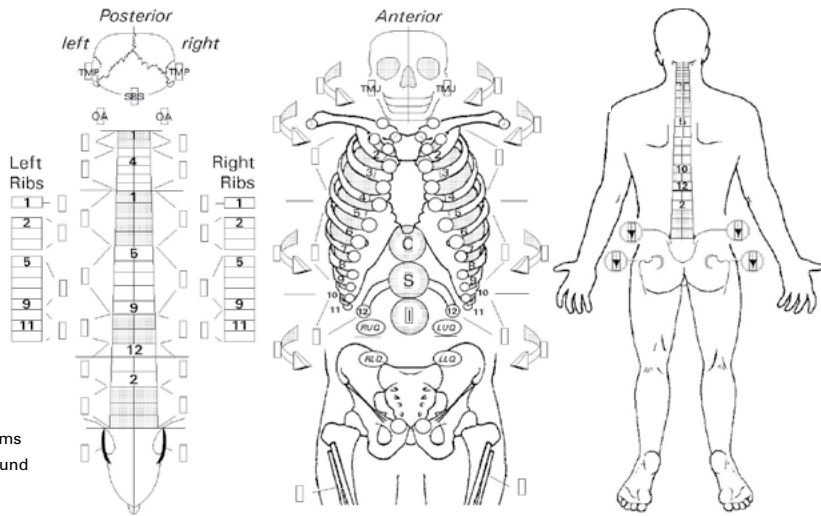
EXAMINER:	SIGNATURE	DATE OF EXAMINATION
EXAMINER:	SIGNATURE	DATE OF EXAMINATION
CHIEF COMPLAINT:		

Required

<p>Ant.Post.Spinal Curves:</p> <p>Cervical Lordosis</p> <p><input type="checkbox"/> Increased <input type="checkbox"/> Normal <input type="checkbox"/> Decreased</p> <p>Thoracic Kyphosis</p> <p><input type="checkbox"/> Increased <input type="checkbox"/> Normal <input type="checkbox"/> Decreased</p> <p>Lumbar Lordosis</p> <p><input type="checkbox"/> Increased <input type="checkbox"/> Normal <input type="checkbox"/> Decreased</p>	<p>Scoliosis (Lateral Spine Curves)</p> <p><input type="checkbox"/> None <input type="checkbox"/> Functional <input type="checkbox"/> Mild <input type="checkbox"/> Moderate <input type="checkbox"/> Severe</p> <p>Assessment Tools</p> <p><input type="checkbox"/> T= Tenderness</p> <p><input type="checkbox"/> A= Asymmetry</p> <p><input type="checkbox"/> R= Restricted Motion <input type="checkbox"/> Active <input type="checkbox"/> Passive</p> <p><input type="checkbox"/> T= Tissue Texture Change</p>	<p>For coding purposes only</p>
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Abbreviation Key

- OA** Occipito-Atlantal joint
- Sympathetic Ganglia:**
- C** Celiac
- S** Superior Mesenteric
- I** Inferior Mesenteric
- TMJ** Temporomandibular joint
- TMP** Temporal Bone
- SBS** Sphenobasilar symphysis



Severity Key

- 0** No SD or background (BG) levels
- 1** Minor TART more than BG levels
- 2** TART obvious (R&T esp) +/- symptoms
- 3** Symptomatic, R and T very easily found
"key lesion"

Region Evaluated	Severity				Specific Major Somatic Dysfunctions
	0	1	2	3	
Head	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Neck	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Thoracic	T1-4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	T5-9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	T10-12	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Lumbar	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Pelvis/Sacrum	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Pelvis/Innominate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Extremity Lower	R	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	L	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Extremity Upper	R	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	L	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Ribs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Other/Abdomen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Major Correlations with:

- Traumatic
- Orthopedic
- Neurological
- Viscerosomatic
- Primary Musculoskeletal
- Cardiovascular
- Rheumatological
- EENT
- Cardiovascular
- Pulmonary
- Activities of Daily Living
- Genitourinary
- Other: _____