

Midterm usually around the 9th week
Final is comprehensive - 1 hour
Only the things he talks about in class will be tested- textbook goes along with slides

Need to know LISTINGS for Boards
Ex. ASRA- C1 listing- Anterior, Superior (*nose and chin in the air*), Right Laterality (lateral and superior to right- *head tilt away from side of pain-Xray shows wider lateral mass on anterior side*), Anterior on the Right (*nose rotates away*)

★ Look at Atlas if patient has a hard time looking over the shoulder
Look at X-ray to confirm findings

Subluxation- A minor misalignment between two adjacent articulating surfaces that cause a problem

When bones misalign the mobility of joint diminishes
Motion Palpation is an orthopedic test-we're putting the joint through range of motion to reproduce the pain- the purpose of Ortho tests are to reproduce pain

Three Primary Components of Subluxation

1. Inflammation
 - a. Instrumentation
 - b. In Gonstead technique = Nervoscope/Temposcope
 - c. Helps pinpoint area of increased heat
 - d. Can also see some redness
2. Edema/Swelling (static palpation)
3. Decrease mobility - 6 ROM (motion palpation)
 - ★ a. This is the biggie/most important
 - b. Want to restore optimal functional mobility
 - c. Used as an orthopedic test

★ **Don't be looking just for the pain!!! Subluxation doesn't have to cause pain and just because they have pain that doesn't mean there's a subluxation there. Pain can often be referred.**

Ex. of patient, Sherri having Gallbladder problem- she presented with pain in the back between the shoulders that referred to the right shoulder- no edema or decreased mobility at site of pain

Injury --> Irritation --> Inflammation --> Edematous

★ *Clinical experience has shown that there is often an Upper Cervical subluxation on side opposite of eye problems*

Patient has right shoulder pain (not from gallbladder)- first thing to do is test ROM- ROM does not exacerbate pain - check motion of the cervical spine between C4-C6 -all is fine- then just Thoracic spine T1-T5. The connection between T5 and the shoulder is muscular. Most shoulder problems have problem with C1- muscle connection. "Anything can cause anything."

Important to check all these things ON the patient because you won't find on the MRI, CT, tests, etc

Every subluxation will have a compensation
Compensation is usually above subluxation
Be sure to consider the jaw with chronic upper cervical subluxation- often on opposite side of jaw that patient chews most often

Three possible patient outcomes

1. Patient gets better
 - a. Correct vertebra/correct listing
2. Patient stays the same
 - a. On the wrong segment
 - b. Usually 1 or 2 segments too high
3. Patient gets worse
 - a. Either on wrong spot or putting force in wrong direction

CoQ10 is great for fatigue. As we get older we lose CoQ10 so our electron transport chain and ultimately energy decreases in function

At compensation point

- There won't be any heat/inflammation
- No edema
- Increased mobility

When patient comes into office:

1. Obtain History

- a. Detailed list of their medications
 - i. It's not in our scope of practice to tell patients to get off of their medications but we can provide alternatives to treating their problems
- b. Detailed history of accident/chief complaint
 - i. How did they land?
 - ii. What did they land on?
 - iii. Direction they were hit...etc.
- c. What does the patient do for a living

1/29/09

★ **Be there for the patient!** See the patient when they need you

- 2. Exam
 - a. Orthopedic
 - b. Neurologic
- 3. Chiropractic Exam
 - a. Visual
 - b. Instrumentation
 - c. Static Palpation
 - d. MERIC Chart/Law of 13
 - e. Motion Palpation
- 4. X-ray
 - a. We don't do this first because we don't want to be misled
 - b. 14 X 36 FSAP and 14 X 46 Lateral
- 5. Report of Findings
- 6. Fix it with chosen technique (Treatment)
 - a. If Acute 6-7 hour interval
 - i. Treat on first visit if at all possible - DO something
 - ii. Can theoretically see them 3X on that first day
 - b. If not acute you don't have to treat on first visit
- 7. Leave it Alone

★ **Main objective is to restore optimal functional mobility**

Find the problem ON THE PATIENT

★ **Gonstead's Philosophy**

1. Find it
2. Accept it
3. Fix it
4. Leave it alone

Don't be Dr. Hedo "Hit every damn one"
Be specific, be precise, be accurate

2/3/09







FSLAT (MORE important than FSAP)

- Things you'll see on the lateral that you won't see on the lateral
 - ★○ AP Curves
 - Cervical and lumbar curves develop when baby starts crawling- as well as cross crawl proprioception
 - IVF
 - Ant head
 - Cord space
 - ★○ *Spondylo/BP (base posterior)
 - Spinolaminar lines
 - ADI
 - ★○ Disc Space
 - ★○ Compression Fracture
- 2 Exposures on one piece of film
- Arm out in front (shoulder down)
- Primary ray through humeral head- collimate out the bottom half

FSAP

- Scoliosis
- Transitional Segment/ Accurate vertebral count
- Pelvis
- Femur Heights/Leg Lengths
- Listings- pedicles, spinous
 - Confirms what you find on the patient
- Lateral Listhesis

6 Stages of Disk Degeneration

D-1		2-3 days	Acute, disc bulge
D-2		3-6 months	Decreasing posterior disc space
D-3		3-5 years	Decreasing anterior and posterior disc spaces
D-4		5-10 years	Posterior disc space is gone Anterior disc space is decreasing
D-5		10-15 years	Paper thin disc space between vertebrae
D-6		15-20 years	No disc is left between vertebra

- ★ The time period gives you an idea of how long its been since the accident
- ★ Before it can get better you have to stop it from getting worse. Pts need to understand this.
- ★ Parasympathetic is occiput-C6, and sacrum-L5, pelvis
HIO and Basic make patient relax/slow down
Use for hyper-symptomatology of any sort
Subluxation in these areas will speed things up and if you adjust them here it will slow them down
- ★ Sympathetic is everything else - C6-L5
(L5 can go either way)

Things you can say to your patient.

- The longer its been there, the longer its going to take to fix it
- I want you to do this to help me help you.
- ★ ○ **Before it gets better you have to stop it from getting worse**

Clarence S. Gonstead 1898 - 1978

- Mechanical engineer
- Graduated from palmer 1923, learning HIO technique
- 1943 - naturopathic degree
- Mount Horeb, wisconsin, was where his clinic was located

Subluxation in the parasympathetic will speed things up
Subluxation in the sympathetics will slow things down

"First, spend all the time necessary to carefully and precisely find and correct a patient's problem. Do not be in a hurry. Check and re-check your x-ray, your palpation, instrumentation, and visualization. Second, remember that chiropractic always works. When it does not seem to, examine your application, but do not question the principle. Third, be prepared when the demand for chiropractic care increases. Study the spinal column and the nervous system every chance you get. Our future will be the results"
Dr. C.S. gonstead

2/10/09

1. Do not be in a hurry
2. Remember that Chiropractic works
3. Be prepared when the demand for chiropractic care increases

Adjust

- Convert
- Improve
- Right
- Regulate
- Mend
- Straighten
- Arrange
- Position
- Fix
- Remedy
- Harmonize
- Correct
- Restore

Manipulate

- Exploit
- Command
- Govern
- Misuse
- Handle
- Sway
- Take advantage
- Influence
- Grope

X-ray

Look at X-ray as if looking at patient from the back

Line Drawing

1. Put dots
 - i. 1 and 2 go at most superior portion of the femur heads
 - ii. 3 and 4 go at the sacral groove
 - iii. 5 and 6 go at superior portion of iliac crests
 - iv. 7 and 8 at most inferior portion of the innominate (at ischium)
 - v. 9 is at S1 tubercle
 - vi. 10 is at middle of the symphysis pubis
2. Connect the dots
 - i. Connect dots 1 and 2 - labeled Femur Head Base Line
 - ii. Roll a parallel line up from the femur head base line to the most superior sacral groove spot and draw a small line
 - iii. Keeping your parallel, roll up to the iliac crests and draw a straight line through the superior portion of each iliac crest
 - iv. Roll parallel down to go through dots of ischium
 - v. 6 lines total which are all parallel
 - vi. Grid lines
 - 1) Align our parallel with a horizontal grid line
 - 2) Roll down or up until get to superior femur head
 - 3) Draw a line on the inferior femur head (not parallel to femur head base line)
 - vii. Take our parallel and make it 90 degrees to femur head base line through Dot 9 and down through pubic bone
 - viii. Draw a straight line down on the lateral most aspect of the right and left ilium
 - ix. Draw a straight line down on the medial most aspect of the right and left ilium
 - x. Draw a straight line down on the lateral most aspect of the right and left sacral base
 - 1) The above three lines are 90 degrees to the femur head base line
 - xi. Connect the dots at the right and left of the sacral groove (this makes the sacral base line)
3. Measure between the dots
 - i. Measure between iliac crests and the ischium (from top to bottom)- ex. 195 mm left/right innominate measurement
 - ii. Measure space over the low femur head (femur head deficiency) ex. 1 mm
 - iii. Measure between center dot of symphysis pubis and line that cross over one of them (continuation of central sacral line) symphysis pube line ex. 4 mm
 - iv. Measurement of sacral ala - measure between center line and lateral aspect of sacral ala on both side - ex. 60 mm of left sacral ala, 55 mm of right sacral ala
 - v. Measure from most lateral line on iliac crest to most medial line on iliac crest on both sides - ex. 104 left ilium shadow measurement - measuring from lateral to medial

★ All the lines are 90 degrees to or parallel to the Femur Head Base Line except the small line on the inferior femur head line

2/12/09

★ Main objective in the Gonstead technique is not to straighten spines. Our objective is to restore optimum functional capacity

The letters used in Gonstead analysis and the words they abbreviate are given below

A- anterior	I- inferior
P- posterior	S- superior
IN- internal rotation	T- transverse
EX- external rotation	LA- lamina
R- right	M- mammillary
L- left	SP- spinous

IN or EX is only talking about the innominate bone listing
T, LA, M, SP are the contact points telling the doctor where on that vertebrae you will place your hand to deliver an adjustive thrust

T = T1-T12- utilized only in T/S

L = C2-C7 only

M = L1-L5- lumbar only

SP = C2-L5

Ilium

- Your reference/key point for all innominate listings is the PSIS
- What has the PSIS done?
- ★ Chiropractor can list any bone in the body in relation to it's adjacent bone- just because it's listed does NOT mean it's subluxated
- Innominate subluxates by rotating on an arc
 - When it goes anterior it goes superior- AS
 - When it goes posterior it goes inferior - PI
- As the innominate misaligns the appearance of the obturator will be different on X-ray as will be the innominate measurement

AS Ilium	PI Ilium
Smaller/shorter inominate measurement	Bigger/larger inominate measurement
Smaller obturator vertically	Larger obturator vertically
Decreased Lumbar Lordosis	Increased Lumbar Lordosis
Raises the Femur head level	Lowers the Femur head level
Edema at the lower half of the SI joint	Edema in the superior portion of the SI joint
Leaves the sacrum posterior on involved side	Leaves the sacrum anterior on involved side

★ *In order of importance of findings*

- Doctor needs to palpate on the patient to determine what's the problem. We can find one of **four** things
 - Left Ilium subluxated as an AS
 - Right Ilium subluxated as a PI
 - Neither one of them is subluxated
 - Equal mobility and mobility does not exacerbate the symptoms
 - Both subluxated - it's up to us as a chiropractors which one is the major

*Just because it's listed does NOT mean it's subluxated
We're comparing Right to Left Ilium of same patient*

2/17/09

- ★ The longer you sit, the more discomfort you have when you go to get up
 - This is indicative of a L4/L5 problem
- ★ Longer I walk the worse I get- heck of a time going up stairs
 - SI- Inominate of Sacrum

Internal and External Ilium

- PSIS us reference point
- ONLY found in the inominates
- Symptoms
 - Knee pain medially in EX, laterally in IN
 - Corrective shoes/braces to straighten feet won't help
 - Bed Wetting (parasympathetic aggravation)
 - Undescended Testicle in male- Cryptochism
 - Infertility in females
 - Scoliosis
 - Head Tilt, Headaches

★ *EX on one side will be IN on the other side. We have to figure out which one is primary and which one is compensation*

EX Ilium	IN Ilium
PSIS away from center of sacrum	PSIS towards the center of sacrum
Ilium shadow appears narrower	Ilium shadow appears wider
Larger Horizontal Obturator	Smaller Horizontal Obturator
Pubic bone horizontally wider	Pubic bone horizontally narrower
Symphis pubis moves away from this side	Symphis pubis moves towards this side
Hypertonic gluteal musculature (can see dimpling)	Hypotonic gluteal musculature
Toe-in	Toe-out

Nine Inominate Listings

- AS
- PI
- EX
- IN
- ASIN
- PIEX
- ASEX
- PIIN
- IN-EX

Combinations of AS, PI, EX, IN are the most common presentations

★ *ASIN and PIEX are the most common*

4 subluxations in body that need trauma to cause- less subluxated

- Inominate*
- Sacrum*
- Coccyx*
- Occiput*

- Left and right ilium are equally subluxated and adjusting both iliums with one thrust

★ *Two most commonly subluxated vertebrae in body
C1 and L5*

Example of Order to do things with the patient

- Ask two questions:
 - The longer you sit do you have more discomfort you get when you get up?
 - Is it hard to walk up stairs - yes
- Look at posture- *pt has a toe out*
- Instrumentation- *hot at left SI joint*
- Static palpation- *pool of edema and it hurts when press*
- Motion palpation- MP the **GOOD** one first so you can establish what is normal for the patient
 - *Up and down and left and right exacerbates symptoms*
- Take an X-ray
 - *Obturator is smaller than other side vertically and horizontally*
 - *Shorter inominate measurement*
 - *Ilium shadow is wider*
 - *AS-IN*

LOD and twist of wrist will eliminate the AS-IN

LOD will be used to eliminate the following listings when they are by themselves: AS, PI, IN, EX - get LOD from **position of the forearm**

Use **Torque** to eliminate IN or EX when in combination with AS or PI

Patient #2 Example- PIEX

- Same symptoms as above patient
- Pt has a toe in, tight gluteal musculature
- X-ray- inominate measurement is larger, ilium shadow measurement is smaller, obturator is larger in BOTH planes

*PIEX: Contact inferior and lateral to PI
LOD is anterior and superior
Torque is Counterclockwise (on left) and
Clockwise (on right)*

Patient #3 Example - ASEX

- Toe In
- Ilium shadow appears narrower
- Larger Horizontal Obturator for EX
- Smaller Vertical Obturator for AS
- Smaller inominate measurement

Patient #4 - PIIN

- Toe out
- Larger inominate measurement
- Larger ilium shadow
- Obturator horizontally smaller for IN
- Obturator vertically larger for PI

*PIIN: Contact is inferior and medial to PI
LOD anterior superior
Torque is Clockwise (on left) and
Counterclockwise (on right)*

Table

- Height should be in middle of patella
- One side of table should be up against the wall so it doesn't move
- Clothed covered to prevent sliding of patient

Rule of Four

1. Patient Position - Relax
 - Want bottom leg to hang off the table to allow for freedom of rolling
 - Buttocks and shoulder 90 degrees to table
 - Want him 3 inches from table to prevent no more than 45 degrees of rolling/torqueing
 - Put pillow under head and want head extended to prevent tension on lumbar
 - Upper arm up along rib cage
2. Doctor Position- Relax
 - a. Superior knee touches table
 - b. Start 1" below and 1" out to slide up and in
 - c. Place your thigh on his thigh and slide down to put him in position
 - d. Arch back
 - e. Straight line between coccyx, condyle and calcaneus
3. LOD
 - a. Set up by the forearm through the disc plane line
 - b. Be behind your contact
4. Speed/Timing

Contact Ischial Tuberosity for AS sacrum

- a. Use knee to take PSIS up until lock out
- b. Lay hand on contact- don't grip
- c. One continuous motion- DON'T STOP
 - i. As you slide down, arch you back and thrust all in one motion

2/24/09

Femur Height Changes with Ilium misalignment

- AS, IN and ASIN will cause the femur head to appear **higher** on Xray
 - Side of the **long** leg in physical examination
- PI, EX and PIEX will cause the femur head to appear **lower** on Xray
 - Side of the **short** leg in physical examination
- We look at leg lengths from two different aspects
 - Physiological Leg Deficiency
 - Leg appears shorter because of a subluxation in the innominate, sacrum, knee, ankle or foot
 - Innominate subluxation is the most common
 - Anatomical Leg Deficiency
 - Polio as a child can cause this
 - Knee/hip replacements
 - Can use a heel lift to treat this
 - If there is no scoliosis NO heel lift
 - Could also find a Physiological AND a Anatomical Leg Deficiency
 - Don't be too quick to put in a heel lift
 - Don't want to do this on the first and maybe even the second or third because we first need to fix the subluxation
 - Fix the physiological problem first and then if you need to stabilize you can put in a heel lift

Subscripts

- AS and PI subscripts are the **difference in the innominate measurement**
 - Ex. Innominate measurement is 200 with a PI₅, innominate measurement on AS side would be 195 - we know that AS is shorter innominate measurement
 - IN and EX subscripts come from the **symphysis pubis measurement**
 - Ex. IN₅
 - Ex. AS₅IN₅
 - 20 mm of MD
 - AS corrected by LOD
 - IN corrected by torque
 - As you correct that you lower the femur head- for every 5 mm of AS and IN you lower it two therefore if measurable deficiency was 20 than the actual deficiency is 24
 - Correcting AS lowers femur head and correcting IN lowering femur head further
- **MD** = measured deficiency
 - **AD** = actual deficiency
 - **5-2 Rules for Correction**
 - For every five millimeters of *subscript of AS* or *IN correction*, the femur head height will be lowered two millimeters
 - For every five millimeters of *PI* or *EX correction*, the femur head height will be raised two millimeters

Three Steps in Treating Patient

1. Find out what bone is subluxated
2. Find out what direction bone is subluxated in
3. Adjust/Fix with chosen technique

3/5/09

Midterm Next Tuesday



Only use torque to correct IN or EX when combined with PI and AS
Use LOD to correct any of the other listings when they are by themselves

Ex. If AS₅IN₅ on left and femur head MD of 10 mm on the right
The femur head is lowered by 4 mm on the left (5 for the AS and 5 for the In)
Then 6 mm of AD on the right

Ex. AS₁₀EX₅
5 mm of left femur head MD
AS subluxation will raise femur head. EX subluxation will lower the femur head. Correction of AS will lower femur head by 4 (to 9 mm)
Correction of EX will raise femur head by 2 (to 7 mm)
Actual deficiency is 7

- ★ Larger subscript is the major component of the subluxation thus more focus on LOD and less emphasis on torque for the example above. AS₅EX₁₀ will have more emphasis on torque

Ex. 0 mm of MD. AS₅EX₁₀ -as correct AS₅ we lower femur head 2 and for EX₁₀ we raise femur head four giving and AD of 2 on opposite leg

- ★ **Remember the problem is found ON the patient**

- ★ The posterior sacral ala will appear wider on the AP Film
Posterior rotated sacral ala (this is NOT a posterior sacrum) -the ala not the sacrum has gone posterior

- ★
 - This will rotate the entire spine's SPs to the opposite side - all the way up and including C2
 - Sacral ala measurement has to be at least 6-7 mm wider than the opposite side

The four potential sacral misalignments involving the sacroiliac articulation are as follows:

1. Posterior Rotated Sacral Ala on the Right (P-R)
 - a. Entire spine's SPs are rotated to the Left
 - b. High TPs on the Right
 - c. Right sacral ala measures at least 6-7 mm wider than the other side
2. Posterior Rotated Sacral Ala on the Left (P-L)
3. Posterior and Inferior Sacrum on the Right (PI-R)
4. Posterior and Inferior Sacrum on the Left (PI-L)