1 Gonstead Radiological Analysis

Occiput

2 Goals when analyzing the Occiput

1. Locate Posteriority/Anteriority (lateral film)
2. Locate Laterality (A-P film)
3. Locate Rotation on the appropriate side
4. Watch for pathologies or other items that will affect your adjustment

3 Goal 1: Locate Posteriorty/Anteriority

4 On the Lateral film…

- We'll need to construct two lines
  1. Foramen Magnum Line
  2. A-P Atlas Plane Line

5 What are we using for a reference point?

- All of our occipital listings reference the **bottom** of the occipital condyle itself.

6 OK, The lines are there, Now what?

- If the lines diverge (separate) **anteriorly**, the condyle went Anterior Superior (AS)
  - We'll list the occiput "AS"
- If the lines diverge **posteriorly** then the condyle went Posterior Superior (PS)
  - We'll list the occiput "PS"

7 Goal 2: Locate the laterality of the occiput

- We'll need to draw 2 lines for this one
  1. Transverse Occipital line
  2. Transverse Atlas Plane Line

8 Interpreting these lines:

- The Theory here is that the occiput will move laterally and subluxate. It appears to subluxate on one side. Due to the shape of the atlas lateral masses, the occiput will rise on the subluxated side. Also, like the atlas, the capsule there swells, causing the condyle to rise.

9 OK, what does that mean to me?

- The diverging lines will show you which side is lateral.
- We list the occiput on the open wedge side.
- Example: PS-RS or AS-LS

10 Goal 3: Finding Rotation

- The theory: In order to list a Y-axis rotation without taking an x-ray along that axis, we have to understand the distortions that occur when the upper cervical complex rotates

11 When the occiput subluxates:

- It does so on the atlas… right?
- So….
- In order to keep your eyes straight ahead, the atlas will compensate. We can then use the compensation on the film to interpret where the occiput went

12 Huh?

- We will look at the atlas to see what rotation occurred, and then
- Reverse the atlas findings for the occiput
- The Atlas and Occiput are “Functionally Opposite”

13 ☐ Quick review

- Since we’re going to be looking at atlas, let’s remind ourselves how that works…

14 ☐ What distortions do occur?

- The lateral masses are somewhat bean-shaped, and we can take advantage of that fact.

15 ☐ The anterior side

- As the atlas rotates, the side going anterior will turn its flatter side to the x-ray, making it appear wider on the film

16 ☐ The Posterior side

- The side going posterior will turn its end more to the x-ray and it will appear narrower on the film

17 ☐ We want to list the side that is lateral

- (the side we’re going to be contacting.

18 ☐ Lucency

- There is a lucent region on the lateral mass where the bone density is lower (see image). This will behave the same way the lateral masses did: wider is the anterior side, narrower is the posterior side
- We want to list the side that is lateral (the side we’re going to be contacting.

19 ☐ SO…

- We see what atlas is doing on the side of occiput laterality
- And then reverse it for the occipital listing

20 ☐ Examples

- PS-RS
- AS-LS-LP
- AS-LS-LP
- PS-RS-RP
- Note: the R’s and L’s don’t mix

21 ☐ Goal 4: Pathologies, etc

- Use the skills you will learn in your bone path classes to accomplish this.
- As your experience grows, so will the things you can glean from the film.
- Take good films and you’ll get good readings