Transitioning to the Suboccipital Triangle

**Borders**
- Rectus capitis posterior major
- Obliquus capitis superior
- Obliquus capitis inferior

**Contents**
- Vertebral artery
- Suboccipital nerve
Innervation of the Suboccipital Region

Suboccipital (C1) – innervates suboccipital muscles
Greater occipital (C2) – supplies posterior scalp
C3 – supplies small area of lower scalp

Blood Supply to the Suboccipital Region

Suboccipital triangle (shaded region)
A 29 year old man suffers from a stroke. A dissecting vertebral artery contributed to his stroke. This may in part be due to the course of the vertebral artery as it approaches the suboccipital triangle, which is bordered by the following muscles:

A. Obliquus capitis superior, Obliquus capitis inferior, rectus capitis minor
B. Obliquus capitis superior, rectus capitis minor, rectus capitis major
C. Obliquus capitis superior, Obliquus capitis inferior, rectus capitis major
D. Obliquus capitis superior, semispinalis cervicus, rectus capitis major
E. Obliquus capitis inferior, rectus capitis minor, rectus capitis major

Osteology

• Back
  -Gray’s pp. 26-47
  -Gray’s dissector, pp. 3-9
Osteologic Landmarks (Back)

Scapula (posterior)
The Vertebral Column

Normal Curvatures of the Vertebral Column

Figure 4.3. Curvatures of the vertebral column. Observe the four curvatures of the adult vertebral column—cervical, thoracic, lumbar, and sacral. Observe also the C-shaped curvature of the vertebral column during fetal life, which only the primary (1°) curvatures exist. Observe also the development of the secondary (2°) curvatures during infancy and childhood.
A 42 year old male goes running for one hour and subsequently complains of lower back pain and disoriented equilibrium. After a superficial examination of the back, you conclude that the runner is suffering from one of the following:

A. Lordosis  
B. Scoliosis  
C. Right side winged scapula  
D. Kyphosis  
E. Herniated intervertebral disc (L1)
Clinical Test for Scoliosis

Components of Typical Vertebra
Cervical Vertebrae

-Atlas (C1)
-Axis (C2)
-Foramen Transversarium
-Small Body
-Bifid Spinous Process
Cervical Vertebrae

Figure 2.93. The course of the vertebral arteries, the ligamentum nuchae.
Cervical Vertebrae

Thoracic Vertebrae

- Costal facets
- Spinous processes
  point inferiorly
- Vertebral body somewhat heart-shaped
Thoracic Vertebrae

Figure 2-6. Thoracic vertebrae showing manner of articulation with the ribs.
Thoracic Vertebrae

Lumbar Vertebrae

- Large Body
- Short, stout spinous processes
Lumbar Vertebrae

Lumbar Puncture

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Lumbar Puncture

Lumbar Puncture

Dermatomes
### Dermatomes

**Effects of Spinal Injury**

<table>
<thead>
<tr>
<th>Level of Injury</th>
<th>Effect*</th>
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<tbody>
<tr>
<td>C1 to C5</td>
<td>Paralysis of muscles used for breathing and of all arm and leg muscles, usually fatal.</td>
</tr>
<tr>
<td>C6 to C7</td>
<td>Loss of power; slight ability to move arms</td>
</tr>
<tr>
<td>C5 to T1</td>
<td>Paralysis of legs and part of trunk and hands, shoulder elevation and ability to handle objects preserved.</td>
</tr>
<tr>
<td>T1 to T11</td>
<td>Legs and trunk paralyzed; loss of hip, knee, and ankle movement; some sensation preserved; normal feel and pain sensation below the level of injury.</td>
</tr>
<tr>
<td>T12 to L5</td>
<td>Paralysis and loss of feeling below the groin; function of bowel and bladder preserved.</td>
</tr>
<tr>
<td>L2 to L5</td>
<td>Different patterns of leg weakness and sensation</td>
</tr>
<tr>
<td>L5 to S1</td>
<td>Loss of sensation and loss of function of bowel and bladder control; numbness in the perineum.</td>
</tr>
<tr>
<td>S1 to S5</td>
<td>Loss of bladder and bowel control; control over bowel and bladder anywhere along the spinal column.</td>
</tr>
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### Zygapophysial Joints

- **Cervical:** “Sloped from anterior to posterior”
- **Thoracic:** “Vertical”
- **Lumbar:** “Horizontal”

(Images of cervical and lumbar zygapophysial joints shown, with lateral views highlighting the joint structures.)
Ligaments

- Ligamentum nuchae and Supraspinous ligament
- Anterior and Posterior longitudinal ligaments
- Ligamenta flava

Ligamentum Nuchae
Supraspinous Ligament

Anterior and Posterior Ligaments
Ligamenta Flava

Intervertebral Discs
A 55 year old man was involved in a motorcycle accident and fractured one of his vertebra. The fracture impinged on the spinal cord and the man's breathing became erratic and stopped. Identify the approximate vertebral level of injury.

- A. C3
- B. C6
- C. T2
- D. T4
- E. T7

A 34 year old pregnant female develops lower back pain during the late stages of her pregnancy. The pain is due to an accentuated secondary curvature of her vertebrae in the lumbar region. This condition is referred to as:

- A. Lordosis
- B. Scoliosis
- C. Right side winged scapula
- D. Kyphosis
- E. Herniated intervertebral disc (L1)
A young man is thought to have an infection that has spread into his CSF. A lumbar puncture is required. The needle is inserted at the following vertebral level:

A. T12-L1  
B. L1-L2  
C. L3-L4  
D. L4-L5  
E. L5-S1

A 45 year old woman complains of lower back pain. She is diagnosed with a herniated disc between L5-S1 vertebrae. A tear has most likely occurred in the _________________.

A. Anulus fibrosus  
B. Anterior longitudinal ligament  
C. Ligamenta Flava  
D. Nucleus pulposus  
E. Interspinous ligament
Herniation of the Nucleus Pulposus