

**Osteology of  
the Lumbar Vertebrae**

I. Introduction

- A. Five in number
- B. Designed to support the weight of the head, neck, trunk, and upper extremities
  - 1. Seven secondary centers of ossification: superior and inferior epiphyseal rims, right and left transverse processes, spinous process, right and left mamillary processes

II. Typical lumbar vertebrae (L1-L4)

A. Vertebral body

- 1. Reniform in superior view
- 2. Posterior height slightly greater than anterior height, L2-L4
- 3. Lateral width increases in size, L1-L3

B. Pedicle

- 1. Orientation: primarily posterior, similar to the thoracic vertebrae
- 2. Vertebral notches/incisures
  - a. Superior vertebral notch/incisure: small (between cervical and thoracic depths)
  - b. Inferior vertebral notch/incisure: deep (between cervical and thoracic depths)

C. Intervertebral foramen

- 1. Faces laterally

2. Specific spinal nerve exiting the intervertebral foramen is identified according to the vertebra making up the superior border of the IVF

D. Lamina

1. Broad, top to bottom
2. Shingling continues from thoracic region, but diminishes from L1 to L5

E. Vertebral foramen

1. Triangular in shape
2. Smaller than in the cervical region, but larger than in the thoracic region

F. Transverse process

1. Projects laterally and slightly posteriorly from the lamina-pedicle junction
2. Thin and slender, increasing in length from L1 to L3, then decreasing from L3 to L5
3. Accessory process located at the postero-inferior root of the transverse process
4. Costal element and true transverse process
  - a. Costal element forms most of the transverse process, including transverse tubercle
    - i. Costal element may occasionally develop into a lumbar rib, usually at L1
  - b. True transverse process includes accessory process

G. Articular processes and facets

1. Superior articular facet: faces backward, upward, and medial (BUM); facet is usually concave

- a. Mamillary process projects postero-laterally from the superior articular process
2. Inferior articular facet: faces forward, laterally, and downward (FoLD); facet is usually convex
3. Distance between the right and left superior articular processes is greater than that between the right and left inferior articular processes
4. Pars interarticularis: more robust than in the thoracic region, consisting entirely of compact bone

H. Spinous process

1. Short anterior to posterior, deep superior to inferior, narrow laterally ('hatchet'-shaped)
2. Directed posteriorly, with a large spinous tubercle

III. L5

A. Vertebral body

1. Largest of the lumbar vertebrae
2. Anterior height is greater than posterior height

B. Transverse process

1. Large (anterior to posterior), originating from the vertebral body, pedicle, and lamina-pedicle junction
2. Very short, laterally
3. Transverse tubercle not well developed

C. Spinous process shortest of all the lumbar vertebrae