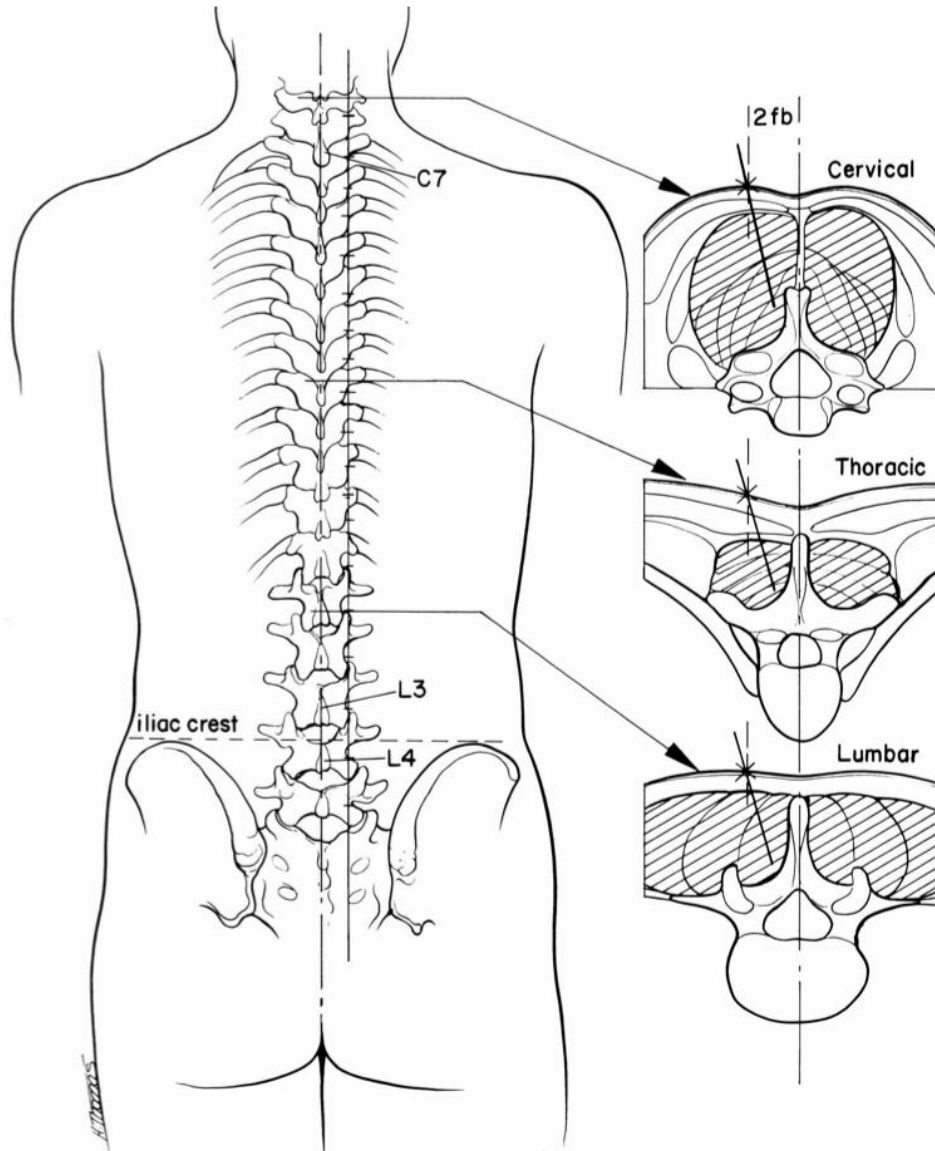


PARASPINALS



Paraspinal muscles are a generic anatomical term used to identify all those muscles located at each side of the spinous process of the spinal column. They are divided in 3 regions: the Cervical, the

Thoracic, and the Lumbo-Sacral. All of these muscles are positioned in several layers and they are so close together that it is impossible to isolate them individually for electrodiagnostic purposes. However, if the electrode is placed in the angle between the lamina of the vertebra and the spinous process, it will be in the multifidus.

Innervation

All of these muscles are supplied by branches of the posterior division of the spinal nerve at their respective level. The innervation usually extends to one or two segments above and below a particular level. This creates a significant amount of overlapping innervation in the entire paraspinal groups. This anatomical characteristic makes it very difficult to assess the precise localization in cases of radicular compromise.

Origin and Insertion

It is impossible to describe the origin and insertion of all paraspinals; this would be beyond the scope of this book. Suffice to say that the deeper the muscles, the shorter they are; the more superficial, the longer distance they travel.

Position

The patient is in prone position. If the cervical area is to be studied, a pillow is placed across the chest of the patient, thus allowing the patient's head to flex and to rest on its forehead.

If the lumbo-sacral area is to be investigated, the pillow is placed across the abdomen, producing a mild "arching" of the lower spine. For the thoracic area, the patient is flat.

Electrode Insertion

Prior to inserting the electrode, the level of the spine must be identified. Two landmarks are used: for the cervical and thoracic area, the spinous process of C7 (prominent) is identified and the count is done up or down accordingly. For the lumbo-sacral area, an imaginary line is drawn between the upper most part of the iliac crests. This line intersects the spinal column at the L3–L4 intervertebral level. The count proceeds up or down accordingly.

The electrode is inserted about one to two-fingers' breadth from the spinous process of the identified level, down to the lamina of the vertebra.

Test Maneuver

For the cervical area: The patient is asked to elevate or extend the head.

If full relaxation cannot be obtained, the patient is asked to push the head onto the examining table.

For the lumbo-sacral area: The patient is asked to elevate the whole leg (from the hip) on the side under study.

If full relaxation cannot be obtained, the patient is asked to either push with the knee on the side under study onto the examining table, or slightly elevate the pelvis off the table.

Pitfalls

If the electrode is too superficial, it may be in the superficial muscular layer of the back (trapezius; latissimus dorsi; rhomboids or splenius).

Comments

The paraspinal muscles can be affected segmentally in processes involving the roots, the cauda equine, the conus medularis, vascular accidents involving the anterior spinal artery or in degenerative or inflammatory conditions involving the A.H.C. (polio, A.L.S.). When studying the C7–T1 segment, care should be taken to avoid going too deep and accidentally causing damage to the sympathetic outflow, which results in unilateral Horner's syndrome (author experience).