Anterior Retroperitoneal Flank Approach to L5–S1

1. For the left retroperitoneal approach to L5–S1, place the patient in the right lateral decubitus position held by either the inflatable “beanbag” or appropriate towel padding. Take care to prevent any degree of left hip flexion, which could permit the thigh to interfere with the exposure.

2. Make the incision from the midaxillary line, midway between the iliac crest and lowest rib, curving in a lazy-S configuration to the lower half of the symphysis to umbilicus distance. This is approximately at the junction of the middle and distal third (Fig. 19A).4,5

3. With the electrocautery, divide the fascia, and the external oblique and internal oblique muscles in the line of the incision. The transversus abdominis muscle is very thin. Open it in the posterior portions of the incision closer to the midaxillary line. Each of these muscle layers thins out anteriorly, and the peritoneum is very superficial at the edge of the rectus sheath. This is the area where the peritoneum is often inadvertently entered. If this occurs, repair the peritoneum after it has been well exposed and prior to the spinal work. With identification of the peritoneum and retroperitoneal space in the midaxillary line, bluntly dissect the peritoneum from the undersurface of the transversalis fascia prior to opening the rest of the abdominal wall incision.

4. For added exposure, bluntly dissect the peritoneum from the posterior aspect of the rectus sheath. The edge of the rectus sheath itself can be opened and the rectus muscle can be partially cut.

5. Proceed directly to the psoas muscle. Identify the genitofemoral nerve running on the surface of this muscle. The spine is medial to the muscle. With identification of the muscle, retract the peritoneal sac and ureter on the undersurface of the peritoneum medially.

6. Palpate the spine with a finger and find a disc for orientation. Usually it is the L4–5 disc (Fig. 19B). With identification of the L4–5 disc, palpate the pulse of the left common iliac artery and the aortic bifurcation.

7. The bifurcation of the aorta is critical in determining the exact approach from this point. The usual bifurcation at the L4–5 disc level was present in 69% of anatomic dissections by Harmon, but there is great variation.3

8. Palpate the left common iliac artery and pass over it medially to the L5–S1 disc. By placement of the finger and a subsequent blunt retractor such as a sponged covered elevator, develop a plane just to the right of the left common iliac artery. (Fig. 19C).
Anterior Retroperitoneal Flank Approach to L5–S1

Fig. 19A: For the left retroperitoneal approach to L5–S1, place the patient in the left lateral decubitus position. Take care to prevent any flexion of the left hip greater than 30 degrees, as the thigh will interfere with the exposure. Incise the skin and subcutaneous tissue from the midaxillary line, midway between the iliac crest and lower rib. Curving in a lazy “S” configuration of the lower half of the symphysis-to-umbilicus distance. This is approximately at the junction of the middle and distal thirds of the distance between the symphysis and umbilicus. Divide with the electrocautery the external oblique, internal oblique, and transversus abdominis muscle, much as described in Chapter 18. Enter the retroperitoneal space and retract medially the peritoneal sac.

Caution: Remember: the left iliac vein lies within the aortic bifurcation. It often courses directly on the surface of the L5–S1 disc and may be flattened against the disc or L5 body, its venous character obscured. Mobilize it to the left and cephalad with the left iliac artery.

9. The middle sacral artery and veins are present in the bifurcation. The key to handling these structures is blunt dissection just to the right of the left common iliac artery, sweeping left to right the prevertebral tissue including the middle sacral vessels and superior hypogastric plexus off the lumbosacral disc. Occasionally the middle sacral vessels are of formidable size, but seldom do they have to be ligated. 1

10. An additional structure in the bifurcation is the superior hypogastric sympathetic plexus (Fig. 19D). The key to avoid damaging the superior hypogastric plexus is to avoid transverse cuts on the face of the disc until all the prevertebral tissue has been elevated from annulus, and to avoid electrocautery on the surface of L5–S1 disc. Small bleeding points are encountered when doing this dissection, but they are usually easily controlled by direct finger pressure or packing with hemostatic gauze. Usually the left iliac artery and vein will be retracted to the left, but it may require retraction to the right on occasion.

Caution: Locate and ligate the iliolumbar vein prior to any mobilization of the left iliac artery to the right.

11. Always obtain X-ray confirmation of the level. It can be done easily by insertion of a 22-gauge spinal needle. Because the L5–S1 disc and the sacrum are often angled very horizontally, the body of L5 can be mistaken for the sacrum.