Ultrasound clip showing the real-time visualisation of the paramedian spinal needle insertion

Ultrasound gel was placed on the back directly under the transducer. Any ultrasound gel near the selected skin puncture site was carefully removed using sterile gauze prior to needle insertion. As a further precaution the point of needle entry through the skin was physically outside the footprint area of the transducer.
The lumbar laminae were identified and a target space between L2-3 and L5-S1 was chosen. The probe was initially positioned with its midline point directly above the selected space. In the video clip the transducer has already been rotated 45 degrees towards midline, into an oblique, paramedian sagittal view affording a view of the spinous process of the upper vertebral body and the lamina of the lower vertebral body simultaneously. The angle between these two structures represents the paramedian window into the spinal canal. With this view it is possible to visualize the lamina, the intervertebral space, and the posterior longitudinal ligament-vertebral body complex (seen as a white line deep in the intervertebral space). As a final maneuver the probe has also already been moved towards the patient's midline (cranio-medial) in the same axis already established. A standard spinal needle (90mm long) can be seen to be inserted in plane from the caudal end of the ultrasound transducer with its tip directed towards the interlaminar space. The needle is then advanced to the interlaminar space, under real-time in-plane US guidance, until the tip was judged to have broken through the ligamentum flavum/dura complex – frequently a distinct 'give' could usually be felt at this point. As was frequently experienced in practice due to the quality of the ultrasound image and the size of the interlaminar space, the needle tip was lost from view as it enters the acoustic shadow formed by the spinous process. At this point the operator would feel the needle enter the ligamentum flavum and entry into the thecal space was definitively confirmed by backflow of CSF through the spinal needle.