

Three-dimensional interactive model of lumbar spinal structures

The application of three-dimensional software to pre-operative magnetic resonance imaging (MRI) data [1] enables 3D models to be reconstructed and embedded in Portable Document Format (PDF) files [2,3].

We wish to bring readers' attention to a free resource for 3D MRI images that might be useful for interactive demonstration of lumbosacral structures, specifically relevant to neuraxial blockade: <http://diposit.ub.edu/dspace/handle/2445/44844?locale=en> (English translation top right of screen). At present, this program runs under Acrobat Reader XI on Windows or Mac computers, but not on tablets, smartphones or Linux systems. Files must be downloaded and saved in the same folder, for which the name must not contain spaces or special characters. Source code and model geometry are not public.

The model includes reconstructions of vertebrae, intervertebral disks, ligaments, epidural and foraminal fat, dural sac and sleeves, sensory and motor cauda equina roots, anesthetic approaches (epidural medial, spinal paramedical and radicular paths), together with predefined sequential 3D views of anaesthetic approaches to epidural blockade, for educational purposes. Zoom, 360° rotation, selective views and transparencies of each structure, and clipping functions, are available (Fig 4).

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References

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Figure 4. 3D-interface. (1) Screen working area. (2) Views from different sights. List of structures (3), visualized after check box confirmation (4). Arrows (5) modify transparency. Structures may be also displayed together (6) or hidden (7). MR images may be displayed (8) and navigation it's possible (9). Clipping (10) in three planes (11) along cuts in each plane (12). Predefined educational views (13). (14) Disables automatic selection of clicked structures. (15) Opens the instruction file.

