1.5 T (A) and 3 T (B) lumbar spine images are compared in Fig. 66–1, Fig. 66–2, and Fig. 66–3. Fig. 66–1 presents FSE T2-weighted sagittal scans, Fig. 66–2 FSE T2-weighted axial scans (at L3–4), and Fig. 66–3 FSE postcontrast T1-weighted axial scans (at L4–5). The two MR exams were acquired consecutively (the scans at 3 T were acquired first), with the patient being a 37-year-old man with a left laminotomy at L4–5 performed 6 years prior to the current exam. He now presents with right-sided pain in an L4 nerve root distribution.

The slice thickness was 4 mm in each instance. Scan times and voxel sizes were similar for all comparisons. Bandwidth was adjusted for equivalent pixel shift. The sagittal T2-weighted scans are comparable at 1.5 and 3 T in terms of diagnostic quality, demonstrating disk desiccation at L3–4 through L5–S1, and end-plate degenerative changes at L4–5. A right paracentral disk herniation at L3–4 is noted on both sagittal and axial T2-weighted scans and is equally well depicted at 1.5 and 3 T. On the axial scans (Fig. 66–2), the right L4 nerve is noted to be compressed in the lateral recess by the disk herniation. A reduced flip angle (120 degrees in the axial plane and 135 degrees in the sagittal plane, for refocusing) was employed for SAR reasons at 3 T.

Figure 66–3 presents axial T1-weighted images at L4–5 after IV gadolinium chelate administration at (A) 1.5 and (B) 3 T. The 1.5 T scan was performed in a delayed fashion.
after contrast administration, accounting for the decreased enhancement of scar noted on that exam (relative to the exam at 3 T). The left-sided laminotomy, mild postoperative deformity of the thecal sac, and enhancing scar tissue surrounding the exiting L5 nerve root (arrow) on the left are all well visualized on (B) the 3 T exam. Both the 1.5 and 3 T scans employed FSE technique, using three echoes. The dose of contrast administered was 0.1 mmol/kg. No adjustment was made in contrast dose for the 3 T scan, nor is this recommended. Intravenous contrast is employed in the postoperative lumbar spine on MR to distinguish scar, which enhances, from recurrent or residual disk material, which does not (when scans are acquired <20 mins postcontrast). Although scar enhances, it does not do so intensely, which has been well appreciated at 1.5 T since approval for this indication in the early 1990s. No published studies exist concerning the relative enhancement of scar at 1.5 versus 3 T. Whatever the improvement at 3 T, if indeed any exists, is well utilized for routine clinical interpretation in the postoperative back.