A 66 year old female patient underwent two separate spinal surgeries, the first using two PEEK spinal implants and the second, three years later, using a ceramic silicon nitride implant. This review compares the two materials post-operatively.
Three years later, the patient returned with intractable back pain which had lasted for 8 weeks. Radiographs indicated no evidence of bony incorporation of the PEEK devices. A broad based protruding herniation of the L3-L4 intervertebral disc existed, with moderate spinal stenosis and narrowing of the right intervertebral neural foramen, causing compression of the right L3 nerve root as it exited. Additionally, there was compression of the left L4 nerve root as it passed through the lateral recess, a result of the bulging disc, osteophytes and left facet arthropathy.

After conservative treatment a laminectomy of L3-L4 was performed, along with a discectomy from the right side where patient experienced pain. An 11 mm ceramic silicon nitride TL device was positioned midline. The Valeo™ TL device and space were packed with autologous posterior element bone graft.
Comparing PEEK to silicon nitride in these 7.4 year (PEEK) and 4.4 year (silicon nitride) postoperative radiographs, it is apparent that silicon nitride fosters superior bone growth and bone density, despite having been implanted three years later. Given the patient’s comorbidities and these results, this material should provide a clinician with significant outcome advantages over PEEK.