Your back surgery plan: why we choose what we choose

Your surgeon will tailor this to your own scans and symptoms.

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What you have

You have spinal stenosis at several levels of your lower back. Over the years, discs, joints and ligaments have thickened and narrowed the space for your nerves. Pressure on the central nerve channel causes leg heaviness and cramping when you walk; pressure at the nerve exit holes causes sharp pain that runs down the leg. Injections often help only briefly.

Our surgical plan

Step 1: decompression (laminectomy and foraminotomy). Through an incision in your back, we remove the thickened tissue and a small part of the bone roof over the nerves, and we widen each nerve exit hole, like widening a squeezed pipe. We keep your own joints. In large studies, when the spine is stable, this worked as well as adding a fusion, with less bleeding, a shorter stay and an easier recovery. About 1 in 5 people needed another operation either way.[1]

Step 2, only if needed: fusion (usually a TLIF). If leg pain from a pinched nerve remains after you heal, we remove the worn disc at that level, place a small spacer with bone graft, and secure the level with screws and rods so it heals as one solid piece. This stabilizes the level and opens the nerve space further.

When we fuse at the first operation

We fuse right away if your scans show any one of these: a crack in the small bone bridge at the back of a vertebra[1]; a large forward slip of one bone on another[1]; bones that shift when you bend forward and back[2]; a bone that slides sideways or a twisted spine[3]; a sideways curve of more than 20 degrees where we operate[3]; and a previous operation at the same level[1]. In each case, removing bone alone could make your spine less stable.

When we add up smaller clues

Some findings only matter together. We count one point for each of these: a collapsed disc squeezing the nerve exit hole[6]; a forward-tilted or flat spine beyond what is normal for your age[5]; a sideways curve of more than 10 degrees[3]; joints angled so they resist slipping poorly[7]; fluid or a cyst in a joint[8]; and back pain that is worse than your leg pain[7].

We fuse at the first operation when you reach 2 points. If you are healthy and want just one operation, 1 point is enough. If you have two or more of the following, we need 3 points, because a fusion is riskier and slower to heal for you: age over 75 or frailty, thin bones, smoking, poorly controlled diabetes, high body weight, or heart or lung disease. We work on these first.[9]

If freeing the nerves during surgery would take too much of a joint, we add the fusion at that time, as we agreed with you beforehand.[4]

Studies behind this

1. Two large trials (SSSS, Sweden, 2016; NORDSTEN-DS, Norway, 2022 and 2024) found decompression alone worked as well as adding fusion, with a shorter stay and lower cost. They did not include people with large curves, severe nerve-hole narrowing, several slipped levels or earlier surgery. A cracked bone bridge or a large slip is accepted teaching.
2. In the Norwegian trial, shifting on bending X-rays did not predict who gained from fusion, and the Swedish trial saw about 1 mm of extra slip after decompression with no effect on symptoms. We still plan fusion when the shift is large.
3. People with a curve over 20 degrees who had fusion did better at one year (Oswestry 16.6 vs 28.1; back pain score 1.5 vs 3.7) than those with decompression alone (Spine Journal, 2024). Sideways slip is linked to leftover back pain after decompression (European Spine Journal, 2013).
4. Removing the inner part of a joint keeps the spine stable; removing a whole joint, even one side, does not (graded-facetectomy studies; Abumi 1990).
5. Opening the nerves changes the lower back curve by only about 3 degrees (European Spine Journal, 2021). Older people normally tilt forward more, so we use age-adjusted targets (Lafage).
6. Disc height under 4 mm or nerve-hole height under 15 mm (Hasegawa, 1995): the hole depends on the disc height.
7. A review of decompression alone found worse results with steeply angled joints and with back pain bigger than leg pain.
8. Joint fluid of 2 mm or more goes with slipping (Chaput, 2007).
9. Fusion in obese patients fails to heal about twice as often, and about 13% more often with diabetes (pooled studies). In a Swedish register of 6,532 people, total second operations were similar (16% vs 13%). Several of these health cutoffs are practical rules rather than trial results.