Lumbar laminectomy uncommon complications

1. direct injury to neural structures. For large disc herniations, consider a bilateral exposure to reduce risk

2. injury to structures anterior to the vertebral body (VB): injured by breaching the anterior longitudinal ligament (ALL) through the disc space, e.g. with a pituitary rongeur. The depth of disc space penetration with instruments should be kept ≤ 3 cm since 5% of lumbar discs had diameters as small as 3.3 cm [1)].

Asymptomatic perforations of the ALL occur in up to 12% of discectomies. Breach of the ALL risks potential injuries to:

a) great vessels: risks include potentially fatal hemorrhage and arteriovenous fistula which may present years later. Most such injuries occur with L4–5 discectomies. Only ≈ 50% bleed into the disc space intraoperatively, the rest bleed into the retroperitoneum. Emergent laparotomy or endovascular treatment66 is indicated, preferably by a surgeon with vascular surgical experience, if available. The mortality rate is 37–67%

● aorta: the aortic bifurcation is on the left side of the lower part of the L4 VB, and so the aorta may be injured above this level

● below L4, the common iliac arteries may be injured see Iatrogenic Iliac Artery Injury.

● veins (more common than arterial injuries): vena cava at and above L4, common iliac veins below L4

b) ureters

c) bowel: at L5–1 the ileum is the most likely viscus to be injured

d) sympathetic trunk

3. wrong-site surgery: incidence in the self-reporting survey was 4.5 occurrences per 10,000 lumbar spine operations [2)].

Factors identified as potential contributors to the error: unusual patient anatomy, not performing localizing radiograph. 32% of responding neurosurgeons indicated that they removed disc material from the wrong level at some time in their career

4. Rare infections:

a) meningitis

b) deep infection:<1%.

Including:

● Discitis: 0.5%

● Spinal epidural abscess (SEA): 0.67%

5. cauda equina syndrome: may be caused by post-op spinal epidural hematoma. Incidence was 0.21% in one series of 28 lumbar discectomies and 0.14% in a series of 12,000 spine operations.

Red flags: urinary retention, anesthesia that may be saddle or bilateral LE

6. postoperative visual loss (POVL)

7. complications of positioning:

a) compression neuropathies: ulnar, peroneal nerves. Use padding over elbows and avoid pressure on the posterior popliteal fossa

b) anterior tibial compartment syndrome: due to pressure on anterior compartment of the leg (reported with Andrew's frame). An orthopedic emergency that may require emergent fasciotomy

c) pressure on the eye: corneal abrasions, damage to the anterior chamber

d) cervical spine injuries during positioning due to relaxed muscles under anesthesia

8. post-op arachnoiditis: risk factors include epidural hematoma, patients who tend to develop hypertrophic scar, post-op discitis, and intrathecal injection anesthetic agents or steroids. Surgical treatment for this is disappointing. Intrathecal depo-medrol may provide short- term relief (in spite of the fact that steroids are a risk factor for the development of arachnoiditis).

9. thrombophlebitis and deep-vein thrombosis with the risk of pulmonary embolism (PE)59: 0.1%

10. complex regional pain syndrome AKA reflex sympathetic dystrophy (RSD): reported in up to 1.2% of cases, usually after posterior decompression with fusion, often following reoperations with onset 4 days to 20 weeks post-op. Treatment includes some or all of PT, sympathetic blocks, oral methylprednisolone, removal of hardware if any

11. very rare: Ogilvie's syndrome(pseudo-obstruction("ileus")of the colon).Usually seen in hospitalized/debilitated patients. May be related to narcotics, electrolyte deficiencies, possibly from chronic constipation. Also reported following spinal surgery/trauma, spinal/epidural anesthesia, spinal metastases, & myelography.

1)
Bilsky MH, Shields CB. Complications of Lumbar Disc Surgery. Contemp Neurosurg. 1995; 17:1–6
2)
Jhawar BS, Mitsis D, Duggal N. Wrong-sided and wrong-level neurosurgery: a national survey. J Neurosurg Spine. 2007; 7:467–472