

Surgery for cervical spondylosis

Aim:

The relief of symptomatic compression of the spinal cord (myelopathy) or nerve roots (radiculopathy)

Surgical considerations

- Anterior or posterior approach?
 - Decompression with fusion or disc replacement?
 - Material for fusion?
 - How many levels? Usually 1, occasionally 2
 - Accelerated adjacent segment disease?
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- Identify the symptomatic level through a careful assessment, and a minimalist approach to surgery to maximise good results and minimise complications

Approaching the spine from in front (Anterior)

- Disc prolapse (herniation/ slipped) causes pressure from in front of the nerve root or spinal cord
- Decompression from the front is very effective at relieving compression and improving symptoms
- The approach is invariably through a 3cm skin crease incision on the right side of the neck
- A careful dissection between carotid artery and the oesophagus (gullet) gives excellent access to the front of the spine
- Only 1 muscle (platysma) just deep to the skin is cut, so there is very little post-operative pain experienced
- An excellent decompression of both nerve roots (left and right) and the spinal cord can be achieved by curetting out the disc and drilling away the bony spurs (osteophytes)

What to put in the space between the bones? (ie where the disc was)

- Nothing - old fashioned, safe, with good fusion rates, but small risk of segmental collapse and segmental deformity (kyphosis)
- Interbody cage - standard. Safe. Cages are made of PEEK (poly ether ether ketone) carbon fibre or titanium. Range of sizes and variation on shape. Advantage – restore segmental alignment (lordosis), and increase cross-sectional area of nerve root exit foramen (more space for the nerve). But occasionally the device can migrate, or settle in the vertebral body (this usually relates to surgical technique). Sometimes revisional surgery is required
- Artificial disc - to preserve motion in the segment

Artificial discs

Disc replacement = arthroplasty

- Allows preservation of motion in the segment
- ie there must be useful motion to start with
- Purpose – to delay progression of adjacent segment disease
 - There is no noticeable loss of neck movement following a single level fusion – because most of the motion is between skull and first 2 neck vertebra (C1 atlas, C2 axis); and, each level only contributes a little, so adjacent levels can compensate. This compensatory extra movement results in extra wear and tear – rate of 2% per year
- Generally these factors mean that it is an operation for the younger spine

Devices – artificial discs

Synthes Prodisc C Nova



DePuy Synthes Prodisc C Vivo



BBraun Activ C



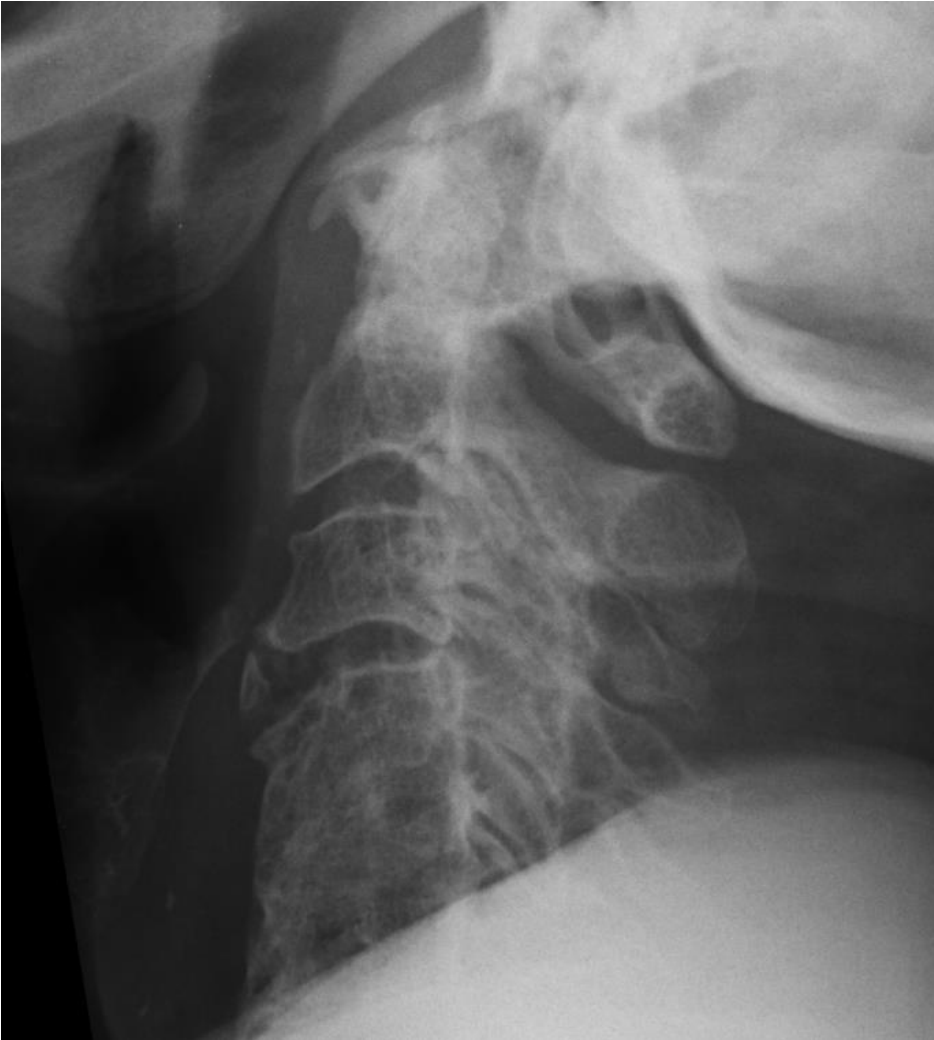
1y motion – Device with keel



1y Motion – Keel-less device



X-rays showing fusion after
a) anterior cervical discectomy
b) Zero-P device (cage with screws)



Case selection

- Careful patient assessment to make a diagnosis of nerve root or spinal cord compression
- MRI to confirm clinical diagnosis
- Dynamic x-rays can identify presence or absence of motion at each segment; rarely excessive motion is seen
- Nerve root syndromes can almost always be fixed by a single level decompression
- Myelopathy may require multi-level surgery
- Anterior multilevel surgery should rarely be more than 2 levels
- An anterior plate is virtually never required

Complications

of anterior surgery (from the front)

All of these are rare in my practice

General

- GA, Bleeding, Infection, DVT/PE
- Blood clot in the wound needing washout

Specific

- Hoarse voice
- Difficulty swallowing
- Neurological – Pain, weakness, numbness in limbs

Late

- Cage migration / settling
- Adjacent segment disease requiring surgery

Posterior decompression (from behind)

- Nerve roots can be decompressed by an operation called – Posterior Microforaminotomy
- The spinal cord can be decompressed by an operation called laminectomy (deroofting the spinal canal)
 - Variations exist - laminoplasty, skip laminectomy
 - Occasionally fixation may be considered (use of metal rods and screws)

Posterior microforaminotomy

- A low risk operation
- Useful for multilevel root decompression
- Preserves the motion segment
- Doesn't preclude future anterior decompression
- No clear evidence favouring anterior over posterior decompression – FORVAD trial attempting to provide evidence
- CT scan showing bony decompression

