Cervical spondylosis is a general term for age-related wear and tear on the neck’s spinal disks. As these dehydrate and shrink, bone spurs and other signs of osteoarthritis develop. The condition is very common, and worsens with age. It also appears to have a genetic component, as some families will exhibit more of these changes then others. Neck X-rays pick up cervical spondylosis and osteoarthritis in more than 90% of people aged over 65, most of whom experience no symptoms. When effects are evident, nonsurgical treatments are often successful.

The SOREDEX Scanora 3D system is a cone beam CT imaging system for use on the head and neck. The unit has been in Koskiröntgen private clinic in Tampere, Finland, for several years and has been used mainly for maxillofacial and sinus diagnostics. The system has also recently been used very successfully for upper cervical spine examinations. Its fields-of-view (H×D) are 60×60mm, 75×100mm, 75×145mm and 130×145mm, and are selectable according to the task at hand. In this seated patient platform, the region of interest can be freely located in the head and neck area, thanks to motorised movements and laser lights. The voxel sizes for adjusting the spatial resolution are selectable in the range of 133–350μm. The protocol can be optimised for each diagnostic task to produce proper image quality at minimum dose levels.

CBCT in action
The first of a sample of patient cases was a middle-aged male complaining of pain in his left upper cervical region. The neurosurgeon found a bony tumour in the region of C3, and a CBCT image (see picture, above, right) was taken that showed a severe arthrosis of the facet joint, where one could see a bony mass formed by bone degeneration, in the medial and lateral borders of the facet joint. It also showed relative lateral stenosis. Images showed the mass in the axial, coronal and sagittal planes and in 3D surface reconstruction picture. The patient was referred to a resection of the lesion and foraminotomy.

The second patient was a young female experiencing neck pain and tenderness and restricted movements of the spine. A sagittal image showed anterior and postero-lateral cervical spondylosis and loss of lordosis in that area. In addition, the spondylotic changes narrowed the main spinal canal in these regions. A coronal image also showed the mild arthrosis of the facet joints bilaterally. Axial images did not show any stenosis of the spinal canal or the intervertebral foramen. A 3D surface reconstruction showed the above mentioned changes.

The third patient was a middle-aged male patient who described severely restricted movements of the cervical spine, as well as bilateral radiating pain in both upper extremities. Axial reformations showed a severe stenosis of the intervertebral foramen at C4-C5 level. Both postero-lateral spondylotic changes and facet joint arthrosis led to the shown stenosis. The patient was referred to an orthopaedic specialist.

CBCT is an excellent diagnostic tool for cervical spondylosis, facet joint arthrosis and stenosis of the intervertebral foramina with minimum radiation to the patient. It makes it possible to image every cervical spine vertebrae until the C6-C7 area in all kinds of patients, obese or lean. Dr Järnstedt and Dr Dastidar recommend that surgeons do not go for native X-ray images with AP, lateral and oblique projections due to the radiation involved and poor diagnoses. Patients with radiating pain in their upper extremities are often referred for an MRI of the cervical spine, where a good diagnosis of prolapse/protrusion can be made, but not of bony stenosis/spondylosis, or facet-joint arthrosis. Stenosis in the spinal canal and the intervertebral foramina can be analysed clearly using CBCT. In conclusion, CBCT of the cervical spine is recommended for these patients instead of X-rays.

Further information
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