Occipitocervical fusion

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Introduction

Occipitocervical fusion is performed primarily in instability due to congenital and post-traumatic deformities, infections, tumours and inflammatory conditions at the craniocervical junction.

Although several techniques of occipitocervical fusion are available cervical pedicle screw is the only posterior cervical instrumentation that can obtain a three column fixation and thereby providing a reliable and rigid anchor in the cervical spine.

Case description

The surgery was performed on a 60-year-old lady with gait disturbance and loss of manual dexterity for 2 months following a trivial trauma. She had features of myelopathy with weakness over all four limbs with upper limbs more affected than the lower limbs. Radiographs showed basilar invagination with an absent posterior arch of atlas. The CT

and MRI scans demonstrated an assimilated atlas with a bony spur projecting anteriorly compressing the craniovertebral junction. The craniovertebral junction was decompressed by excising the bony spur and stabilised by occipitocervical fusion. An enlarged foramen transversarium at C2 precluded pedicle screw insertion necessitating the use of subaxial pedicle screws for fusion.

Surgical procedure

A midline skin incision from theinion to the C4 was made. The muscles were elevated subperiosteally to expose the lateral margin of the articular masses on either side. The atlas was assimilated with the occiput resulting in a bony spur causing significant compression of the cord. This spur was excised with the help of high-speed diamond burrs, pituitary forceps and 1 mm Kerrisons rongeurs. Pedicle screws were then inserted at C3 and C4 to stabilise the occipitocervical region. The landmark for C3/C4 pedicle screw was slightly lateral to the center of the articular mass and close to the inferior margin of the inferior articular process of the cranially adjacent vertebra. The entry point was made with a high-speed burr and probed with a pedicle probe under image. The angle of insertion was 35°–45° medial to the midline as adjudged by the preoperative CT scan while the cephalad angulation was aided by lateral fluoroscopy. The rods were contoured at the plate–rod junction as per the occipitocervical curve and were fixed with self-tapping screws onto the occiput. Occipital screws are placed closed to the midline and below theinion, which provides anchorage into the thickest part of the occiput while being inferior to the transverse sinus. The occiput, lateral masses and the laminae were decorticated with a

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Rosen burr. A surgical was placed over the decompressed cord and locally harvested bone grafts were then packed from the occiput to C4.

Post-op procedure

Drain was removed on the second post-operative day. The patient was ambulated subsequently with a soft collar for comfort.

Discussion and conclusion

This is an illustrative case of a malformation at the craniocervical junction. The primary aim in these cases is adequate decompression before proceeding to fixation. Pedicle screws are particularly useful in cases where laminectomy is included for decompression as this precludes the use of laminar hooks, clamps or sublaminar wiring.

Pedicle screws provide multiple points of fixation which increases the stability of construct and thereby the chances of successful fusion [1–4].

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