Reoperation related to graft complication following anterior cervical fusion

At our department anterior cervical decompression and fusion is usually performed using the Cloward or the Smith Robinson method; for the latter we occasionally employ the technique of partial multiple vertebodyectomy with the insertion of a block graft, a procedure we refer to as a "Trench". It is our standard practice to obtain a lateral cervical spine radiograph on the first postoperative day. Some surgeons find the radiograph useful to confirm that the correct level has been fused. In addition, the radiograph will provide some information about the degree of retropertoneal swelling due to haematoma. However, we interpret the significance of postoperative cervical radiographs in conjunction with the clinical findings. If the patient is symptomatic and the radiograph shows a graft abnormality an early re-exploration may be undertaken. In an asymptomatic patient, partial anterior slippage of the graft or minor degree of collapse are considered acceptable and the patient is followed up. If the patient develops symptoms or signs then a late re-exploration may be performed.

Between 1979-89, 822 patients had anterior cervical decompression and fusion at our department. Fifty one of these had further anterior decompression, 27 at a different level and 24 at the previously operated level. In 12 of the latter group, re-exploration was related to collapse of the bone graft. The other 12 patients had a re-exploration to remove retained osteophytes or disc fragments. Other patients not counted in this group included one who was re-explored for infection following a cervical disectomy without a fusion and three who had reoperation to evacuate a postoperative haematoma in the neck. Preoperative radiographs were carried out in all cases to identify the correct level before and therefore none of our patients had a fusion at the wrong level. We carried out a retrospective study of the 12 patients that required re-exploration because of a graft complication. The postoperative clinical features and the early check cervical spine radiograph were analysed to find out if the clinical features alone are a reliable predictor of the patients with a graft complication that may necessitate re-exploration. In this group of patients four had a one level Cloward operation, two had a two level Cloward operation, three had a one level Smith Robinson procedure, two had a three level "Trench" procedure and one had a four level "Trench" procedure. The graft had collapsed in six cases, slipped anteriorly in five and slipped posteriorly in one case. The early check radiographs showed a serious abnormality which necessitated an urgent re-exploration in four cases, each of whom was symptomatic at the time. In four other cases, the early radiograph showed a minor abnormality which was initially managed conservatively. Re-exploration was performed between two to four months postoperatively when the complication worsened radiologically and was accompanied by symptoms and signs. The final four cases had a satisfactory early check radiograph and the complication became obvious between one week to five months later. They all had clinical symptoms that prompted us to repeat the radiographs. It was clear that each of the 12 patients had an obvious clinical change at the time of re-exploration whether it was early or late. These were: severe brachialgia affecting the asymptomatic side in two cases, severe dysphagia in four cases, recurrence and/or worsening of myelopathy in four cases and recurrence and brachialgia in one case. In one other case there was no postoperative improvement and the patient's myelopathy slowly deteriorated. In our study we did not encounter a single case that was re-explored on the basis of a graft abnormality on the plain cervical radiograph alone.

Our rate of reoperation related to a graft complication following anterior cervical fusion was 1-45%. It is most likely that of the 822 patients that had anterior cervical fusion at our unit, a number of them had a minor degree of graft abnormality on the postoperative radiograph that were managed conservatively and did not develop symptoms and signs to necessitate a reoperation. Lansford reported a reoperation rate of 4% following anterior cervical disectomy and fusion and the reoperation rate reported by Williams was 5-1%.

In our experience a significant graft abnormality that necessitated a reoperation was always associated with a definite clinical problem. Abnormalities on the cervical spine radiographs in asymptomatic patient could be managed conservatively. It is possible therefore to conclude that an early radiograph after a cervical fusion is unnecessary in a patient who is asymptomatic or improving. A radiograph is needed only if the patient complains of dysphagia, persistence or worsening of their radiculopathy or myelopathy. Late recurrence of symptoms or signs is an indication for further radiographs to assess the condition of the bone graft.

While we acknowledge that there are many reasons for an early postoperative radiograph, we do not feel that these reasons are sufficiently convincing in an asymptomatic patient. A patient who had a wrong level fused will continue to have symptoms. An experienced spinal surgeon will know the adequacy of the fusion at the end of the operation and is thus able to select the high risk asymptomatic patients who need to be carefully followed up with postoperative radiography. This decision will take into account the pathology (for example, rheumatoid arthritis), the preoperative assessment (for example, cervical instability) and the technical aspect of the operation (for example, osteoporotic bone graft and unsatisfactory positioning).

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MATTERS ARISING

Akathisia following traumatic brain injury

Akathisia following traumatic brain injury involving right parieto-occipital and orbital frontal areas may be due to blockade of dopamine lateralised to the right hemisphere. Fluoxetine-induced akathisia in patients with obsessive-compulsive disorders whose right hemisphere is at a higher metabolic rate suggests that inhibition of dopamine, which is mediated by serotonin in obsessive-compulsive disorders, may occur as a result of post-traumatic alteration of metabolism in the right hemisphere. This lends further support to the role of decreased dopaminergic activity in the prefrontal cortex in akathisia.

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Isolated palsy of the fourth cranial nerve caused by an intracavernous aneurysm

An interesting case of isolated trochlear palsy due to an intracavernous aneurysm was recently reported by Maurice-Williams and Harvey. Two points of contention arise in this report: 1) the need for performing carotid angiography early in the course in an elderly patient with an isolated fourth nerve palsy, and 2) a cause and effect relationship between intracavernous aneurysm and fourth nerve palsy been conclusively shown in this case.

As they acknowledge in their report, isolated trochlear palsies are most commonly caused by trauma and vascular disease. In patients over the age of 50 years, an ischaemic

5 Baron RJ. The cerebral computer—an introduction to the computational structure of imagery of John. Lawrence Erlbaum, 1987;358-64.
infarction of the peripheral trochlear nerve produces a characteristically downward and outward cranial mononeuropathy in this age group, ipsilateral fronto-temporal headache and browache may be associated. Invariably, spontaneous recovery of double vision occurs in intracavernous months. In young patients, congenital trochlear palsy with decompen-sation should be ruled out by carefully measur-ing vertical fusional amplitudes in primary gaze. Ocular myasthenia may simulate equal pupil sparing, painless ophthalmoplegia and should be investigated with intravenous edrophonium testing when suspected. Only rare cases of solitary fourth nerve palsy due to compressive causes or on each occasion have been reported. In one such instance, a fourth nerve palsy in a 51 year old woman was seen to progress over a 2 year period. Investigation revealed an intracavernous meningioma as the cause. Neuroimaging (CT or MRI) should be reserved for those cases of fourth nerve palsy which are not truly isolated, which do not improve after several months of observation, or are shown to be progressive in nature. Carotid angiography seems warranted only in those rare situations in which an associated subarachnoid haemorrhage (such as due to basilar artery aneurysm) has been shown by lumbar puncture or computed tomography. The multiple cranial neuropa-thy are often large and easily demonstrable on CT or MRI. Pain is often associated and remission of symptoms and signs is unusual. Invariably the oculomotor nerve is involved although an isolated abducens nerve palsy may have been seen. As stated by Maurice-Williams and Harvey, only one case of intracavernous aneurysm producing solitary palsy has been reported and in that case cranial nerves III and VI were later involved. Based on the existing data, I feel therefore that the fourth nerve palsy in their case was most likely ischemic in origin and that the small aneurysm seen on angiography was probably coincidental. This interpretation would be more consistent with the spontaneous remis-sion which occurred.

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