

CASE REPORTS

Tapia's syndrome following shoulder surgery

N. Boisseau*, H. Rabarijaona, D. Grimaud and M. Raucoules-Aimé

Department of Anaesthesiology and Intensive Care, Nice School of Medicine, University of Nice Sophia-Antipolis, Hôpital Archet II, 151 route Saint-Antoine de Ginestière, BP 3079, F-06202 Nice Cedex 3, CHU de Nice, France

*Corresponding author

Multiple cranial palsy occurred after shoulder surgery in the sitting position. Compression by the tracheal tube, caused by displacement of the head, may have caused the injury.

Br J Anaesth 2002; **88**: 869–70

Keywords: nerve, cranial; surgery, orthopaedic; position, sitting; complications, Tapia's syndrome

Accepted for publication: January 1, 2002

Nerve palsy after shoulder surgery may result from the surgical procedure or from regional anaesthesia.¹ Neural injuries may also be caused by poor body position during surgery. We report a case of multiple cranial nerve injury after surgery with the patient in the sitting position, and discuss the possible cause and prevention.

Case report

A 42-yr-old man was to have an arthroscopic procedure for repeated dislocation of the left glenohumeral joint. Clinical and laboratory findings before surgery were unremarkable (ASA score I). General anaesthesia was induced with propofol, fentanyl i.v. and muscle paralysis obtained with atracrium. A size 8 orotracheal tube was easily and gently placed in the trachea. The pressure in the cuff was measured and mechanical ventilation started. The patient was placed in a completely upright sitting position on a standard operating room table and the head was fixed firmly in the neutral position with a strap. The surgery lasted 130 min. Anaesthesia was maintained with sevoflurane in oxygen/air and repeated doses of fentanyl i.v. During surgery, two episodes of bronchial intubation occurred, and the head had to be repositioned while it was under the surgical drapes. Moderate arterial hypotension was maintained with a cuff systolic arterial pressure around 90 mm Hg. At the end of the procedure, 20 ml of 0.75% ropivacaine was injected into the shoulder joint via an intra articular canula. When the surgical drapes were removed, the patient's head was found lying with very pronounced right lateral flexion because the body had moved. The patient was extubated in the recovery

room. He complained of throat and neck pain and hoarseness. Forty-eight hours later, these symptoms persisted, associated with dysphagia. On examination, paralysis of the left side of the tongue and the soft palate was found and complete palsy of the left vocal cord was seen by laryngoscopy. He could not lift the left shoulder but no clear evidence of a XIth cranial nerve injury was found. The remainder of the neurological examination was normal. Horner's syndrome was not present. The following day, vertebral and carotid ultrasonography, cerebral computed tomography, nuclear magnetic resonance imaging, and magnetic resonance angiography of the head and neck were carried out and repeated after 1 week. The results were normal with no ischaemia, abscess formation, tumour or haemorrhage found. The chest x-ray and diaphragm movements were radiologically normal. Corticosteroid therapy and vitamins B1 and B6 were given for 2 weeks and speech therapy started. Three months later, the patient started to recover and the symptoms resolved by 6 months.

Discussion

Peripheral nerve injuries are often associated with shoulder surgery, with an incidence of 4%. Most of these injuries are caused by distraction of the brachial plexus.² Cranial nerve palsy is rare after surgery that has not been performed on the head or neck. Tapia's syndrome is a combination of recurrent laryngeal and hypoglossal palsy.³ It has been reported after interscalene brachial plexus block,⁴ but in this case, no regional anaesthesia was used.

Poor body position during surgery can cause vascular, neurological or tissue damage. Dissection of the ascending pharyngeal branch of the carotid artery could partially explain the symptoms in our patient as it provides exclusive blood supply to Xth and XIIth cranial nerves. Excessive head rotation may provoke such vessel dissection.⁵ However, magnetic resonance angiography did not show any vascular or cerebral abnormalities. In addition, the absence of Horner's syndrome, which is often seen after carotid dissection, would argue for another explanation.

Neural injury after malpositioning during surgery is well described.⁶ No report has been published or given an anatomical explanation for Tapia's syndrome in relation to shoulder surgery. In our patient, marked lateral flexion of the head may have damaged several cranial nerves by a prolonged stretching mechanism. However, it seems unlikely that cranial nerves would be affected without involvement of brachial plexus nerves or the spinal cord.

The tracheal tube could have caused most of the findings in this patient such as disturbance of laryngeal function and swallowing. Nerve damage by pressure from the cuff within the larynx has been reported. In our patient, the pressure was checked and no nitrous oxide was given. However, because of excessive lateral flexion of the head, the tracheal tube may have pressed on a localized area just at the crossing of the vagal and hypoglossal nerves.⁷ The severe throat pain after surgery suggests laryngeal injury and the recovery time is typical of a compression injury.

When surgery is carried out with the patient in the fully upright sitting position, the patient is particularly susceptible to head misplacement. Keeping the head aligned is difficult because the body is generally out of view and direct access is not easy. To avoid these problems, special

shoulder operating tables have been designed to improve the patient comfort and to improve body alignment. Also, to prevent such complication, it may be possible to keep the patient conscious throughout the procedure so that the patient can correct any undesirable head misplacement. If general anaesthesia is used, muscle relaxants can reduce muscle tone and increase the risk of head movement. We pay special attention to peak inflation pressure, as a sudden increase may suggest that the tracheal tube may be bent by neck and tracheal deviation. As described in this case report, selective intubation may occur and capnography analysis is also helpful.⁸

References

- 1 Siler JN, Lief PL, Davis AB. A new complication of interscalene brachial-plexus block. *Anesthesiology* 1973; **38**: 590-1
- 2 Lynch NM, Cofield PL, Silbert PL, Hermann RL. Neurologic complications after total shoulder arthroplasty. *J Shoulder Elbow Surg* 1996; **5**: 53-61
- 3 Schoenberg BS, Massey EW. Tapia's syndrome. The erratic evolution of an eponym. *Arch Neurol* 1979; **36**: 257-60
- 4 Johnson TM, Moore HJ. Cranial nerve X and XII paralysis (Tapia's syndrome) after an interscalene brachial plexus block for a left shoulder Mumford Procedure. *Anesthesiology* 1990; **90**: 311-2
- 5 Gould DB, Cunningham K. Internal carotid artery dissection after remote surgery: iatrogenic complications of anesthesia. *Stroke* 1994; **25**: 1276-8
- 6 Kroll DA, Caplan RA, Posner K. Nerve injury associated with anesthesia. *Anesthesiology* 1990; **73**: 202-7
- 7 Gelmers HJ. Tapia's syndrome after thoracotomy. *Arch Otolaryngol* 1983; **9**: 622-3
- 8 Toung TJK, Grayson R, Saklad J, Wang H. Movement of the distal end of the endotracheal tube during flexion and extension of the neck. *Anesth Analg* 1985; **64**: 1029-38