Case Report

Acute unilateral post-operative submandibular sialadenitis following posterior cranial fossa surgery

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ABSTRACT

Extreme degree of rotation and flexion of the head during posterior fossa surgeries can lead to acute post-operative submandibular sialadenitis that can cause respiratory compromise. Identification of this problem is vital to prevent deterioration in the early post-operative period. This condition responds well to conservative management provided airway obstruction is taken care of. We discuss a case of a 63-year-old female, with a left side vestibular schwannoma who developed airway obstruction in post-operative period due to swelling of right submandibular gland. Various possible mechanisms leading to this condition and related literature are briefy reviewed.

Key words: Posterior fossa surgery, postoperative submandibular sialadenitis, retrosigmoid

INTRODUCTION

Acute post-operative submandibular gland sialadenitis is a rare complication occurring after posterior fossa surgery.[1,2] It develops on the side opposite to the surgery and can lead to respiratory compromise.[3-5] Here, we report a case of retrosigmoid craniotomy developing acute respiratory distress in post-operative period due to acute submandibular gland sialadenitis.

CASE REPORT

A 63-year-old female weighing 55 kg with a body mass index of 22 kg/m^2 presented with complaints of hearing loss and tinnitus in the left ear for the past 8 years which was insidious in onset and gradually progressive. She did not have any associated co-morbid conditions such as diabetes mellitus, hypothyroidism or autoimmune disorders. On examination, she was conscious and oriented with left-sided sensorineural hearing loss. There was an associated left facial lower motor neuron palsy with left-sided cerebellar signs. Magnetic resonance imaging revealed an intensely enhancing lesion of size 3.5 cm × 3.1 cm × 3.0 cm in left-sided cerebello-pontine (CP) angle cistern with mass effect on pons, medulla and left cerebellar peduncle causing gross hydrocephalus suggestive of a vestibular schwannoma. The lesion was extending into the internal acoustic meatus.

After shifting to operation room and connection of routine monitors, anaesthesia was induced with fentanyl and propofol. Rocuronium was administered to facilitate tracheal intubation and anaesthesia was maintained on mixture of oxygen and nitrous oxide, and isoflurane. Mannitol (40 g) was administered intravenously at the time of induction. The patient's head was fixed in Mayfield clamp, and she underwent left retrosigmoid suboccipital craniotomy in right park bench position. The endotracheal tube was fixed on the right angle of mouth (contralateral to side of surgical incision). Electromyographic needles for facial nerve monitoring were also placed on the left side. The head was flexed, and the face was turned to right side with vertex downwards. Two finger breadths were maintained between the chin and the

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chest. This position remained stable throughout the surgery which lasted around 6 h. The intra-operative fluid input was 2700 ml with a blood loss of 400 ml and urine output of 750 ml.

The patient was extubated in the immediate post-operative period. She developed right-sided neck swelling in the submandibular region [Figure 1] about 2 h after surgery which continued to progress rapidly. She was afebrile and there were no local signs of inflammation. The patient then developed stridor and respiratory distress. In view of persistent stridor and distress, the patient had to be intubated. NCCT of the neck [Figure 2] revealed a swelling of the right submandibular gland and surrounding tissues with trachea shifted to the opposite side. No calculus was seen in the submandibular duct. Antibiotics (a combination of third-generation cephalosporin and aminoglycoside) were administered for 5 days in the post-operative period. Steroid (dexamethasone 4 mg 8 hourly) were also administered to reduce brain oedema. Local massage of the affected area was done to promote salivation and help in decreasing the size of gland. The swelling progressed over the next 48 h and then gradually subsided over 1 week. Tracheal extubation was done on third post-operative day and the patient was discharged from the hospital on the 6th post-operative day.

DISCUSSION

Acute submandibular gland sialadenitis following posterior fossa surgery is a rare complication.[1-3] Overall incidence of this complication is assumed to be <1%–2% of skull base surgeries.[1] Table 1 summarises similar cases reported in English literature. As posterior fossa surgeries such as retrosigmoid and far-lateral approach require extreme head rotation and flexion for long duration, this complication has been most commonly seen during these procedures.[2,4,5,7] The swelling occurs on the side opposite to that of the surgery. Although the exact reason is not known, various mechanisms have been proposed as a reason for this complication. The duct of the submandibular gland (Wharton's duct) opens on the sublingual

Figure 1: Right-sided neck swelling (marked with asterisk) developing within 2 h after surgery requiring intubation

Figure 2: Non-contrast computed tomography neck showing markedly swollen right-sided submandibular gland (arrow) pushing the trachea to the opposite side (arrowhead)

Table 1: Review of cases requiring intubation after surgery due to acute unilateral submandibular sialadenitis

Author	Years	Age/sex	Diagnosis	Position	Duration of surgery (h)	Onset of swelling (h)	Side	Duration of swelling (days)
Kim *et al*.[1]	2008	20-64/male (3), female (2)	Meningioma (3), VS (1), Cavernoma (1)	Supine=4, PB=1	6	4	C/L	7
Shimizu *et al*.[2]	2009	56/female	Tentorial meningioma	PB	10	2	C/L	11
Cavaliere *et al*.[3]	2009	73/female	Parietooccipital meningioma	Prone	7	1	C/L	7
Singha and Chatterjee[4]	2009	23/female	Cerebellar meningioma	Lateral	ND	Immediate	C/L	7
Prabhu *et al*.[5]	2010	41/female	VS	Semi-sitting	ND	Immediate	C/L	7
Diehn and Morris[6]	2012	51/female	Glossopharyngeal neuralgia	ND	3	Immediate	C/L	2
Present case	2017	63/female	VS	PB	6	2	C/L	7

VS – Vestibular schwannoma; PB – Park bench; C/L – Contralateral; ND – Not described

papilla at the base of the tongue. The endotracheal tube may cause compression of the tongue which causes salivary duct obstruction and stasis leading to sialadenitis. The downward migration of the tongue due to gravity, fixing the endotracheal tube on the side opposite to the side of surgery further contributes to duct obstruction.[1] The extreme degree of head rotation can cause pressure ischaemia of the gland. It may also compress the facial artery adding to the ischaemic insult. Reperfusion of such ischaemic tissues after surgery leads to rapid progression of the swelling within a few hours after surgery causing respiratory compromise and stridor.[1,5,8] Medical conditions such as diabetes mellitus, Sjogren's syndrome and dehydration can predispose to this complication.[1,5]

Use of un-humidified oxygen or anaesthesia gases, antisialogogues, non-depolarising neuromuscular blocking agents, antihistaminics, benzodiazepines and diuretics can decrease salivary secretions and lead to blockage of salivary ducts.[8,9] Morphine has been proposed to produce spasm of parotid ducts causing swelling of the gland.[10]

Acute post-operative sialadenitis has good prognosis provided respiratory compromise is taken care of. It can be managed conservatively using massage, heat, sialogogues, antibiotics and steroids and the swelling subsides gradually over 7–10 days.[5]

CONCLUSION

Acute post-operative submandibular gland sialadenitis is a rare complication seen most commonly in posterior fossa surgeries. Excessive head rotation and flexion must be avoided to prevent its occurrence.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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