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Case Report

Anaesthesia Section

Acute Unilateral Parotid Gland Swelling following General Anaesthesia for Arthroscopic Shoulder Surgery: A Case Report

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ABSTRACT

Acute enlargement of the parotid gland following general anaesthetic administration is an uncommon, harmless, and self-limiting complication. The most likely cause was thought to be anaesthesia mumps, which involves a complex interaction of multiple factors, including factors such as direct trauma, patient position leading to altered salivary flow along with an increase in viscosity due to dehydration, its occurrence following arthroscopic shoulder surgery under general anaesthesia is relatively rare. It is usually a self-limiting disease and requires only follow-up observation, and in a few case reports, evaluation with imaging studies has been performed. However, severe complications may sometimes occur. If upper airway obstruction develops as in the present case, then emergency airway management must also be considered. Several surgical subspecialties, including orthopaedics, obstetrics and gynaecology, neurology, and spinal surgery, have recognised this uncommon postoperative syndrome. The present case report describes the medical condition of a 50-year-old female patient who experienced postoperative parotitis and underwent arthroscopic shoulder surgery for rotator cuff repair involving general anaesthesia.

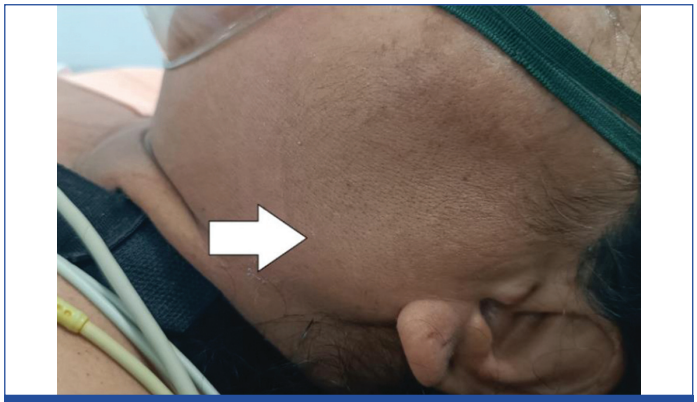
Keywords: Anaesthesia mumps, Parotitis, Salivary gland, Sialadenitis

CASE REPORT

A 50-year-old female presented with a chief complaint of recurring shoulder injury, who required arthroscopic assisted Hill Sachs repair under general anaesthesia. She had no medical history of co-morbidities, habits, or allergies. The patient's preoperative anaesthesia examination revealed a blood pressure of 160/100 mmHg and an American Society of Anesthesiologists (ASA) 3 rating, with normal airway examination, full temporomandibular and neck movement, and a Mallampati grade II. The patient's Electrocardiogram (ECG) revealed a regular sinus rhythm, and the chest x-ray was unremarkable. To manage her blood pressure, the patient was prescribed a 5 mg daily dose of amlodipine and was instructed to take it on the day of the procedure with sips of water. The patient was kept nil per oral overnight and given maintenance intravenous fluids.

In the operating theatre, an 18-gauge cannula was inserted, and standard anaesthesia monitoring was established. The patient received premedication with 0.2 mg i.v. of glycopyrrolate and 0.02 mg/kg of midazolam. The patient was induced with propofol and vecuronium. After mask ventilation for three minutes, the patient was intubated with a 7.5 mm id endotracheal tube and was kept under mechanical ventilation with a tidal volume of 8 mL/kg of predicted weight with a respiratory rate of 16/minute. Fifteen minutes after induction patient was positioned in the lateral decubitus position (left) with a semi-soft ring pillow. Sevoflurane was used to maintain anaesthesia at a Minimum Alveolar Concentration (MAC) of 0.8%, with 1.5 L/minute oxygen and 1.5 L/minute air (50%). A muscle relaxant was administered intermittently. Intraoperative blood pressure was maintained around 140/80 mmHg with a pulse of 72 beats/minute. Crystalloids were used for fluid replacement. She received 2.6 L (crystalloids). Urine output was monitored at 0.5-1 mL/kg during the four hour procedure, with a blood loss of around 40 mL. The irrigation fluid pump pressure and flow rate were standardised in the normal recommended range of 40-80 mmHg and 50-150 mL/minute. The patient was then made supine, reversed with 0.05 mg/kg of myopyrrolate, and extubated.

After the surgery, the patient experienced painless swelling on the left jaw in front of the ear which was noticed immediately after repositioning the patient to supine [Table/Fig-1]. However, the patirent did not have any trouble with swallowing, and her vital signs remained stable. On examination, a firm, globular mass was palpated in the left gland but there was no erythema or tenderness [Table/Fig-2]. The patient had a full range of motion when opening her



[Table/Fig-1]: Left parotid swelling immediately postsurgery.

[Table/Fig-2]: Left parotid swelling after one hour postsurgery.

mouth and denied any previous symptoms of decreased salivation or dry mouth. After being transferred to the postoperative observation room, there were no signs of fever or elevated white blood cell count. The swelling improved significantly after the patient received 100 mg hydrocortisone, rehydration therapy with ringer lactate at the rate of 80 mL/hour. It gradually subsided after 72 hours [Table/Fig-3]. The patient was discharged after five days without any complications.

[Table/Fig-3]: Parotid swelling after 72 hours.

DISCUSSION

Anaesthesia mumps, also known as postoperative parotitis, is a rare complication of general anaesthesia that causes acute swelling of the salivary glands, particularly the parotid glands. It is a common and transient occurrence that typically occurs within two weeks after surgery. The incidence of anaesthesia mumps following endotracheal anaesthesia was reported to be five in 3000 cases [1]. The typical manifestation of this condition is painless swelling of the parotid gland on one side, which usually resolves within a few days [2]. This uncommon postoperative syndrome has been identified not only in orthopaedics, obstetrics and gynaecology, neurology, and spinal surgery, but also in several other surgical subspecialties [3,4].

In 1878, Munde was the first to describe acute postoperative sialadenitis after oophorectomy surgery [5]. The parotid gland is more susceptible to inflammation compared to other salivary glands due to its anatomical features, such as the buccal orifice and lack of mucin secretion [6]. During anaesthesia, the use of neuromuscular relaxants, along with straining and/or coughing, can cause air to flow backward into the parotid gland, leading to inflammation and swelling [3,7,8]. Increased airway pressure combined with muscle relaxation can result in air entering the parotid orifice and obstructing the excretory ducts, causing pneumoparotid [4,9]. Relaxation of muscle tone around Stensen's duct opening can cause venous congestion and obstructive acute transitory sialadenopathy may occur due to compression pressure blocking the Stenson's duct during lengthy procedures in the lateral decubitus position [8]. Dehydration before surgery can lead to thick secretion and obstruction of the salivary duct. Parasympathetic stimulation following pharyngeal activation can cause vasodilation and hypeaemia, exacerbating swelling [8,10]. The patient's condition was unlikely to have been caused by an adverse drug reaction as there were no signs of fever, skin rash, or eosinophilia, and none of the medications known to cause drug-induced sialadenitis were given [11-13]. Anaesthesia mumps has also been observed in a patient who underwent a ceasarean section under spinal anaesthesia [5]. A study conducted to observe the effect of irrigation fluid in shoulder surgery found a significant increase in the patient's neck, chest, midarm, and midthigh circumference, indicating regional and systemic absorption of irrigation fluid. However, this change in anthropometric measures was insufficient to impair the airways or respiratory system [14]. Periglandular tissue oedema that compromised the upper airway lumen was observed in a case of craniotomy [9]. It was speculated that the instrumentation used during surgery could trigger a strong reflex arc, resulting in gland hypeaemia. Morbidly obese patients with short, thick necks are at risk of ischaemic sialadenitis due to vessel compression and compromised perfusion [8,9,15]. Vascular compression, whether arterial or venous, can lead to the development of ischaemic sialadenitis. The clinical presentation of ischaemia-related sialadenitis often includes painful unilateral swelling and red haemorrhagic patches. To prevent this complication, adequate padding of the face and stabilisation of the neck should be ensured [8,16]. Various imaging techniques, such as ultrasonography, sialography, Computed Tomography (CT), and Magnetic Resonance Imaging (MRI), have been used to diagnose the condition. Ultrasonography can confirm the presence of subcutaneous emphysema by identifying multiple bright areas within the affected side. CT appears to be the most effective imaging modality for detecting even small amounts of air within the parotid gland [8]. Bacterial infection can be ruled out through cultures and procalcitonin level assessment [9]. Treatment for this condition may include sufficient hydration and the use of anti-inflammatory drugs such as Nonsteroidal Anti-inflammatory Drugs (NSAIDs) or corticosteroids [17].

CONCLUSION(S)

While there is no specific treatment for anaesthesia mumps, preventive measures such as pre-surgery hydration and proper patient positioning can help prevent and mitigate the risk of this complication. It is important for anesthesiologists to recognise that this condition is temporary and benign. They should be informed about its nature, which can even occur after local anaesthesia, and be prepared for emergencies that may require prompt action to secure the airway. Rehydration therapy using crystalloids like Ringer's lactate and appropriate airway management appear to be the most effective care for this condition, although further research is needed to confirm this conclusion.

REFERENCES

[1] Asghar A, Karam K, Rashid S. A case of anaesthesia mumps after sacral laminectomy under general anaesthesia. Saudi J Anaesth. 2015;9(3):332-33.
[2] Ece C, Uzgur P. Case report: Postoperative parotitis and review of the literature. Journal of Emergency Medicine Case Reports [Internet]. 2020;11(3):88-89 [cited 2022 Nov 27]; Available from: https://dergipark.org.tr/en/doi/10.33706/jemcr.782379.
[3] Kwon SY, Kang YJ, Seo KH, Kim Y. Acute unilateral anaesthesia mumps after hysteroscopic surgery under general anaesthesia: A case report. Korean J Anaesthesiol. 2015;68(3):300-303.
[4] Liu YH, Pu TW, Yu HW, Kang JC, Hsiao CW, Chen CY. Anaesthesia mumps after laparoscopic right hemicolectomy under general anaesthesia: A case report. International Journal of Surgery Case Reports. 2021;80:105632.
[5] Maher AH, Anfal S, Mahmoud M, Maab M, Ahmad T, Ababca FZ, et al. Anaesthesia mumps: a case report. Int J Clin Anaesth Res. 2023;7(1):06-07.
[6] Ugga L, Ravanelli M, Pallottino AA, Farina D, Leone C. Diagnostic work-up in obstructive and inflammatory salivary gland disorders. Acta Otorhinolaryngol Ital. 2017;37(2):83-93.
[7] Kumar KP, Kumar PK, Jagadesh G. Acute sialadenitis of parotid gland: Anaesthesia mumps. Indian J Anaesth. 2014;58(1):97-98.
[8] Postaci A, Aytac I, Oztekin C, Dikmen B. Acute unilateral parotid gland swelling after lateral decubitus position under general anaesthesia. Saudi J Anaesth. 2012;6(3):295-97.
[9] Cavaliere F, Conti G, Annetta MG, Greco A, Cina A, Proietti R. Massive facial edema and airway obstruction secondary to acute postoperative sialadenitis or 'anaesthesia mumps': A case report. J Med Case Reports. 2009;3(1):7073.
[10] Mandel L, Surattanont F. Bilateral parotid swelling: A review. Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology, and Endodontology. 2002;93(3):221-37.
[11] Power KN, Flaatten H, Gilhus NE, Engelsen BA. Propofol treatment in adult refractory status epilepticus. Mortality risk and outcome. Epilepsy Research. 2011;94(1-2):53-60.
[12] Mauz PS, Mörike K, Kaiserling E, Brosch S. Valproic acid-associated sialadenosis of the parotid and submandibular glands: Diagnostic and therapeutic aspects. Acta Oto-Laryngologica. 2005;125(4):386-91.
[13] Kenningham J. An unusual case of postoperative facial swelling: Correspondence. Anaesthesia. 2000;55(6):601-02.
[14] Gupta S, Manjuladevi M, Vasudeva Upadhyaya K, Kutappa A, Amaravathi R, Arpana J, et al. Effects of irrigation fluid in shoulder arthroscopy. Indian J Anaesth. 2016;60(3):194-98.

[15] Chidipothu K, Verma NC, Madavi S, Jadhav JA. Acute bilateral swelling of the parotid gland after general anaesthesia in lateral decubitus position. Cureus. 14(9):e29154. [Internet]. 2022 Sep 14 [cited 2023 May 27]; Available from: https://www.cureus.com/articles/113305-acute-bilateral-swelling-of-the-parotid-gland-after-general-anaesthesia-in-lateral-decubitus-position.
[16] Narang D, Trikha A, Chandralekha C. Anaesthesia mumps and morbid obesity. Acta Anaesthesiol Belg. 2010;61(2):83-85.
[17] Montazeri N, Darabi MH, Hessami K, Shekouhi R, Sohooli M, Shamsi T, et al. A case of bilateral anaesthesia mumps after cesarean section under spinal anaesthesia: A rare case and literature review. Case Reports in Obstetrics and Gynecology. 2022;2022:5004358.

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