

## CASE REPORT

# Transient aphasia following general anesthesia in patient undergoing laparoscopic gynecologic surgery: A case report and literature review

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**Abstract**

Aphasia could be a manifestation of postoperative psychoemotional disorder. Early differential diagnosis is important.

**KEY WORDS**

aphasia, case report, general anesthesia, laparoscopic surgery

## 1 | INTRODUCTION

This case report describes a healthy 45-year-old woman who received total intravenous anesthesia for laparoscopic hysterectomy, and then exhibited postoperative transient aphasia. Droperidol was given and the patient resolved. The author hypothesized that aphasia is a manifestation of psychoemotional disorder. Early differential diagnosis is important.

Laparoscopic gynecological surgery has been widely employed under general anesthesia. Although the safety and effectiveness of these techniques have greatly improved over the past decades, some problematic effects may still occur. Lithotomy position, Trendelenburg position, and CO<sub>2</sub> pneumoperitoneum may increase the risk of neurologic complications.<sup>1-4</sup> There have been isolated case reports of psychogenic language disorder during surgery.<sup>5</sup> However, cognitive and

neurologic complications after prolonged Trendelenburg position are extremely rare and more often reported in elderly patients, or those with underlying venous disease.<sup>6</sup> Furthermore, aphasia is rarely reported in perioperative settings. In this report, we present a patient who developed transient aphasia after extubation after laparoscopic hysterectomy. The patient provided written consent for this case report.

## 2 | CASE PRESENTATION

A 45-year-old woman was admitted for laparoscopic hysterectomy under general anesthesia. She weighed 60 kg and was 162 cm tall. She had no history of psychiatric illness, medical disease, or drug abuse. Her physical examination did

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not reveal any significant findings. The preoperative electrocardiography and laboratory data, which included complete blood count, liver function, kidney function, and coagulation profile, were unremarkable.

Upon arrival in the operating room, routine monitoring, including electrocardiograph (ECG) monitoring, noninvasive blood pressure, and pulse oximetry, was applied. Lactated Ringer's solution (500 mL) was rapidly infused intravenously during the induction of anesthesia. Scopolamine (0.3 mg) and dexamethasone (5 mg) were administered before induction. Propofol (2 mg/kg) and fentanyl (4 µg/kg) were used for induction. When the patient lost consciousness, 0.6 mg/kg of rocuronium was given to facilitate tracheal intubation. Anesthesia was maintained by the continuous infusion of propofol (6-7 mg/kg/h) and remifentanyl (0.15-0.2 µg/kg/min). The patient was placed in the Trendelenburg position, and intra-abdominal pressure was maintained at 11-14 cmH<sub>2</sub>O during surgery. After surgery, the patient was extubated when spontaneous breathing and consciousness recovered. The surgery lasted 80 minutes. Neuromuscular blockade was monitored by TOF-Watch, and no additional rocuronium was given during surgery.

After extubation, the patient manifested symptoms of dyspnea, showing repeated effort to breathe. She was a little anxious but could obey loud verbal commands, such as opening the mouth and holding the anesthetist's hand. The TOF value was above 90% though our first concern was a possible weakness of muscle tone. We gave the patient neostigmine (0.04 mg/kg) and atropine (0.02 mg/kg). However, the patient became more anxious and irritable. We tried to pacify her with reassuring remarks that the surgery was successful and that she would be sent back to her husband soon. However, the patient frequently pointed to her throat, and we began to notice that she had difficulty speaking. She remained conscious and seemed to understand what we were saying to her. She tried to answer but could not utter a word. She could move her mouth, lips, tongue, head, and extremities upon command. Her pupils were equal in size and reactive to light. Her lungs were clear, and vital signs were stable. Arterial blood gas analysis showed no abnormal results. The patient asked for paper by gesture and wrote down the following words, "I want to speak, but I can't say a word" and "help me." The patient was getting increasingly anxious, became uncooperative, and was in tears.

### 3 | DIAGNOSIS AND TREATMENT

We administered 2.5 mg of droperidol, and she fell asleep. When she woke up 20 minutes later, she could speak in a hoarse voice and was transferred to the ward. She became more peaceful when she saw her husband. After 4 hours, the patient was able to talk normally. The aphasia lasted for

1 hour, and the whole episode lasted for 5.5 hours. She told the anesthetist that she could recall the events during recovery and felt happy to be able to talk again. She recalled that approximately 4 years ago, she experienced an episode of transient aphasia after a bitter quarrel with her husband.

### 4 | OUTCOME AND FOLLOW-UP

A neurology consultation suggested that the patient should undergo more extensive studies before any definite diagnosis could be made. Therefore, imaging (MRI) was arranged immediately. No definite organic lesions were found in an MRI of the brain. She was discharged without sequelae on postsurgery day 3. She was followed up for 3 months, and no complications were reported.

### 5 | DISCUSSION

The differential diagnosis of such a clinical presentation of sudden and transient aphasia could be related to a residual effect of the anesthesia, transient ischemic attack (TIA), structural injury of vocal function,<sup>7</sup> or psychoemotional change.<sup>8,9</sup> The available literature on acute aphasia after anesthesia is limited.

Transient ischemic attack is a transient neurological event that usually persists for minutes and can occur due to hypotension, hypoxia, or embolism. However, the patient did not have hypoxia or hypotension. Thromboembolism was considered because the patient was placed in the lithotomy position. Lithotomy position and CO<sub>2</sub> pneumoperitoneum may result in increased lower extremity venous pressure during hysterectomy, representing a risk factor for deep venous thrombosis.<sup>10</sup> And it was reported that steep Trendelenburg, along with several other risk factors, increased the odds of venous thromboembolism formation by 2.4 [95% confidence interval (95% CI) 1.9-5.0].<sup>11</sup> When TIA is suspected, the "ABCD2" score could be used for the assessment of early stroke risk ("ABCD2" score ≥ 4).<sup>12</sup> The "ABCD2" score in this patient was 3 (speech disturbance without weakness [1 point] and duration of symptoms > 60 minutes [2 points]). And the patient was with a Glasgow score of 15 and a normal MRI results after surgery. The patient was followed up for 3 months because there is a 10%-20% risk of major stroke after TIA in the subsequent 3 months.<sup>13</sup> All the evidences supported that the patient did not suffer from TIA.

There are several reports of acute neurological events, including cerebral edema, in patients undergoing laparoscopic gynecological surgery.<sup>2,3</sup> Any rise in arterial carbon dioxide can possibly result in increased cerebral blood flow. A steep Trendelenburg position can alter the cerebral blood volume and, thus, increase intracranial pressure. Moreover,

head-down tilt causes cephalad fluid shift and increases capillary pressure in the head, leading to an increase in extracranial vascular pressure that may cause facial, laryngeal, pharyngeal edema, and nasal congestion.<sup>1,4</sup> However, in our case, the carbon dioxide levels were measured by capnography and were kept at the normal limit. The surgery lasted for 80 minutes, and no significant facial edema existed. Because MRI was normal, brain edema was not considered.

Residual neuromuscular blockade could affect the speaking function. The patient could write down what she wanted to say, appropriately response to verbal command, indicating well-reversed neuromuscular blockade. Structural injury, including the luxation of the arytenoid cartilage and laryngeal nerve injury, may occur after tracheal intubation and affect pronunciation.<sup>7,14,15</sup> The aphonia or aphasia in these cases is usually consistent and requires treatment. However, for our case the aphasia was transient, so structural damage was excluded. Pre-existing neurologic disease should be screened for postoperative speaking dysfunction. Willson et al<sup>16</sup> reported a patient with hemiplegic migraine who developed atypical migraine with apneic spells, aphasia, and hemiparesis following general anesthesia. By history and MRI assessment, these possibilities were excluded in our case.

Postoperative delirium may present as speaking disorder. Medications including midazolam and scopolamine have been proved to increase delirium.<sup>17,18</sup> And in a case of a healthy 12-year-old girl who received preoperative midazolam, Drobish et al<sup>19</sup> reported postoperative transient associative agnosia and expressive aphasia. The administration of flumazenil led to the immediate and lasting resolution of her symptoms. Confusion assessment method (CAM) is the most often used tool for delirium evaluation. The diagnosis of delirium by CAM requires the presence of features 1 (acute onset and fluctuation course) and 2 (inattention) and either 3 (disorganized thinking) or 4 (altered level of consciousness). Given the presentation as it is, the patient does not probably meet these criteria. Though the EEG was not recorded during the episode, the Brief Psychiatric Rating Scale of the patient was 10, which did not support the diagnosis of psychiatric disorder. Moreover, Broca's aphasia patient's cannot speak or write and with Wernicke's they can speak but cannot convey a clear message. The presentation of the patient may support that the aphasia is manifestation of psychological in nature. Droperidol was effective for the sedation of the patient; however, ruling out dangerous episodes by CT scan or MRI maybe important before droperidol administration.

Psychogenic cognitive disturbance varies in presentation, including aphasia, aphagia, and quadriplegia.<sup>8,20,21</sup> In this case, the patient stayed awake and remembered the entire recovery process. The patient has a history of transient aphasia after a bitter quarrel with her husband 4 years ago. Stress and anxiety could have triggered her aphasia. She could be soothed by seeing her family, which highlights the

importance of emotional support in treating perioperative psychogenic disorders. Enhanced pre-operative education and early company of the family may improve the outcome.

## 6 | CONCLUSION

In summary, transient aphasia can occur after general anesthesia. The possibility of cerebral complications and the injury of the laryngeal-pharyngeal structures should be ruled out in appropriate clinical settings. A previous history of psychoemotional disorder should not be dismissed when reviewing a patient preoperatively.

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## CONFLICT OF INTEREST

None declared.

## AUTHOR CONTRIBUTION

ZL and HD: were the patient's anesthetists, reviewed the literature, and contributed to manuscript revision; JZ and MY: reviewed the literature and contributed to manuscript drafting; all authors issued final approval for the version to be submitted.

## ETHICAL APPROVAL

The patient provided signed informed consent to the publication of the case. All the procedures performed in this study were in accordance with the ethical standards of the institutional and national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

## DATA AVAILABILITY STATEMENT

Data were not available for share.

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## REFERENCES

1. Danic MJ, Chow M, Alexander G, Bhandari A, Menon M, Brown M. Anesthesia considerations for robotic-assisted laparoscopic prostatectomy: a review of 1,500 cases. *J Robot Surg*. 2007;1:119-123.
2. Pandey R, Garg R, Darlong V, Punj J, Chandralekha. Hemiparesis after robotic laparoscopic radical cystectomy and ileal conduit formation in steep Trendelenburg position. *J Robot Surg*. 2012;6:269-271.
3. Pandey R, Garg R, Darlong V, Punj J, Chandralekha xxx, Kumar A. Unpredicted neurological complications after robotic laparoscopic

- radical cystectomy and ileal conduit formation in steep trendelenburg position: two case reports. *Acta Anaesthesiol Belg.* 2010;61:163-166.
4. Phong SV, Koh LK. Anaesthesia for robotic-assisted radical prostatectomy: considerations for laparoscopy in the Trendelenburg position. *Anaesth Intensive Care.* 2007;35:281-285.
  5. Ng KO, Lee JF, Mui WC. Aphonia induced by conversion disorder during a Cesarean section. *Acta Anaesthesiol Taiwan.* 2012;50:138-141.
  6. Arvizo C, Mehta ST, Yunker A. Adverse events related to Trendelenburg position during laparoscopic surgery: recommendations and review of the literature. *Curr Opin Obstet Gynecol.* 2018;30:272-278.
  7. Chun EH, Baik HJ, Chung RK, Lee HJ, Shin K, Woo JH. Arytenoid cartilage dislocation mimicking bilateral vocal cord paralysis: a case report. *Medicine.* 2017;96:e8514.
  8. Drexler H, Zaroura S, Shapira Y. Transient aphonia and quadriplegia during epidural anesthesia. *Anesth Analg.* 1985;64:365-366.
  9. Parker WD Jr, Parker KC. Anesthesia-related transient aphonia and quadriplegia. *Anesth Analg.* 1985;64:1038.
  10. Liu X, Wang X, Meng X, Wang H, An Z. Effects of patient position on lower extremity venous pressure during different types of hysterectomy. *J Obstet Gynaecol Res.* 2015;41:114-119.
  11. Pellino G, Sciaudone G, Candilio G, De Fatico GS, Canonico S, Selvaggi F. Predictors of venous thromboembolism after colorectal surgery in a single unit. *Acta Chir Belg.* 2015;115:288-292.
  12. Merwick A, Kelly PJ. Transient ischaemic attack clinics and management of transient ischaemic attacks. *Curr Opin Neurol.* 2011;24:50-58.
  13. Sylaja PN, Hill MD. Current management of transient ischemic attack. *Am J Cardiovasc Drugs.* 2007;7:67-74.
  14. Takahoko K, Iwasaki H, Sasakawa T, Suzuki A, Matsumoto H, Iwasaki H. Unilateral hypoglossal nerve palsy after use of the laryngeal mask airway supreme. *Case Rep Anesthesiol.* 2014;2014:369563.
  15. Ulusoy H, Besir A, Cekic B, Kosucu M, Geze S. Transient unilateral combined paresis of the hypoglossal nerve and lingual nerve following intubation anesthesia. *Braz J Anesthesiol.* 2014;64:124-127.
  16. Willson J, Kapur S. Apnoeic spells following general anaesthesia in a patient with familial hemiplegic migraine. *Anaesthesia.* 2007;62:956-958.
  17. Aldecoa C, Bettelli G, Bilotta F, et al. European Society of Anaesthesiology evidence-based and consensus-based guideline on postoperative delirium. *Eur J Anaesthesiol.* 2017;34:192-214.
  18. European Society of Anaesthesiology evidence-based and consensus-based guideline on postoperative delirium: erratum. *Eur J Anaesthesiol.* 2018;35:718-719.
  19. Drobish JK, Kelz MB, DiPuppo PM, Cook-Sather SD. Emergence delirium with transient associative agnosia and expressive aphasia reversed by flumazenil in a pediatric patient. *A A Case Rep.* 2015;4:148-150.
  20. Adams AP, Goroszeniuk T. Hysteria. A cause of failure to recover after anaesthesia. *Anaesthesia.* 1991;46:932-934.
  21. Kuczkowski KM, Goldsworthy M. Transient aphonia and aphagia in a parturient after induction of combined spinal-epidural labor analgesia with subarachnoid fentanyl and bupivacaine. *Acta Anaesthesiol Belg.* 2003;54:165-166.

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