

Telephone follow-up care for disabled patients discharged after receiving dental treatment under outpatient general anesthesia

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Background: Patients were subjected to post-discharge follow-up (by telephone) in order to investigate the potential complications of outpatient general anesthesia or deep sedation that could develop in disabled dental patients discharged from the hospital. The ultimate aim of this study was to establish an appropriate response measure for such complications.

Methods: The caregivers of 79 disabled patients who underwent dental procedures under general anesthesia at our outpatient clinic were interviewed over telephone. Necessary care instructions were provided during the phone calls when required. The patient satisfaction level regarding the telephonic follow-up care was surveyed by additional telephone calls.

Results: Most of the patients did not suffer any serious complications; however, some reported fever and bleeding. The data obtained in this study can be utilized towards the development of caregiver education pertaining to the ambulatory general anesthesia of dental patients with disabilities.

Conclusions: Additionally, we hope that the findings of this study will help minimize the effects of complications experienced by disabled dental patients undergoing ambulatory general anesthesia, as well as increase the overall patient satisfaction level.

Key Words: Dental treatment; Disabled patients; Outpatient anesthesia; Telephone follow-up

INTRODUCTION

The demand for dental care in patients with disabilities has been on the rise over the past few years [1]. Pharmacological behavior management methods, such as general anesthesia or sedation, are often required to treat these patients because of the difficulty in obtaining patient cooperation. An increasing number of disabled patients have been receiving dental treatment under general anesthesia. The trend is more prevalent in the outpatient clinics of the university medical centers, where patients are commonly subjected to general anesthesia and return home on the same day [2]. General anesthesia offers a

number of advantages for the dental treatment of disabled patients, such as increased patient and caregiver compliance, effective dental examination, and cost effectiveness [3]. However, it also poses a significant disadvantage, in that, timely and appropriate after-care is difficult to provide in cases in which complications develop after the patients are discharged [4]. A large number of disabled patients have multiple disabilities, and have a higher likelihood of developing complications after treatment, such as excessive bleeding, pain, chills, vomiting, lowered consciousness, airway obstruction, and pneumonia. Furthermore, underlying diseases, such as organic brain disease, cardiovascular disease, diabetes, adrenal gland disorder, chromosome disorder, and epilepsy, may be exacerbated

after such treatments. However, the recent advances in anesthesia management, use of anesthetics with relatively lesser adverse effects and shorter duration, development of oral analgesic and antiemeticum, and active involvement of anesthesiologists have contributed to the decreasing rates of negative adverse effects, complications, and hospitalization, among patients with multiple medical conditions.

Despite this, a recent survey has indicated that 33% of the disabled dental patients reported experiencing minor and major negative adverse effects of anesthesia during follow-up (phone calls) on the next day after discharge [5]. Furthermore, a telephone follow-up survey indicated that 20% of epileptic dental patients experienced seizures within a week of returning home [6]. Considering these findings, care givers must be sufficiently educated regarding patient care at home, adverse effects of medication, and other complications; in addition, they must be followed up with phone calls offering support and advice on symptoms to look out for [7,8].

In this study, caregivers of disabled patients who received outpatient general anesthesia for a dental treatment were followed up through phone calls. The purpose of these phone calls was to educate the patients and caregivers on the recognition, management, and appropriate intervention techniques for possible unexpected symptoms experienced while recovering at home. Additionally, the study compiled baseline data pertaining to the process of post-discharge recovery of disabled dental patients from general anesthesia, with an aim to reduce any unwanted complications, and increase treatment effectiveness.

SUBJECTS AND METHODS

This study was done as quality improvement projects

Table 1. Questionnaire item

The next day call after surgery
1. On the way home
1) How did you get home from the hospital?
- Car / Taxi / Public transportation (Bus or Subway) / Etc.
2) How was the condition of the patient on the way home?
- Awake

of Seoul National University of Dental Hospital after approval.

1. Discharge instructions and follow up care via phone call

In this study, post-discharge follow-up telephone calls were made to the caregivers of patients receiving dental treatment under general anesthesia or deep sedation, at the disabled outpatient unit of the Seoul National University Dental Hospital. Caregivers were provided with educational pamphlets containing discharge instructions (such as immediately notifying the hospital and medical faculties in case of the patients developing complications). Anesthesiology unit nurses were instructed to make post-discharge follow-up telephone calls to the caregivers on the morning after hospital discharge to inquire about the recovery status of the patient and to provide appropriate intervention, if necessary. Additional training regarding the appropriate care of patients developing complications at home (post-discharge) was provided. The caregivers received an additional phone call within a week of discharge, which evaluated the recovery and in-home care status of the patients, as well as the patient satisfaction level regarding the discharge education and post-discharge care provided.

2. Study subjects and statistics method

The records of discharge education and post-discharge follow-up calls made to 79 disabled patients who underwent outpatient general anesthesia or deep sedation at the outpatient unit of the Seoul National University Dental Hospital between August 21, 2014 and February 23, 2015, were analyzed (Table 1).

- ; Good / Bad / Fractious / Have no energy
 - Drowsy
 - Sleeping
 - Keep waking up
 - Etc.
 - 3) Have you ever had any complications?
 - Nausea / Vomiting / Fever / Swelling / Bleeding / Pain / Cough / Etc.
 - 4) Did you have any other problem?
2. At home
- 1) Did the patient sleep all day?
 - 2) Did the patient have a fever?
 - When you have a fever, take antipyretics.
 - 3) Did the area that the patient was treated for hurt?
 - If the pain is very serious, take some pain reliever.
 - 4) Did the patient have difficulty "in" breathing? / Was the patient coughing continuously?
 - The patient's throat is swollen so he/she is coughing
 - The patient's throat has been hurting for 2 or 3 days.
 - When the patient have difficulty "in" breathing, reassure and comfort the patients while encouraging normal breathing.
 - 5) Was the patient bleeding from the mouth?
 - If there is bleeding from the mouth, you have to apply gauze pressure on the bleeding area.
 - If the bleeding does not stop, call the hospital.
 - 6) Did the patient eat dinner?
 - 7) Did the patient go to the restroom?
 - 8) (When the patient was prescribed the medicine) Was? he/she take it?
 - 9) How is the condition of the patient now?
 - When the swelling of the surgical site is serious, apply an ice pack.

The week after surgery

- 1) Do you remember the nurse's call the day after you went home?
- 2) Did the patient keep the doctor's instruction?
- 3) Was the phone call of the hospital helpful for the patient's recovery?
- 4) Do you satisfied with the general anesthesia at our hospital?
- 5) If you need to come to the hospital will you come back to our hospital?
- 6) Do you want to recommend outpatient general anesthesia to other people?
- 7) Do you think that outpatient general anesthesia is a good method when you need dental treatment?

Table 2. Characteristics of patients (N=79)

Gender (Male / Female)	Age (year)	Type of disabilities*	Type of anethetsia	Anesthetic	Duration of anesthesia	Duration of stay in the recovery room
43 / 36	28.7 ± 16 (2-78)	Mental Retardation (37) Epilepsy (17) Autism (12) Encephalopathy (11) Dementia (5) Renal disorder (4) Heart problem (3) Down syndrome (3) Blindness (3) Severe gag reflex (3) Genetic disorder (2) Myasthenic (2) Developmental disorder (2) Paralysis (2) Dysphasia (2) Pulmonary hypertension (1) Hearing problem (1) Dysphagia (1) Mental disorder (1) Etc. (13)	General anesthesia (53) Deep sedation (25)	Propofol / Remifentanil (36) Desflurane / N ₂ O-O ₂ (17) Propofol (24) Midazolam / Ketamine (1)	177 ± 110 (20-550)	78 ± 34 (30-230)

Values are mean ± SD / *Redundancy selection

RESULTS

1. Patient characteristics

Table 2 displays the general characteristics of all patients. The patients were aged between 2 and 78 years (mean age of 29 years). The patient group was composed of 43 male and 36 female patients. The patients exhibited a range of disabilities, including intellectual disability, dementia, brain encephalopathy? and developmental disability. Multiple disabilities were observed in multiple cases. Fifty-three patients were administered general anesthesia; while 17 patients received desflurane and nitrous oxide for maintenance, 36 patients were administered propofol and remifentanyl. Twenty-four patients received treatment under deep sedation by propofol, and 1 patient was administered midazolam and ketamine for a CT scan. The duration of anesthesia ranged from 20 to 550 min, with an average of 177.3 min. The duration of stay in the recovery room ranged from 30 to 230 min (average of 78.5 min).

2. Patient response during the return journey

Personal vehicles were used as the mode of transportation by 59 patients, while 14 and 5 patients returned home in taxis and using other modes of public transportation, respectively (Table 3). Fifty-five patients reported an

uneventful trip; 6 patients reported sleeping through the entire trip, 5 patients reported sleeping on and off throughout the trip, while 6 patients reported negative symptoms, such as nausea or vomiting (Table 4).

3. Recovery status at home

The patients received follow-up phone calls analyzing their recovery status at home (Table 5). A relatively high number of patients were affected by symptoms such as fever and bleeding (13 patients, respectively), while persistent pain and coughing appeared to be a common complaint. A majority of the patients did not develop any unusual side effects. However, 2 patients reported sleeping through the morning post-discharge, 3 patients reported sore throat and facial swelling, and 2 patients reported ingesting an antipyretic.

4. Follow-up telephone education

The patients who reported negative side effects received follow-up phone calls from nurses of the anesthesiology unit to provide patient care instructions. Patients with a persistent fever of 38°C or higher and those who complained of pain were prescribed antipyretics and analgesics, respectively; patients complaining of cough or difficulty in breathing were reassured and encouraged. Gauze compression was instructed for the control of bleeding; patients displaying symptoms of

Table 3. Form of transportation

Mode of transportation	Number of patients	Percentage (%)
Personal vehicle	59	75
Taxi	14	18
Public transportation (Bus, Subway)	5	6
Etc.	1	1

Table 4. Patient response during the return journey

The condition of the patient	Number of patients	Percentage (%)
Good	55	70
Sleeping on and off throughout the trip	5	6
Sleep through the entire trip	6	8
Eating food or drinking water	2	2
Nausea / Vomiting	6	8
Etc.	5	6

Table 5. Recovery status at home

	Yes	No
1. Did the patient sleep all night?	5	74
2. Did the patient have a fever?	13	66
3. Did the patient have a pain?	6	65
4. Did the patient have difficulty breathing? / Was the patient coughing continuously?	5	74
5. Was the patient bleeding from the mouth?	13	66
6. Did the patient eat dinner?	72	7
7. Did the patient go to the restroom?	75	3
8. (When the patient was prescribed the medicine) was he/she take it?	51	2
	Number of patients	Percentage (%)
9. How is the condition of the patient?		
Good	64	81
Sleeping through the morning post-discharge	2	3
Have no energy	2	3
Sore throat and facial swelling	3	3
Fever	2	3
Etc.	6	7

Table 6. Satisfaction survey after the week

	Not at all	Very little	It was OK	Yes, it helps	It helps a lot	No Blank
1. Was the phone call of the hospital helpful for the patient's recovery?	0	1	1	62	13	2
2. Do you satisfied with the general anesthetic or deep sedation at our hospital?	0	2	5	50	16	6
3. If you need to come to the hospital will you come back to our hospital?	0	3	2	47	25	2
4. Do you want to recommend our treatment to other people?	0	2	9	57	9	2
5. When you go to the dentist, do you think that general anesthetic or deep sedation is a good idea ?	0	4	11	59	3	2

excessive bleeding were instructed to call? the hospital again. Caregivers were also instructed to reassure and encourage the patients experiencing difficulties with eating or urinating; a call? to the hospital was advised in case of persisting problems.

5. Patient satisfaction level one-week post-anesthesia

An additional follow-up telephone call was made within a week of surgery in order to survey the patient status and verify the effectiveness of post discharge care training. Seventy-five caregivers reported receiving a follow-up telephone call from an anesthesiology unit nurse the day after hospital discharge. Of these, 74 reported the nurses as being courteous and friendly. Sixty-seven caregivers reported the effective implementation of all instructions. A majority of the caregivers responded positively to the telephonic patient satisfaction survey (Table 6).

DISCUSSION

It has become a common practice to administer general anesthesia to patients with disabilities for the purpose of improved behavioral management and cooperation. The number of outpatients undergoing general anesthesia prior to a dental procedure is on the rise [9]. Deep sedation by propofol is another widely used method. Although outpatient general anesthesia offers a number of advantages, the effective management of complications and negative side effects at home is difficult.

The reported cases of deaths or hospitalization as a result of complications of outpatient general anesthesia are rare, with patients typically being discharged from the hospital on the day of the procedure. However, a recent study reported that 44% of the disabled dental patients who received treatment under outpatient general

anesthesia reported discomfort upon follow-up (by telephone) [5].

This study surveyed the features of the return trip taken by the disabled dental patients, recovery status at home, and adverse effects experienced after outpatient general anesthesia, through a follow-up telephone call conducted on the morning after discharge from the hospital. Subsequent follow-up calls ensured that sufficient care instructions were provided regarding the management of potential negative adverse effects. Through these efforts, we aimed to minimize the negative adverse effects and maximize the effects of treatment. A final follow-up call was made within a week after treatment to evaluate the recovery status of the patient and confirm that care instructions were being properly followed.

Fever and bleeding were the most commonly reported adverse effects, affecting 13 patients each. These patients were instructed to take (or their caregivers were instructed to administer) antipyretics or gauze compression. Caregivers of patients complaining of cough or difficulty in breathing were instructed to reassure and comfort the patients while encouraging normal breathing and to call? the hospital if the problems persisted.

A final follow-up call was made a week after the procedure to survey the recovery status of the patient and to determine conformity with the care instructions. Most patients were reported to be recovering normally under the provided care instructions, with no particular negative side effect being reported.

The data obtained from this study would help identify the need for outpatient general anesthesia or hospitalization for disabled dental patients. The results of this study can also be utilized as evaluation and discharge guidelines, as well as education and training material, for the caregivers upon discharge of the patients. Furthermore, it would help minimize the potential complications of outpatient general anesthesia, and contribute to increased patient and caregiver satisfaction.

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