



ORIGINAL ARTICLE

Analysis of clinical characteristics, dental treatment performed, and postoperative complications of 200 patients treated under general anesthesia in a special needs dental clinic in northern Taiwan



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KEYWORDS

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Abstract *Background/purpose:* Dental patients with mental, psychiatric, or neurological disorders may need general anesthesia during dental treatments. This study analyzed the dental treatments and postoperative complications of 200 dental patients in a special needs dental clinic in northern Taiwan.

Materials and methods: The dental treatments and postoperative complications of 200 dental patients who needed general anesthesia for performing the dental treatments in a special needs dental clinic were analyzed statistically.

Results: The mean age of 200 dental patients (97 pediatric and 103 adult patients; 130 males and 70 females) was 20.2 ± 15.2 years. Of the 200 patients, 145 had tooth extractions, 118 tooth fillings, 46 root canal treatments, 56 either pulpotomy or pulpectomy, 45 stainless steel crown placement, and seven panoramic radiographic examinations. In pediatric patients,

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psychiatric problems were the most commonly encountered disorders (61.9%), followed by mental retardation (44.3%). In adult patients, mental retardation was the most common disorder (81.6%), followed by psychiatric disorders (34.0%). Of the 200 patients, 66 needed intubation general anesthesia (IGA) and 134 nonintubation general anesthesia (NIGA). IGA patients needed a significantly longer operation duration than NIGA patients ($P < 0.001$). Regarding postoperative complications, IGA patients had significantly higher epistaxis episodes than NIGA patients ($P < 0.001$). However, NIGA patients had significantly higher desaturation rate than IGA patients ($P = 0.028$).

Conclusion: Both IGA and NIGA are effective and relatively safe methods for dental patients who need dental treatment in a special needs dental clinic, but anesthesia itself still carries certain risks.

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Introduction

In 2000, a consensus conference held by the National Health Research Institute (NHRI) on the dental force concluded that more dental resources should be allocated for aged people and for the special dental needs group.¹ Under the support of the Ministry of Health and Welfare, the National Taiwan University Hospital, Taipei, Taiwan started an integrated dental clinic for special needs patients in 2011. Each patient had his/her own case manager, who helped with dental appointments, dental treatment, general anesthesia arrangements, and oral hygiene education. Dental treatment for special needs patients requires intensive care due to complex medical, psychological, and socioeconomic problems. Though most of the patients could be treated by behavior control, some patients needed sedation or general anesthesia.² Patients who needed general anesthesia for dental treatment used to be scheduled in operation theaters, but most of these patients are now treated in an integrated dental clinic as outpatients. Also, most of the patients who have general anesthesia in operation theaters need intubation general anesthesia (IGA). However, with a higher anesthesiologist to patient ratio, the nonintubation general anesthesia (NIGA) can be carried out for performing nontraumatic and short-duration dental procedures in a special needs dental clinic. In this study, we analyzed the dental treatments and postoperative complications of 200 dental patients in a special needs dental clinic in northern Taiwan.

Materials and methods

After approval from the Institutional Ethical Committee of National Taiwan University Hospital, this uni-institutional (tertiary university affiliated medical center) cohort study was conducted to analyze the patient characteristics, dental treatments, and postoperative complications of 200 dental patients who needed either IGA or NIGA for performing dental treatments in a special needs dental clinic from January 2012 to December 2013. For each dental patient, physiological parameters, anesthetic methods, physical characteristics, medical conditions, anesthetic methods, operation procedures, and complications were

recorded and analyzed. All dental patients who needed general anesthesia were referred to the anesthesiologist clinic for preoperative evaluation. In the clinic, anesthesiologists took history and performed physical examinations. Laboratory tests and additional image studies were arranged as needed. The American Society of Anesthesiologists (ASA) physical status classification system was used for preoperative risk assessment. A family meeting for risk explanation and precautions was held at the same time. On the scheduled appointment date, the dentist, anesthesiologist, dental assistant, and nurse anesthetist met for case briefings. Either IGA or NIGA was decided during the meeting. The body temperature, height, and weight were measured for each patient in the waiting area. Nothing *per os* (NPO) duration for more than 8 hours was strictly followed. General anesthesia was carried out by one of the following methods, depending on the patient's cooperation for intravenous catheter placement: intravenous injection of midazolam 0.1 mg/kg (maximum 5 mg), intramuscular ketamine 2.0 mg/kg and midazolam 0.1 mg/kg, or sevoflurane inhalation. After the patients fell asleep, they were prepared with eyelid covers and continuously monitored using pulse oximetry, electrocardiography (ECG), noninvasive blood pressure, and thermometers. IGA was performed after the patient was paralyzed by cistracurium 0.2 mg/kg and nasal preparation with topical 2% xylocaine jelly. Nasal RAE³ endotracheal tube was chosen according to the formula of $(\text{age}/4) + 3.5$, and the size was adjusted according to patient's body size variation. Coagulopathy was a contraindication for nasal RAE placement in our practice. We used oral RAE instead if intubation was considered necessary. Nasotracheal tube intubation was done by direct laryngoscope or glidescope with Magill forceps facilitation if needed. Respiration was monitored by end-tidal carbon dioxide value. For patients who needed NIGA, oxygen was given by nasal cannula 3 L/minute. Respiration was monitored by wireless stethoscope. During the procedure, intravenous alfentanil and propofol by syringe pump or target concentration infusion (TCI) was used for maintenance. After recovery, patients were sent to the postoperative care unit. All patients were followed up for at least 1 hour.

Intra- and postoperative complications were documented and managed by an anesthesiologist. Desaturation

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