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Successful oral surgery under general anesthesia for a patient with Duchenne muscular dystrophy presenting with mandibular fracture: A case report

Duchenne muscular dystrophy (DMD) is an X-linked recessive disorder caused by a mutation in the dystrophin gene situated on chromosome Xp21. This debilitating condition manifests as a progressive weakening and atrophy of muscles, leading to a gradual deterioration in cardiovascular function among affected individuals. Because inhalational anesthetics and succinylcholine can cause fatal results,[1] the utilization of total intravenous general anesthesia (IVG) coupled with ventilation via endotracheal intubation utilizing an air/oxygen mixture is advocated as the preferred anesthetic approach.[2] In the field of oral and maxillofacial surgery, these patients often encounter challenges related to endotracheal intubation, with a heightened risk of airway obstruction. DMD patients are susceptible to perioperative complications, such as rhabdomyolysis, hyperkalemia, and hyperthermia. Moreover, DMD patients afflicted with severe respiratory conditions face an elevated likelihood of postoperative pulmonary complications, including respiratory insufficiency, obstruction, or failure. They may necessitate prolonged mechanical ventilation following surgical procedures,[3] leading to extended stays in the intensive care unit, averaging approximately 19 h.[4] The imperative nature of ensuring full recovery of respiration before extubation cannot be overstated. We herein presented a case of DMD with mandibular fracture in a 12-year-old boy who underwent closed reduction under intravenous anesthesia. The patient's recovery was uneventful and regained orofacial function postoperatively.

A 12-year-old boy presented with a broken jaw bone following a fall-down accident. Upon assessment, the patient exhibited physical fragility and made use of a wheelchair for mobility. Clinical examination revealed facial swelling, bruise on the chin, dental malocclusion, and trismus. Radiographic imaging, including panoramic X-ray and computed tomography (CT) scan, delineated fractures in the right mandibular body and bilateral subcondylar regions (Fig. 1A, B, and C). Notably, the patient had a confirmed diagnosis of DMD and had been undergoing routine clinical monitoring at a nearby hospital. Given the heightened susceptibility to perioperative complications, the preoperative assessment encompassed an array of diagnostic modalities, which included ECG (sinus rhythm, heart rate: 99 beats per minute, right ventricular hypertrophy), echocardiography (normal echocardiogram, good LV systolic function, LVEF: 60.6 %), pulmonary function tests (mild restrictive ventilatory defect, TLC: 2.19 L, and 72 % predicted), complete blood count, blood biochemical tests, and chest X-ray. Subsequent to diagnostic workup, the patient was diagnosed as having bilateral subcondylar and right mandibular body fractures, which were managed through closed reduction techniques followed by postoperative mouth-opening exercises.

The closed reduction procedure was conducted under IVG utilizing propofol as the anesthetic agent. Anesthesia induction was achieved through propofol target-controlled infusion, supplemented by a bolus administration of atracurium (0.5 mg/kg) to facilitate endotracheal intubation. Maintenance of anesthesia was sustained through continuous infusions of propofol and remifentanil, while ventilation support was delivered using an air/oxygen mixture. Following the procedure, the patient was transferred to the intensive care unit for postoperative monitoring, during which he received ventilation for 24 h before being successfully extubated. Subsequent to extubation, the patient's recovery progressed uneventfully, with a return to normal mouth opening observed within 2 months (Fig. 1D and E). Scheduled routine follow-up appointments have been arranged for the patient at the pediatric department.

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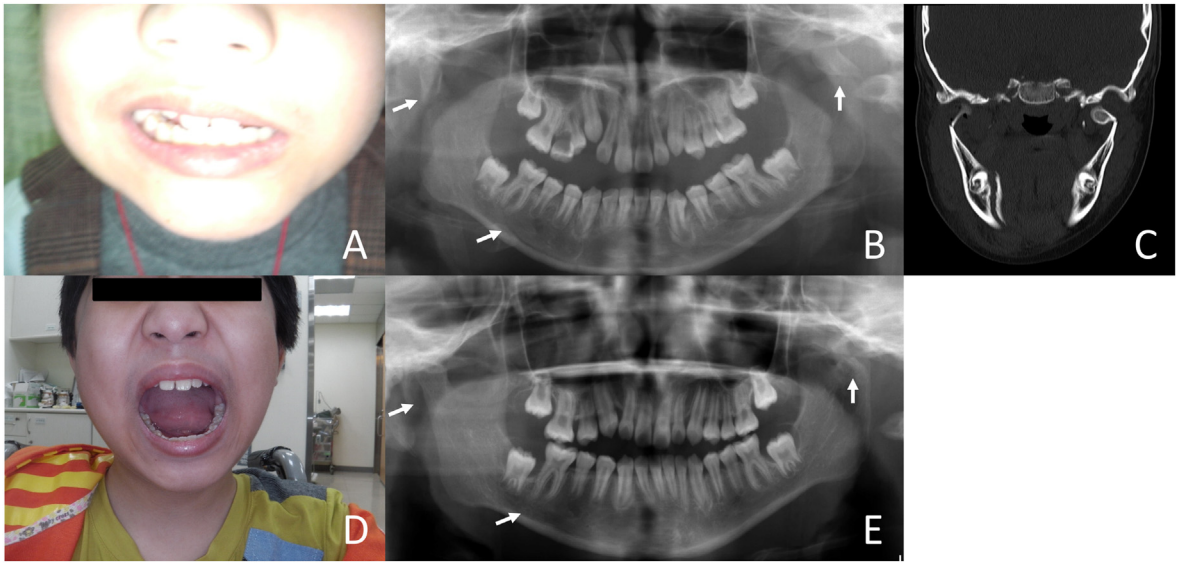

Figure 1 Pre- and post-treatment photographs and radiographs of our patient. (A) Pre-operation, limited mouth opening and malocclusion was noted. (B and C) Radiographs showed fracture of right mandibular body and bilateral condyles. (D) 2 months post-operation, the mouth opening was wide and oral function was regained. (E) 9 months post-operation, radiograph showed good healing of mandible.

Declaration of competing interest

The authors have no conflicts of interest relevant to this article.

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