

# Anesthetic Management of a 5 Year Old Female with Glucose-6-Phosphate Dehydrogenase Deficiency for Oral Root Canal Treatment

Shweta Khatri, Aishwarya Hunashikatti\*

Department of Anesthesiology, Dr. D. Y. Patil Medical College, Hospital and Research Centre, Dr. D. Y. Patil Vidyapeeth (Deemed to be University), Pune, Maharashtra, India.

## ARTICLE INFO

### Article history:

Received 26 December 2025

Revised 18 January 2026

Accepted 02 February 2026

Glucose-6-phosphate dehydrogenase (G6PD) deficiency is a common X-linked enzymatic disorder that predisposes affected patients to oxidative hemolysis when exposed to certain drugs, infections, or perioperative stress [1-2]. Anesthetic management in pediatric patients with this condition therefore requires careful selection of anesthetic agents and vigilant perioperative monitoring [3].

We report the anesthetic management of a 5-year-old female child weighing 18 kg with known G6PD deficiency who underwent oral root canal treatment under general anesthesia with nasal intubation. Preoperative evaluation, including laboratory investigations, was within normal limits. In view of the surgical requirement, nasal intubation was planned.

After application of standard monitoring, anesthesia was induced using total intravenous anesthesia (TIVA) with ketamine and propofol, both of which are considered safe in patients with G6PD deficiency [3-5]. Neuromuscular blockade was achieved with atracurium, and the trachea intubated nasally with a 4.5 mm flexometallic cuffed endotracheal tube. Anesthesia was maintained with infusion of injection propofol at 8–10 mg/kg/hour, supplemented with oxygen and nitrous oxide. The intraoperative course was hemodynamically stable, with no clinical evidence of hemolysis. After the end of surgery, neuromuscular blockade was reversed

using injection neostigmine 0.05mg/kg and glycopyrrolate 0.008mg/kg intravenously, and extubation was smooth. The post-extubation and postoperative periods were uneventful.

Patients with G6PD deficiency are particularly susceptible to oxidative stress, which may precipitate acute hemolysis [1,2]. Anesthetic induction and neuromuscular blockade agents such as propofol, ketamine, atracurium, neostigmine and anticholinergic glycopyrrolate have been reported to be safe in these patients [3–6]. Conversely, agents such as prilocaine, benzocaine, methylene blue, and high-dose ascorbic acid should be avoided in G6PD deficiency due to their association with hemolysis or methemoglobinemia [3,4,6].

Current literature supports the use of total intravenous anesthesia (TIVA) with propofol as a safe and effective technique in pediatric patients with G6PD deficiency, as it minimizes oxidative stress and provides stable anesthetic conditions [3,5].

This case highlights that with appropriate perioperative planning, avoidance of contraindicated drugs which can cause oxidative stress and intern leading to hemolysis, and close monitoring, general anesthesia with nasal intubation can be safely used in pediatric patients with G6PD deficiency undergoing dental procedures.

The authors declare no conflicts of interest.

\*Corresponding author.

E-mail address: [aishwaryahunashikatti821@gmail.com](mailto:aishwaryahunashikatti821@gmail.com)

DOI:

**References**

- [1] Luzzatto L, Ally M, Notaro R. Glucose-6-phosphate dehydrogenase deficiency. *Blood*. 2020; 136(11):1225-40.
- [2] Cappellini MD, Fiorelli G. Glucose-6-phosphate dehydrogenase deficiency. *Lancet*. 2008; 371(9606):64-74.
- [3] Ryan CA, Tierney E, McHugh SM. Anaesthesia and glucose-6-phosphate dehydrogenase deficiency. *Anaesthesia*. 2021; 76(7):920-7.
- [4] Foedinger A, Luger TJ. Anaesthesia recommendations for patients suffering from glucose-6-phosphate dehydrogenase deficiency. *OrphanAnesthesia*. 2015.
- [5] Tobias JD. Anaesthetic implications of glucose-6-phosphate dehydrogenase deficiency. *Paediatr Anaesth*. 2012; 22(9):855-62.
- [6] Gupta A, Gupta N. Perioperative management of paediatric patients with G6PD deficiency. *J Clin Anesth*. 2023; 45:112-8.
- [7] Mehta A, Mason PJ, Vulliamy TJ. Glucose-6-phosphate dehydrogenase deficiency. *Baillieres Best Pract Res Clin Haematol*. 2000; 13(1):21-38.