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Case Report

Anaesthetic Management of a Child with Chromosome 7q32.1 Microdeletion Undergoing Ligation of Patent Processus Vaginalis

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Abstract

Presentation
A six-year-old boy with chromosome 7q32.1 microdeletion, autism spectrum disorder, attention deficit hyperactivity disorder, hypotonia and asthma presented for elective ligation of a patent processus vaginalis under general anaesthesia.

Diagnosis
Chromosome 7q32.1 microdeletion is a rare genetic disorder with developmental, behavioural and neuromuscular features. Coexisting reactive airway disease and autism spectrum disorder heighten the risk of perioperative respiratory adverse events (PRAEs) and complicate induction and emergence.

Treatment
A perioperative strategy minimising airway stimulation and preserving spontaneous ventilation was employed. Anaesthesia was induced with sevoflurane in oxygen; a laryngeal mask airway (LMA) was used instead of endotracheal intubation, and neuromuscular blockade was avoided. The perioperative course was uneventful, with no respiratory complications.

Discussion
Use of a supraglottic airway with maintenance of spontaneous ventilation, and a calm behaviourally tailored approach, facilitated safe anaesthesia in this child. This case adds to the limited literature on the anaesthetic implications of chromosome 7q32.1 microdeletion.

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Introduction

Chromosome 7q proximal interstitial deletions are rare genetic abnormalities with variable phenotypes, including developmental delay, behavioural dysregulation, communication impairment and abnormalities of muscle tone. Anaesthetic implications of chromosome 7q32.1 microdeletion are poorly characterised due to the scarcity of reported cases.[1]

Children with autism spectrum disorder often present additional perioperative challenges, including sensory hypersensitivity, anxiety and emergence agitation. Coexisting asthma or reactive airway disease further increases susceptibility to perioperative respiratory adverse events (PRAEs) such as bronchospasm, laryngospasm, and desaturation.[2-5]

We describe successful perioperative management of a child with chromosome 7q32.1 microdeletion undergoing elective surgery, balancing a rare chromosomal diagnosis with autism-related behavioural considerations and asthma-related airway risk.

Case Report

A six-year-old male child (20 kg) with a confirmed chromosome 7q32.1 microdeletion presented for elective ligation of a patent processus vaginalis. The diagnosis had been established by chromosomal microarray, which identified an interstitial deletion at 7q32.1. His history included autism spectrum disorder, attention deficit hyperactivity disorder, global developmental delay, hypotonia, and asthma managed with inhaled therapy. He was born at term following an uncomplicated pregnancy but required a short neonatal intensive care admission. There was no prior anaesthetic exposure or active respiratory infection, and preoperative examination and oxygen saturation were normal.

The anaesthetic strategy focused on minimising airway stimulation, maintaining spontaneous ventilation and providing a predictable perioperative course. Standard monitoring was applied in accordance with established guidelines, including pulse oximetry, electrocardiography, non-invasive blood pressure, and capnography.[1] Anaesthesia was induced with sevoflurane in oxygen, with preservation of spontaneous ventilation. A 22-gauge intravenous cannula was inserted and a size 2 LMA was placed.[6] Neuromuscular blocking agents were intentionally avoided.

Intraoperative medications included intravenous cefuroxime 300 mg, fentanyl 35 µg, morphine 2 mg, ondansetron 2 mg and dexamethasone 2 mg, with paracetamol 500 mg and diclofenac 12.5 mg administered per rectum. The procedure lasted approximately one hour with stable haemodynamics, a normal capnography waveform and oxygen saturation within normal limits. The LMA was removed when the child was fully awake with intact airway

reflexes. Recovery was uneventful and the patient was discharged following routine observation with no perioperative complications.

Discussion

This case highlights the practical link between syndrome phenotype and anaesthetic management. Reported features of chromosome 7q32.1 microdeletion include developmental delay, communication impairment, behavioural dysregulation and abnormalities of muscle tone, all of which may influence perioperative assessment, cooperation, positioning and recovery. Published anaesthetic experience in this specific microdeletion remains extremely limited, making individualised planning particularly important.

Children with asthma are at significantly increased risk of PRAEs during induction and emergence.[2,3] Airway instrumentation is a recognised precipitant of bronchospasm and laryngospasm.[5,6] An LMA was therefore preferred to endotracheal intubation, reducing airway stimulation while still providing an adequate airway. Spontaneous ventilation preserved physiological respiratory mechanics, and neuromuscular blockade was avoided as it was not surgically required, simplifying the technique and avoiding reversal-related residual respiratory effects. The child's baseline hypotonia, a feature of the microdeletion phenotype, reinforced this decision, as caution has been advocated in the use of neuromuscular blocking agents (NMBAs) since the risk of prolonged response could not be excluded.[7-8]

Autism spectrum disorder added a behavioural dimension because communication differences, sensory hypersensitivity and distress with unfamiliar routines may complicate induction and recovery. A calm, predictable approach tailored to the child's behavioural needs is therefore important alongside physiological considerations. In this case, the mother was present at induction of anaesthesia to provide a familiar, reassuring presence, a quite low-stimulation environment was maintained, and the inhalational induction allowed the child to be anaesthetised without prior venous cannulation, minimising distress before loss of consciousness.

In summary, this case adds to the limited literature on chromosome 7q32.1 microdeletion and suggests that safe perioperative care can be achieved through careful airway planning, supraglottic airway use and behavioural awareness. As a single case report, generalisability is limited, and further reports are needed.

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Declarations of Conflicts of Interest:
None declared.

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