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# Behavior Guidance Considerations in a Preschool Child with Multiple Caries and Hyperactive Gag Reflex: A Case Report

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**Abstract**

Managing dental treatment in preschool children with multiple carious lesions can be challenging, particularly when behavioral difficulties and physiological responses, such as an exaggerated gag reflex, interfere with clinical procedures. Effective behavior guidance strategies are essential to achieve successful treatment outcomes while maintaining the child's comfort, cooperation, and psychological well-being. This case report aimed to describe the considerations and application of behavior guidance approaches in managing a preschool child with multiple carious lesions and a hyperactive gag reflex during dental treatment. A preschool-aged child presented with multiple dental caries requiring comprehensive restorative treatment. The treatment process was complicated by limited cooperation, dental anxiety, and an exaggerated gag reflex that interfered with intraoral examination and clinical procedures. An individualized behavior guidance approach was implemented, including communication techniques, gradual exposure, positive reinforcement, distraction techniques, and modification of clinical procedures according to the child's tolerance. The treatment plan was adjusted based on the child's behavioral responses and physiological limitations to minimize discomfort and improve cooperation. The implementation of individualized behavior guidance techniques improved the child's acceptance of dental procedures and facilitated the progressive completion of required treatments. The approach reduced treatment-related anxiety and enabled clinicians to manage the gag reflex more effectively during dental care. Successful dental management of preschool children with multiple caries and a hyperactive gag reflex requires comprehensive assessment, individualized behavior guidance strategies, and appropriate adaptation of treatment procedures. A patient-centered approach can enhance cooperation, improve treatment feasibility, and promote positive dental experiences in young children.

## INTRODUCTION

Early childhood caries remains one of the most prevalent chronic oral diseases among young children (Arroyo Buenestado & Ribas-Pérez, 2023; Cheng et al., 2023; He et al., 2024; Lam et al., 2022). Untreated caries can result in pain, infection, difficulty eating, sleep disturbances, school absenteeism, and reduced oral health-related quality of life (Amer et al., 2022; Dahroug et al., 2026; Matos et al., 2022; Silva et al., 2026; Yadav et al., 2026). In preschool children, treatment planning is influenced not only by the severity of dental disease

but also by behavioral characteristics, developmental stage, caregiver support, medical conditions, and the child's ability to tolerate intraoral procedures (American Academy of Pediatric Dentistry [AAPD], 2025a, 2025d, 2025e, 2025f).

Behavior guidance is a fundamental component of pediatric dental care. Basic non-pharmacological techniques, including tell-show-do, positive reinforcement, distraction, parental presence, communication strategies, voice modulation, and gradual desensitization, are commonly used to reduce anxiety and improve cooperation. The primary goals are to establish effective communication, build trust, minimize fear, and provide safe dental care while maintaining the child's dignity and psychological well-being (AAPD, 2025a, 2025c). However, some children cannot be managed effectively with basic behavior guidance alone, particularly when extensive or urgent dental treatment is required (Bikey, 2025; Dhaliwal et al., 2025; Pastore et al., 2023; Saygılı et al., 2024; Zerman et al., 2022).

A hyperactive gag reflex presents an additional challenge in pediatric dentistry. Gagging is a protective physiological reflex that may be triggered by dental instruments, suction devices, radiographic sensors, impression materials, or restorative procedures. In severe cases, it may interfere with adequate visualization, isolation, and safe clinical instrumentation. Management strategies range from behavioral approaches and desensitization techniques to local interventions, sedation, and other advanced treatment approaches, depending on the severity of gagging, the child's age, treatment duration, and procedural complexity (Eachempati et al., 2019; Mehdizadeh et al., 2023).

This case report describes behavior guidance considerations in a preschool child with multiple caries, definitely negative behavior, and a hyperactive gag reflex. The novelty of this report lies in highlighting the clinical decision-making process, including the transition from basic non-pharmacological behavior guidance techniques to an advanced behavior management approach when conventional chairside treatment was not safe or feasible. The report follows the CARE guidelines for case reports by presenting patient information, clinical findings, diagnostic assessment, therapeutic intervention, follow-up, and clinical lessons (Gagnier et al., 2014).

## CASE PRESENTATION

### Patient information and chief complaint

A 5-year-1-month-old boy weighing 15 kg was brought by his parents to the pediatric dentistry service with the chief complaint of multiple decayed teeth and recurrent pain, particularly in the maxillary anterior region. The parents requested comprehensive dental care. The child had no reported history of systemic disease. Dental treatment in the conventional dental chair could not be completed because the child was uncooperative and easily vomited during intraoral procedures.

For privacy, all patient identifiers were removed from the manuscript and figures. The case information was reconstructed from the clinical presentation, intraoral findings, radiographic assessment, operative record, and postoperative visit notes.

### Clinical findings

The general condition was good. Extraoral examination revealed no significant abnormality. The child's behavior was classified as Frankl scale I, indicating definitely negative behavior. Intraoral examination showed multiple carious primary teeth in the maxillary and

mandibular arches, with severe destruction of the maxillary anterior teeth and carious lesions affecting posterior primary teeth. A hyperactive gag reflex was observed during intraoral manipulation and limited conventional chairside management.

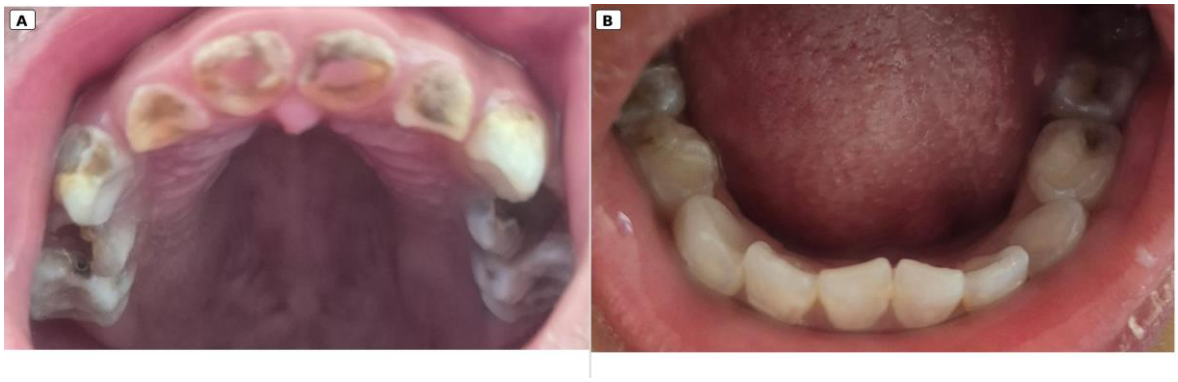



**Figure 1.** Preoperative intraoral occlusal photographs. (A) Maxillary arch showing multiple carious lesions and severe anterior destruction. (B) Mandibular arch showing carious lesions in posterior primary teeth.

**Diagnostic assessment**

Diagnostic assessment included history taking, extraoral and intraoral examination, panoramic radiography, thoracic radiography, laboratory blood examination, pediatric consultation, and anesthetic consultation. The working diagnosis was multiple caries associated with a hyperactive gag reflex. Teeth with reversible pulpitis were planned for conservative pulp protection and restoration when restorable, whereas teeth with pulpal necrosis and furcation involvement were planned for extraction because of poor prognosis and infection risk. The dental diagnoses and definitive treatment plan are summarized in Table 1.

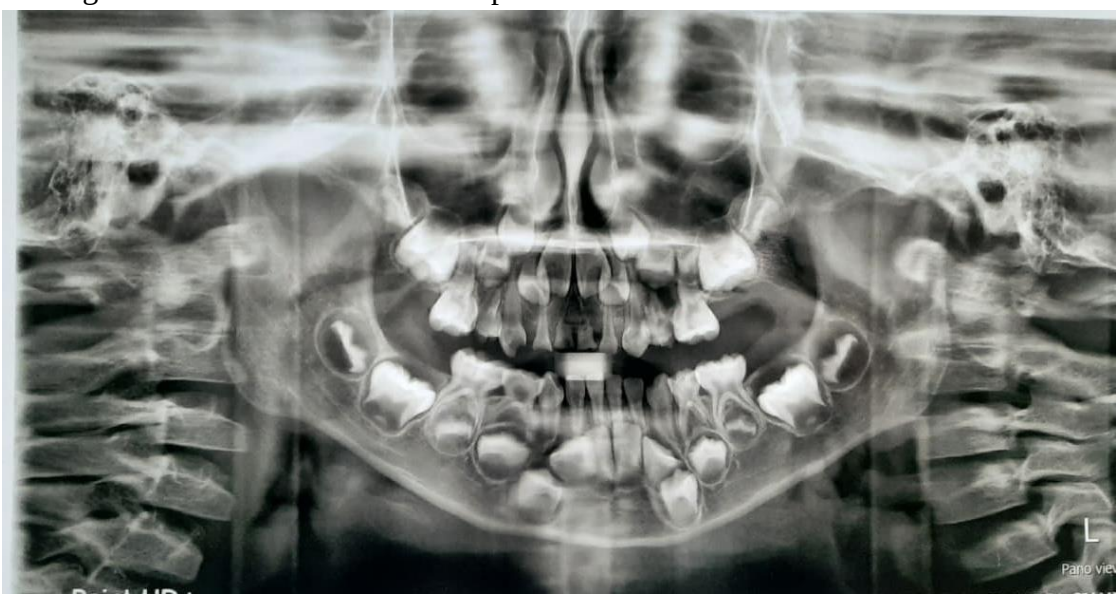



**Figure 2.** De-identified panoramic radiograph used for treatment planning. Patient identifiers were removed before manuscript preparation.

**Table 1.** Dental diagnosis and definitive treatment plan.

| Tooth/area | Clinical diagnosis | Definitive treatment | Clinical rationale |
|---|---|---|---|
| **55** | Reversible pulpitis | GIC restoration | Restorable posterior primary tooth |
| **54** | Pulpal necrosis with furcation involvement | Extraction | Non-vital tooth with furcation involvement |
| **53** | Reversible pulpitis | Pulp capping and GIC restoration | Vital tooth with restorable lesion |
| **52** | Reversible pulpitis | Pulp capping, base, and composite strip crown | Anterior esthetic rehabilitation |
| **51, 61** | Pulpal necrosis | Extraction | Non-restorable necrotic anterior teeth |
| **62** | Reversible pulpitis | Pulp capping, base, and composite strip crown | Anterior esthetic rehabilitation |
| **63** | Reversible pulpitis | GIC restoration | Restorable vital primary canine |
| **64** | Pulpal necrosis with furcation involvement | Extraction | Non-vital tooth with furcation involvement |
| **65** | Reversible pulpitis | Pulp capping and GIC restoration | Restorable posterior primary tooth |
| **74, 75** | Reversible pulpitis | GIC restorations | Restorable posterior primary teeth |
| **84, 85** | Reversible pulpitis | GIC restorations | Restorable posterior primary teeth |
| **Upper and lower arches** | High caries risk after multiple restorative/surgical procedures | Topical fluoride varnish | Post-rehabilitation preventive measure |

**Behavior-Guidance Considerations and Decision-Making**

The primary clinical problem was not only the number of carious teeth but also the child's inability to tolerate intraoral procedures. The behavior assessment indicated a definitely negative response, and the hyperactive gag reflex was repeatedly triggered by intraoral manipulation. In such a child, basic behavior-guidance techniques are important but may not be sufficient when the treatment need is extensive and urgent.

Basic non-pharmacological approaches considered in this case included child-friendly communication, tell-show-do, gradual exposure to dental instruments, positive reinforcement, distraction, and caregiver support. These techniques are appropriate first-line strategies in pediatric dentistry, particularly for reducing fear and improving cooperation. However, the expected treatment included multiple restorations, pulp protection procedures, extractions, hemostasis, and preventive care. The combination of treatment complexity and gagging risk created a situation in which prolonged chairside attempts could increase distress, compromise airway safety, and reduce treatment quality.

After discussion with the caregivers and the multidisciplinary team, an advanced behavior-guidance pathway was selected to provide comprehensive care in a single controlled session. This decision was based on the extent of dental disease, Frankl I behavior, gagging severity, the need for safe isolation and suction, and the goal of preventing repeated traumatic dental experiences.

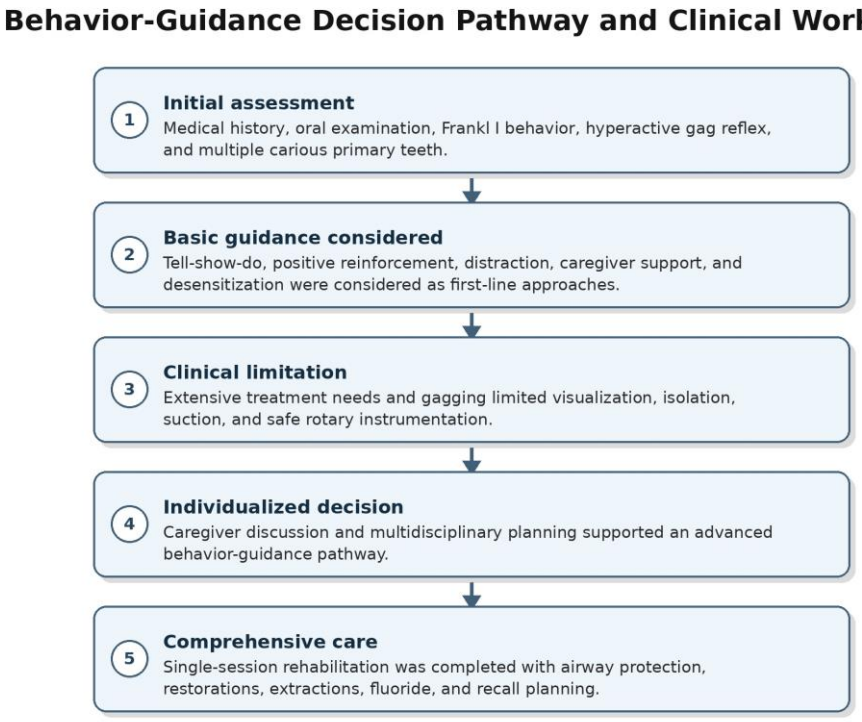



**Figure 3.** Behavior-guidance decision pathway and clinical workflow in the present case.

**Therapeutic Intervention**

Preoperative preparation included vital-sign observation, laboratory examination, panoramic and thoracic radiographic assessment, pediatric consultation, anesthetic consultation, confirmation of inpatient admission, evaluation for fever, cough, or rhinorrhea, fasting instruction for 6 hours before the procedure, and antibiotic prophylaxis according to institutional protocol.

The procedure was performed on 9 June 2026. After induction and continuous vital-sign monitoring, orotracheal intubation was performed by the anesthesiology team. The dental team performed time-out, asepsis with 10% povidone iodine, draping, mouth gag placement, and oropharyngeal pack placement before oral prophylaxis with a brush and pumice. Airway protection was confirmed throughout the procedure.

Dental rehabilitation was completed systematically. On the first side, cavity preparation was performed for teeth 55, 53, 52, 85, and 84. Tooth 52 received pulp capping and base placement followed by composite strip crown restoration. Tooth 53 received pulp capping and GIC restoration, and teeth 85 and 84 received GIC restorations. Tooth 54 was extracted after local infiltration, and bleeding was controlled using absorbable gelatin sponge and topical gel.

The oropharyngeal pack and mouth gag were repositioned to allow treatment of the opposite side. Cavity preparation was performed for teeth 62, 63, 65, 74, and 75. Tooth 62 received pulp capping, base placement, and composite strip crown restoration. Tooth 63 and teeth 74 and 75 were restored with GIC. Tooth 64 was extracted after local infiltration, and teeth 51 and 61 were extracted after intraligamentary anesthesia. Hemostasis was achieved

using absorbable gelatin sponge and topical gel. Topical fluoride varnish was applied to both arches. The operative time was 160 minutes, from 10:40 to 13:20.

**Postoperative Care and Follow-up**

After the procedure, the patient was transferred to the recovery room. Vital signs and the intraoral condition were evaluated. The child was kept fasting until fully conscious, and supportive intravenous fluid was maintained according to hospital protocol. Postoperative medication included cefadroxil syrup and paracetamol syrup according to the institutional prescription.

On the first postoperative visit at 18:30 on the day of surgery, the child was conscious and in good general condition. Bowel sounds were present, and there was no bleeding, nausea, vomiting, or fever. On the second postoperative visit at 06:30 the following morning, the child remained in good condition, with no pain, nausea, vomiting, bleeding, or fever.

Postoperative instructions included a soft diet for 72 hours followed by gradual return to a normal diet, avoidance of hot food and vigorous rinsing for the first 24 hours, avoidance of straw use, and avoidance of touching extraction wounds with the tongue or fingers. Parents received oral hygiene instruction and were taught how to clean the child's teeth carefully. The child was discharged after approval and scheduled for recall at the pediatric dental clinic.

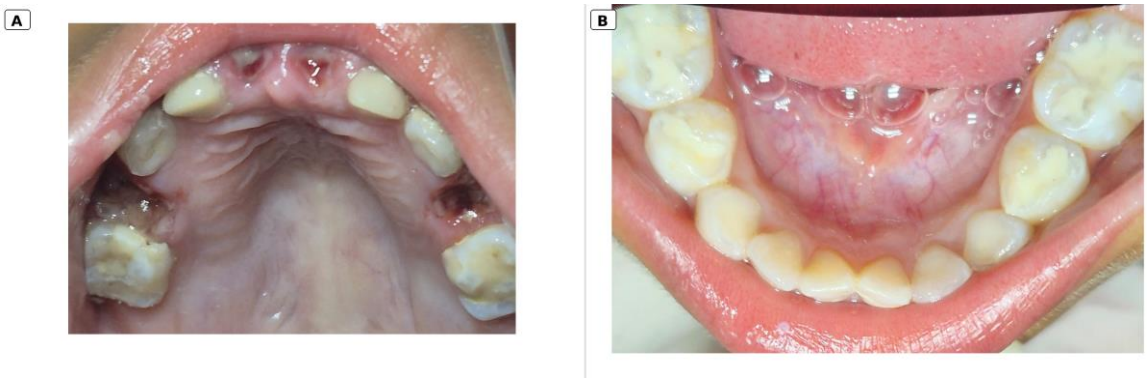



**Figure 4.** Postoperative intraoral occlusal photographs following rehabilitation. (A) Maxillary arch after extractions, anterior composite strip crown restoration, and restorations. (B) Mandibular arch after posterior restorations and preventive care.

## RESULTS AND DISCUSSION

This case illustrates a behavior-guidance challenge in pediatric dentistry: a preschool child with extensive dental caries who could not tolerate conventional chairside procedures because of definitely negative behavior and a hyperactive gag reflex. The selected title emphasizes behavior-guidance considerations because the central clinical issue was the decision-making process, rather than the pharmacological modality itself. The case demonstrates that behavior guidance is a continuum, beginning with communication and basic non-pharmacological strategies and progressing to advanced approaches when basic methods cannot ensure safe and effective treatment.

Basic behavior guidance remains the foundation of pediatric dental care. Techniques such as tell-show-do, positive reinforcement, distraction, parental presence, and desensitization should be considered according to the child's developmental level and clinical condition. In the present case, however, the child's Frankl I behavior and hyperactive gag reflex limited the feasibility of adequate visualization, isolation, suction, and safe use of instruments. Repeated

unsuccessful chairside attempts may worsen dental fear, reinforce avoidance behavior, and delay elimination of infection or pain.

The gag reflex is a protective mechanism that can become clinically problematic when exaggerated. Severe gagging may be triggered by dental mirrors, suction, radiographic sensors, cotton rolls, restorative instruments, or intraoral pressure. In children, gagging may be intensified by anxiety, lack of understanding, oral sensitivity, or previous unpleasant experiences. Management of gagging should be individualized. Behavioral desensitization may be useful for mild to moderate gagging, but extensive restorative and surgical needs may require an alternative pathway when gagging compromises safety and treatment quality (Eachempati et al., 2019; Mehdizadeh et al., 2023).

The decision to provide comprehensive care in a controlled setting was based on several converging factors: the child's young age, definitely negative behavior, repeated gagging during intraoral manipulation, multiple teeth requiring treatment, presence of necrotic teeth with furcation involvement, and the need for careful hemostasis and airway protection. This decision is consistent with pediatric dentistry principles that recommend individualized assessment of urgency, treatment extent, patient cooperation, medical status, and caregiver consent before selecting advanced behavior guidance (AAPD, 2025a, 2025c).

Comprehensive single-session rehabilitation offered important clinical advantages. It enabled elimination of sources of pain and infection, preservation of restorable primary teeth, extraction of non-restorable teeth, delivery of preventive fluoride therapy, and caregiver counseling without exposing the child to repeated stressful appointments. Nevertheless, the operative phase is only one component of care. Long-term success depends on caregiver adherence to dietary advice, oral hygiene practices, fluoride exposure, recall visits, monitoring of extraction sites, and evaluation of eruption and space-management needs.

Restorative and pulp-related decisions were guided by diagnosis and tooth restorability. Teeth with reversible pulpitis were managed conservatively with pulp capping and restoration when feasible, supporting the goal of preserving function and maintaining arch integrity. GIC was selected for several posterior and canine restorations due to chemical adhesion, fluoride release, and suitability for pediatric restorative care. Composite strip crowns were used for selected maxillary anterior teeth to restore form and improve esthetics. Teeth with pulpal necrosis and furcation involvement were extracted due to poor prognosis and risk of persistent infection.

Preventive management was emphasized after the operative procedures. Fluoride varnish application, oral hygiene instruction, dietary counseling, and recall scheduling are essential in children with high caries risk. Without preventive follow-up, children treated for severe caries remain at risk for recurrent caries and restoration failure. Therefore, the behavior-guidance plan must continue beyond the operative appointment and include caregiver-centered education and reinforcement.

The main limitation of this report is the short-term follow-up and single-case design, which limit generalizability. Long-term outcomes such as restoration survival, caries recurrence, oral hygiene improvement, caregiver compliance, space maintenance, eruption of permanent teeth, and behavior change should be monitored. Despite these limitations, the case provides clinically relevant documentation of behavior-guidance decision-making for a child with multiple caries and hyperactive gag reflex.

**Clinical Significance**

1. Definitely negative behavior and hyperactive gag reflex may transform routine pediatric dental care into a complex behavior-guidance problem when extensive treatment is required.
2. Basic non-pharmacological strategies should be considered first, but advanced behavior guidance may be justified when chairside treatment cannot be delivered safely or effectively.
3. Successful management requires more than operative rehabilitation; caregiver education, prevention, recall, and monitoring are essential for sustained outcomes.

## CONCLUSION

Successful dental management of preschool children with multiple caries and a hyperactive gag reflex requires a comprehensive assessment of the child's behavioral, physiological, and clinical conditions. This case highlights that individualized behavior guidance strategies, including effective communication, gradual desensitization, positive reinforcement, distraction techniques, and appropriate modification of treatment procedures, can improve cooperation and facilitate the completion of dental care. When conventional approaches are insufficient, clinicians should consider an adaptive behavior management pathway based on the child's tolerance, treatment needs, and safety considerations. A patient-centered approach that integrates behavioral assessment and clinical flexibility is essential to reducing anxiety, managing gag reflex challenges, and creating positive dental experiences for young children. Further studies are needed to evaluate standardized behavior guidance protocols for preschool patients with complex behavioral and physiological challenges.

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