Use of Protective Stabilization for Pediatric Dental Patients

Latest Revision
2024

How to Cite: American Academy of Pediatric Dentistry. Use of protective stabilization for pediatric dental patients. The Reference Manual of Pediatric Dentistry. Chicago, IL: American Academy of Pediatric Dentistry; 2025:400-6.

Abstract

This best practice is presented to assist dentists regarding the need for and use of the advanced behavior guidance technique of protective stabilization when treating pediatric dental patients. Considerations for the use of protective stabilization include the patient's specific oral health needs, dental and medical histories, cognitive and emotional development, alternative approaches to care (including treatment deferral or pharmacological techniques), impact on the quality of care and the patient's well-being, as well as the desires of the parent. Recommendations for using protective stabilization focus on the following areas: education of the health care providers, discussion of consent/assent with parent and patient, parental presence in the operatory or treatment area, specific immobilization techniques and equipment, method of monitoring the patient, and individualized considerations for patients with special health care needs. Indications, contraindications, risks, and required documentation are addressed. In the spirit of patient safety, the decision to utilize protective stabilization and chosen techniques should be customized for each patient, depending on his medications and physical and psychological health. Protective stabilization is considered within an overall behavior guidance plan that promotes a positive dental attitude and quality of care.

This document was developed through a collaborative effort of the American Academy of Pediatric Dentistry Councils on Clinical Affairs and Scientific Affairs to offer updated information and recommendations regarding the use of protective stabilization as an advanced behavior guidance technique in contemporary pediatric dentistry.

KEYWORDS: BEHAVIOR THERAPY; CHILD; DELIVERY OF HEALTH CARE; INFORMED CONSENT; RESTRAINT, PHYSICAL

Purpose

The American Academy of Pediatric Dentistry (**AAPD**) believes that all infants, children, adolescents, and individuals with special health care needs (**SHCN**) are entitled to receive oral health care that meets the treatment and ethical principles of our specialty. The AAPD has included use of protective stabilization (formerly referred to as physical restraint and medical immobilization) in its recommendations on behavior guidance since 1990.[1,2] This separate document, specific to protective stabilization, provides additional information to assist the dental professional and other stakeholders in understanding the indications for and developing best practices in the use of protective stabilization as an advanced behavior guidance technique in contemporary pediatric dentistry. Greater detail on behavior guidance techniques for pediatric dental patients is provided in the AAPD's *Behavior Guidance for the Pediatric Dental Patient* and *Nonpharmacological Behavior Guidance for the Pediatric Dental Patient.*[2,3]

Methods

Recommendations on protective stabilization were developed by the Council on Clinical Affairs, adopted in 2013[4], and last revised in 2020.[5] This revision is based on a review of the current dental and medical literature related to the use of protective stabilization devices and restraint in the treatment of infants, children, adolescents, and patients with SHCN in the dental office. This revision included an electronic database search of PubMed/MEDLINE using the following parameters: terms: *protective stabilization* AND *dentistry*, *protective stabilization* AND *medical procedures*, *medical immobilization*, *restraint* AND *dentistry*, *restraint* AND *medical procedures*, *papoose board* AND *dentistry*, *papoose board* AND *medical procedures*, and *patient restraint for treatment*; limits: within the last 10 years, English, and birth through age 18. Two hundred ten articles matched these criteria and were evaluated by title and/or abstract. Additional resources included Google Scholar and textbooks. When data did not appear sufficient or were inconclusive, recommendations were based upon expert and/or consensus opinion by experienced researchers and clinicians.

Definitions

A restraint is broadly defined by the Centers for Medicare and Medicaid Services as "(A) Any manual method, physical or mechanical device, material, or equipment that immobilizes

ABBREVIATIONS
AAPD: American Academy of Pediatric Dentistry. **SHCN:** Special health care needs.

or reduces the ability of a patient to move his or her arms, legs, body, or head freely; or (B) A drug or medication when it is used as a restriction to manage the patient's behavior or restrict the patient's freedom of movement and is not a standard treatment or dosage for the patient's condition."[6]

Protective stabilization is the term utilized in dentistry for the physical limitation of a patient's movement by a person or restrictive equipment, materials, or devices for a finite period of time[7] in order to safely provide examination, diagnosis, and/or treatment.[8] Other terms such as medical immobilization and medical immobilization/protective stabilization have been used as descriptors for procedures categorized as protective stabilization.[7,9] Active immobilization involves restraint of movement by another person such as the parent, dentist, or dental auxiliary.[9] Passive immobilization utilizes a restraining device.[9]

Background

Pediatric dentists receive formal education and training to gain the knowledge and skills required to manage the various physical challenges, cognitive capacities, and age-defining traits of their patients. Assessing each patient's history, developmental level, dental attitude, and temperament and recognizing potential barriers to delivery of care (eg, previous unpleasant and/or painful medical or dental experiences) help the dentist anticipate a child's reaction to treatment.[2] For patients unwilling or unable to cooperate, an approach tailored to the needs of the patient and desires of the parent*[10] is indicated. A continuum of nonpharmacological and pharmacological behavior guidance techniques, including protective stabilization, is available to help alleviate anxiety, nurture a positive dental attitude, and perform quality oral health care safely and efficiently for infants, children, adolescents, and individuals with SHCN.[2] When basic behavior guidance techniques are ineffective, advanced techniques (ie, protective stabilization, sedation, general anesthesia) may be necessary.[2]

The objectives of protective stabilization are: to reduce or eliminate untoward movement; to protect patient, parent, clinician, and staff from injury; and to facilitate delivery of quality dental treatment. The decision to recommend use of stabilization or immobilization techniques is based on the patient's oral health needs, emotional and cognitive development levels, and medical and physical conditions, as well as alternative approaches (eg, treatment options including deferral or other advanced behavior guidance techniques) and their potential impact on quality of care and the patient's well-being.[11,12] Socioeconomic status, geographic location, and ethnic/cultural influences may affect parental preference for various techniques.[13,14] Practitioner gender, practice setting, regional location, and perception of parental acceptance have been related to pediatric dentistry diplomates' acceptance and use of protective stabilization.[15] Lack of access to sedation services or operating rooms may contribute to utilization of protective stabilization as a means for provision of timely, medically-necessary restorative or surgical care.[8]

Protective stabilization is considered an advanced behavior guidance technique in dentistry.[2] Formal training will allow the dentist and staff members to acquire the necessary knowledge and skills in patient selection and in the successful use of restraining techniques to prevent or minimize psychological stress and/or decrease risk of physical injury to the patient. Attempts to restrain or stabilize patients without adequate training can leave not only the patient—but also the accompanying caregiver, clinician, and staff—at risk for physical harm.[16,17] Protective stabilization training has been shown to be variable in didactic and clinical experiences between and within dental schools.[18] While some schools provide didactic and hands-on training in advanced behavior guidance, others offer limited exposure. A survey of predoctoral program directors found a majority of dental schools spend fewer than 5 classroom hours on behavior guidance techniques.[19] Furthermore, 53.6% of institutions reported fewer than 25% of students had 1 hands-on experience with passive immobilization for nonsedated patients, while 21.4% of programs provided no clinical experiences.[19] Surveys of first year pediatric dental residents and their program directors found predoctoral education did not adequately prepare recent graduates to provide immobilization.[20] Reported rates of inadequate training in immobilization during predoctoral training ranged from 23% (first year residents) to 82% (predoctoral program directors).[20] Therefore, graduates from dental school may lack knowledge and competency in the use of protective stabilization. Limited training in protective stabilization is not unique to dentistry as other health care disciplines have suggested a need for advanced training and guidelines.[21-24]

Both didactic and hands-on education beyond dental school are essential to ensure medically-necessary, safe, and effective implementation of protective stabilization of a patient unable to cooperate. Advanced training can be attained through an accredited postdoctoral program (eg, advanced education in general dentistry, general practice residency, pediatric dentistry residency) or an extensive and focused continuing education course that includes both didactic and hands-on experiences. Currently, at least 1 state (Colorado)[25] requires training beyond basic dental education for a practitioner to utilize protective stabilization devices. Specialists in pediatric dentistry have the requisite education and experience in patient selection and stabilization techniques.[26]

* *In all AAPD oral health care policies and clinical recommendations the term "parent" has a broad meaning encompassing 1) a natural/biological or adoptive father or mother of a child with full parental legal rights, 2) a person recognized by state statute to have full parental legal rights, 3) a parent who in the case of divorce has been awarded legal custody of a child, 4) a person appointed by a court to be the legal guardian of a minor child, 5) a person appointed by a court to be the guardian for an incapacitated adult, 6) a person appointed by a court to have limited, legal rights to make health care decisions for a ward, or 7) a foster parent (a noncustodial parent caring for a child without parental support or protection who was placed by local welfare services or a court order).*[10]

When providing medically-necessary oral health care, consideration of alternative approaches to reduce patient movement and resistance as well as increase cooperation is indicated prior to implementing protective stabilization, especially for patients with SHCN.[8,27-29(p252)] Various behavioral modification approaches such as distraction, shaping, modeling, sensory integration, desensitization, and reinforcement are regarded as alternatives.[28,30,31] Nonpharmacological behavior guidance approaches have been effective in some patients with autism spectrum disorders.[32-35] Children and adolescents with SHCN will, at times, require protective stabilization to facilitate completion of necessary dental treatment.[29(p252)] Aggressive, uncontrolled, and impulsive behaviors along with involuntary movements may cause harm to both the patient and dental personnel.[36] Use of protective stabilization reduces potential risks and helps provides safe management of patients with certain SHCN.[36,37] Studies have demonstrated that sensory-adapted environments and techniques such as deep pressure from an immobilization device (eg, Olympic Papoose Board [Canadian Hospital Specialties, Limited]) provided comfort, reduced effects of stressful stimuli, and were observed to be nonharmful to patients with SHCN receiving medical and dental care.[36,38]

Protective stabilization, with or without a restrictive device, led by the dentist and performed by the dental team requires informed consent from a parent.[8,39,40] The practitioner's role is to explain the benefits and risks of protective stabilization, as well as alternatives (eg, interim therapeutic restoration, silver diammine fluoride, treatment deferral) to definitive dental procedures and alternative behavior guidance techniques (eg, sedation, general anesthesia), and assist the parent in determining the most appropriate approach to treat the child.[29(p254)] Informational booklets or videos may help the parent and/or patient understand the proposed procedure. One study reported parents of children with SHCN had greater acceptance of protective stabilization in comparison to parents of children with no disabilities.[41] An earlier survey of mothers of patients treated with the Papoose Board found that 90% recognized immobilization had protected their children from harm.[42] Ultimately, a parent has the right to terminate use of protective stabilization at any time if he or she believes the child may be experiencing physical or psychological trauma due to immobilization.

Numerous devices are available to limit movements by a patient unable to cooperate during dental treatment. Stabilization of a patient's extremities can be accomplished using devices such as Posey straps (Tidi Products), hook and loop straps, or seat belts. If a patient is unable (due to medical diagnosis) or unwilling (due to maladaptive behaviors) to control bodily movement, a full body wrap may be necessary. Full body stabilization devices include, but are not limited to, Papoose Board and Pedi-Wrap (The Medi-Kid Co.)[43,44(pp575-578)] Devices with a flat board design may not adapt to the dental chair. Pillows or beanbags under the board may promote stability.[29(p260)] Stabilization for the head may be accomplished using forearm-body support, a head positioner, or an extra assistant.[44(pp575-578)] Positioning devices or stabilizers such as wheelchair head supports or dental chair cushions are adjunct devices that are not necessarily considered protective stabilization devices.[29(p260)] Although a mouth prop may be used as an immobilization device, the use of a mouth prop in a compliant child is not considered protective stabilization.

Recommendations

Education. Practitioners must have both didactic and hands-on education beyond dental school to ensure the necessary knowledge in patient selection and skills in safe and effective implementation of protective stabilization of a patient unable to cooperate. Staff members must be trained in the safe and humane use of restraining techniques to prevent or minimize psychological stress and decrease risk of physical injury to the patient, the parent, the clinician, and themselves.

Indications. Protective stabilization facilitates safe and efficient treatment or assessments of patients who do not respond to basic behavior guidance techniques.[8] Treatment should first be attempted with communicative behavior guidance without protective stabilization unless there is a history of maladaptive or combative behavior that could be injurious to the patient and/or staff.[44] Protective stabilization should be used only when less restrictive interventions are not effective. It must not be used as a means of discipline, convenience, or retaliation.

Protective stabilization is indicated for

- a patient who requires immediate diagnosis and/or urgent limited treatment (eg, toddler with acute dental trauma) and cannot cooperate due to developmental levels (emotional or cognitive), lack of maturity, or medical/physical conditions.
- a patient who requires urgent care and uncontrolled movements risk the safety of the patient, parent, clinician, or staff without the use of protective stabilization.
- a previously cooperative patient who quickly becomes uncooperative and cooperation cannot be regained by basic behavior guidance techniques in order to protect the patient's safety and efficiently complete a procedure and/or stabilize the patient.
- an uncooperative patient whose treatment needs are limited (eg, requires only a single quadrant of care), and sedation or general anesthesia may not be an option because the patient does not meet sedation criteria or because of a long operating room wait time, financial considerations, and/or parental preferences after other options have been discussed.
- a sedated patient who requires limited stabilization to help reduce untoward movements during treatment.
- a patient with SHCN who exhibits movements that if uncontrolled would be harmful to patient or clinician or significantly interfere with the quality of care.

Contraindications: Protective stabilization is contraindicated for

- a cooperative nonsedated patient.
- an uncooperative patient when there is not a clear need to provide treatment at that particular visit.
- a patient who cannot be immobilized safely due to associated medical, psychological, or physical conditions.
- a patient with a history of physical or psychological trauma, including physical or sexual abuse or other trauma that would place the individual at greater psychological risk during restraint.
- a patient with non-emergent treatment needs in order to accomplish full mouth or multiple quadrant dental rehabilitation.
- the practitioner's convenience.
- a dental team without requisite knowledge and skills in patient selection and restraining techniques to prevent or minimize psychological stress and/or decrease risk of physical injury to the patient, parent, clinician, and staff.

Precautions. When considering protective stabilization during dental treatment, the dentist in collaboration with the parent must consider the importance of treatment and the safety consideration of the restrictive technique.[45] The following precautions are recommended.

- The patient's medical history must be reviewed carefully to ascertain any medical conditions or medications that can compromise physiologic function, may contraindicate the use of protective stabilization, or are associated with specific risk factors including
  - cardiac instability.[29(p253)]
  - pulmonary and respiratory instability.[29(p253)]
  - musculoskeletal alignment issues or weakness.[29(p253)]
  - joint hypermobility.[29(p253)]
  - bone fragility.[29(p253)]
  - cutaneous vulnerability to mechanical stress.
  - psychological instability.[29(p253)]
  - thermoregulation disorders.[29(p253)]
  - psychotropic medications.[46]
- Tightness and duration of the stabilization must be monitored and reassessed at regular intervals.
- Stabilization around extremities or the chest must not actively restrict circulation or respiration.
- Observation of body language and pain assessment must be continuous to allow for procedural modifications at the first sign of distress.
- Stabilization should be terminated as soon as possible in a patient who is experiencing severe stress or hysterics to prevent possible physical or psychological trauma.

The dental provider should acknowledge and abide by the principle to "do no harm" when considering completion of excessive amounts of treatment while the patient is immobilized with protective stabilization.[47] The physical and psychological health of the patient should override other factors (eg, practitioner convenience, financial compensation).[47]

Consent. Informed consent must be obtained and documented in the patient's record prior to performing protective stabilization.[7,16,48,49] When the patient can reasonably understand, an explanation regarding the need for restraint, with an opportunity for the patient to respond, is advised.[40,49-51] Although a minor (unless emancipated) does not have the statutory right to give or refuse consent for treatment, the child's wishes and feelings (assent) should be considered when addressing the issue of consent.[48,49] Also, when providing dental care for adolescents or adults with intellectual disabilities, patient assent for protective stabilization should be considered.[45] An explanation of the technique to be used and the reasons for application should be provided.[45] If a patient's behavior during treatment necessitates a change in stabilization procedure or technique, further consent must be obtained and documented.[49] If at any point during treatment the parent requests termination of restraint, the practitioner immediately should complete the necessary steps to bring the procedure to a safe conclusion before ending the appointment. The AAPD's *Informed Consent* provides in greater detail information on methods and considerations for obtaining consent.[49]

Techniques. This advanced technique must be integrated into an overall behavior guidance approach that is individualized for each patient in the context of promoting a positive dental attitude for the patient, while ensuring the highest standards of safety and quality of care. When immobilization is indicated, the least restrictive alternative or technique should be used.[52,53] Active stabilization (limitation of movement by another person) and passive stabilization (utilization of restraining device) can be used in combination.

Parental presence in the operatory may help both the parent and child during a difficult dental experience.[42] Furthermore, most mothers believed their presence increased the security and comfort of children placed on a rigid stabilization board.[42] The dentist should consider allowing the parent to be in the operatory or to directly observe the patient during use of protective stabilization unless the health and safety of the patient, parent, clinician, or staff would be at risk.[29(p253)] If parents choose not to be present, they should be encouraged to provide positive nurturing support for the child both before and after the procedure.

Behavioral support while utilizing protective stabilization is necessary to decrease stress for the patient. Continuous communication with the patient can provide empathy and reassurance; giving clear and specific instructions can help reduce anxiety and encourage patient cooperation.[54] Shaping and promoting coping skill development may lead to reduced need for protective stabilization in the future.[55]

Following explanation of the procedures and consent by the parent, protective stabilization of the patient should begin by placing the child, in a manner as comfortable as possible, in a supine position. If restriction of extremity movement is needed, the dentist may ask a dental auxiliary or parent to employ hand guarding or hold the patient's hands. Gradually increasing or

decreasing levels of restriction in response to the patient's behavior is one method of providing protective stabilization.[52] If hand guarding or hand holding does not deter disruptive movement of a patient's hands, wrist restraints may be utilized.[43, 44(pp575-578)] Full-body protective stabilization, when indicated, should be accomplished in a sequential manner.[56] If the stabilization device includes a head hold, that is activated last. At no time should the device be active to the point of restricting blood flow or respiration.[46] Furthermore, the use of protective stabilization should not induce pain for the patient.

At the completion of dental procedures, removal of restraints may be accomplished sequentially with short pauses between stages.[43] When immobilization has been introduced intraoperatively (ie, an unplanned intervention), debriefing is beneficial for parent/patient understanding[16] and to discuss management implications for future appointments. In addition, providing the opportunity for the staff members to debrief following the use of protective stabilization should be considered.[52]

Equipment. A passive restraining device employed as an adjunct to dental procedures should be

- easy to use.
- appropriately sized for the patient.
- soft and contoured to minimize potential injury to the patient.
- specifically designed for patient stabilization (ie, not improvised equipment).[56]
- able to be disinfected.

Monitoring. Ongoing awareness/assessment of the patient's physical and psychological well-being during the dental procedure must be performed.[29(p262)] Tightness of the stabilization device must be monitored continuously.[46] If a patient is noted to be experiencing severe emotional stress, protective stabilization must be terminated as soon as possible to prevent possible physical or psychological trauma.[29(pp251,252)] Sequential removal of restraints with short pauses between stages allows assessment the patient's level of cooperation.[43] Struggling during removal of restraints may increase the potential for injury to the patient, parent, clinician, and staff.

Risks. The provider should consider the patient's emotional and cognitive developmental levels and have an understanding of potential physical and psychological effects of protective stabilization. The majority of restraint-related injuries consist of minor bruises and scratches, although other more serious injuries have been reported.[46,57] Fewer injuries were incurred due to passive stabilization compared to active stabilization, and fewer injuries occurred with the use of planned passive stabilization may compared to its use in emergent situations.[57] Patients placed on a rigid stabilization board may overheat during the dental procedure.[29(p257)] They must never be unattended while placed on the board as they may roll out of the chair.[43(p9)] A rigid stabilization board may not allow for complete extension of the neck and, therefore, may compromise airway patency, especially in young children or sedated patients.[58] Proper training and use of a neck roll may minimize this risk.[43] Significant release of adrenal catecholamines may occur in patients who experience increased agitation when restrained by staff members or protective stabilizing equipment.[46] Excessive catecholamine release may sensitize the heart and cause rhythm disturbances.[46]

Documentation. The patient's record must include

- indication for protective stabilization.
- type of stabilization.
- informed consent for protective stabilization.
- reason for parental exclusion during protective stabilization (when applicable).
- the duration of application of stabilization.
- behavior evaluation/rating during stabilization.
- any untoward outcomes, such as skin markings.
- management implications for future appointments.

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