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Exploit restraints in managing Maladaptive behaviors

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ABSTRACT

Behavior management for the child in dentistry is not only an art and science but also a crucial step for successful outcomes of therapy, enhancing positive dental attitudes for future visits. Since children exhibit a wide range of development and diversity of attitudes toward dental treatment, it is imperative that dentist adopt different behavior management methods to meet the need of the individual child. The need to diagnose, treat as well as the safety of the patient and practitioner must justify before considering these methods. The aim of this comprehensive review to present on different types protective stabilization available in dentistry, distinguish between physical and mechanical restraints, elucidate some of these mechanical restraints.

Keywords: Behavior management, Physical restraint, Mechanical restraint, Advanced behavior guidance techniques.

Introduction

The problems associated with paediatric dental practice are mainly concerned with behaviour modulation. With out the child's cooperation dental treatment becomes difficult if not impossible [1]. Most of the children can be managed effectively using the techniques outlined in basic behavior guidance. These basic behavior guidance techniques should form the foundation for all of the management activities provided by the dentist. Children, however, occasionally present with behavioral considerations that require more advanced techniques [2] due to lack of psychological or emotional maturity and/or mental, physical or medical disability. The advanced behavior guidance techniques[3] commonly used and taught in advanced pediatric dental training programs include protective stabilization, sedation, and general anesthesia.

Protective Stabilization [4,5]
Also known as medical immobilization or treatment immobilization.

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The broad definition of protective stabilization is the partial or complete restriction of patient's freedom of movement, with or without the patient's permission, to decrease risk of injury while allowing safe completion of treatment. The restriction may involve another human(s), a patient stabilization device, or a combination thereof.

Types of protective stabilization [6]

1) Physical Restraint (Active restraint)
Physical restraint also known as personal restraint refers to personal restriction that reduces the ability of the child to freely move his or her arms, legs or head. **Example:** Head holds, hand guarding, therapeutic holds, hand-over-mouth exercise, and hand-over-mouth with airway restricted.

2) Mechanical Restraint (Passive restraint)
Refers to the use of mechanical devices which assist the patient in remaining properly positioned during the course of dental treatment. **Example:** Papoose board, pedi-wrap, sheets, straps, towels, and mouth props.

3) Chemical Restraint (conscious sedation)
Also called pharmacological restraint and refers to the use of a sedative or other drug to manage patient's movements. In addition, conscious sedation usually

requires mechanical and/or physical restraints to effectively manage a patient's movements.

Why restraints still acceptable in dentistry?

Restraints are useful and effective [7] in facilitating quality dental care for patients who need help controlling their extremities and for managing extremely resistant patients who need dental care but who are not candidates for general anesthesia. The use of restraints has potential serious consequences, such as physical or psychological harm, loss of dignity, violation of patient rights and even death. Because of associated risk and possible consequences of use, the dentists are encouraged to evaluate thoroughly its use on each patient and possible alternatives. Always use least restrictive, but safe and effective protective stabilization. The use of mouth prop in a compliant child is not considered protective stabilization. The need to diagnose, treat and to protect the patient, practioner, staff and parent should be considered for the use of these protective stabilization.[8]

Physical and Mechanical Restraints Classification [9]

Also known as positioners.

1. ***For the body***

Examples:- Papoose board, Triangular sheet , Pedi wrap, Bean bag dental chair insert, Safety belt, Towel and tape, and Extra assistant.

2. ***For the Extremities***

Examples:-Posey straps, Velcro straps, Towel & tape, and Extra assistant.

These restraints attach to the dental unit, restraint patient at the chest, legs, and arms to control the activity of the mentally / physically handicapped patient who cannot control his own movements. They also prevent the child from getting injured him and interfering in the dental procedure.

3. ***For the Head***

Examples:-Fore body support, Head protector, Plastic bowel and Extra assistant.

They support the head and protect the patient from getting injured himself.

4. ***For the Teeth***

Examples:-Mouth props, Padded wrapped tongue blades, and Rubber bite blocks.

They are used at the time of injection for stubborn child/ defiant child, mentally handicapped child and very young child who cannot keep its mouth open for extended period of time.

Indications –AAPD [10,11]

Ideally unco-operative child should be given time and opportunity to voluntarily accept treatment over a series of de sensitizing visits. If the child remains unco-operative after gentle coaxing and normal behavior management strategies, restraint may be indicated.

- ✓ For a patient who requires diagnosis/ treatment and cannot cooperative due to a lack of maturity or a handicapping condition.
- ✓ When the safety of the patient or staff would be at risk without restraint.
- ✓ As a part of treatment during conscious sedation procedures if GA is not readily available.(Connick *et al* 2000, Kupietsky[12] 2004)

Contraindications

Use of restraint is contra-indicated in the following circumstances:

- ➢ If there is no available informed parental consent and child is co-operative.
- ➢ Child with complicating physical or mental condition.
- ➢ Non sedated patient with non emergent treatment requiring lengthy appointments.
- ➢ Patient has experienced previous physical or psychological trauma from physical restraint.
- ➢ Child suffering from respiratory problems (asthma) which may compress respiratory function.

Restraints sometimes become controversial due to reports of over use, abuse of the procedures and the real risk of physical and psychological injury.

Advantages

- ❖ Avoids risk to patients with use of general anesthesia.
- ❖ Avoids patient hospitalization.
- ❖ Safe and cost-effective in-office.

Disadvantage

- ❖ Traumatized children will continue to grow up into adult dental phobics, stay away from the dentist for as long as possible until they have pain worse.
- ❖ Dentistry will continue to be the universally recognized symbol for fear and pain, just as it was for centuries.
- ❖ Traumatic experiences lead to difficulty in schooling.

Before use of restraints patient record must include [13]

- ❖ Informed consent for stabilization.
- ❖ Indication for stabilization.
- ❖ Type of stabilization.
- ❖ The duration of application of stabilization.
- ❖ Behavior evaluation/rating during stabilization.

Precautions in using restraints [14]

1) Tightness and duration of the stabilization must be monitored and reassessed at regular intervals.
2) Stabilization around extremities or the chest must not actively restrict circulation or respiration.
3) 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.

Papoose Board (PB)

Definition:

A *Papoose Board* [15] is a device commonly used to immobilize children for dental work, blood-drawing, and minor medical procedures. The child is placed on a flat board and wide fabric straps are wrapped around the upper body, middle body, and legs.

Olympic Papoose Board is indispensable aids in thousands of hospitals, and doctors' and dentists' offices. Papoose Boards are easy to clean. Simply wipe the board with liquid disinfectant or soap and water. The flap sets and arm straps can be machine-washed.

Types [16]

Papoose Board - Small

- For patients aged 3 months - 24 months
- Patient weight: 13 - 35 lbs (6 - 16 kg)

Papoose Board – Regular

- For patients aged 2 - 6 years
- Patient weight: 30 - 50 lb (13 - 23 kg)

Papoose Board - Large

- For patients Aged 6 - 12 years
- Patient weight: 45 - 100 lbs (20 - 46 kg)

Papoose Board - Extra Large

- For patients aged 13 – adult
- Patient weight: 70 - 200 lbs (30 - 90 kg)

Par*ts of papoose board*

Advantages [17]

- Less alarming to child by applying quickly in less than 60 seconds to keep a child from struggling and resisting treatment.
- Child is held safely, cannot escape, and is protected from self injury.
- Hangs on wall for compact storage.
- Rigid board is lightweight, durable and wipes clean.
- Head strap adjusts up or down and is foam padded.
- Arm holes permit exposure of one or both arms.
- Infinite adjustment with generous Velcro brand fasteners on flaps.
- Arm straps have secure brand fasteners that adjust up or down.
- Its unique feature is any pairs of flap can be opened while the child is still held securely by remaining flaps, which permits exposure of any area of child's body while maintaining restraint and control.

Disadvantage

- Restraints are traumatizing to children and may add to the terror of an already stressful situation.

Papoose Board works on the proven splint principle of binding the child to a rigid board to suppress struggling. The board is quickly and easily applied using three sets of opposing canvas flaps, with Velcro brand fasteners, that fold over the child's body. The diagonal shape of each board causes the flaps to crisscross, providing a snug-fitting restraint. Separate arm straps hold each arm. In addition, an adjustable strap can be used to immobilize the child's head. (Optional Head immobilizers and Arm immobilizers are also available).

Caution: Use the restraint only under the supervision of a licensed practitioner and only when necessary for the safety and protection of the patient is needed. Use the Board only for temporary restraint never for continuous or long-term restraint. Make sure the restraint does not impair the patients breathing or circulation, or cause overheating or positional injuries.[18] Watch for risk of aspiration when the patient is in the prone position. A survey was done on 50 mothers to known their attitudes towards use of papoose boards. 90% of the mothers approved of the use of the PB, 96% thought the PB was necessary to perform the dentistry, 78% did not think it had a later

negative effect on the child, and 86% were willing to use it with their next child.[19]

Triangular sheet

Also called bed sheet technique described by Mink.[20] It allows the patient to sit upright during radiographic examinations. One method is to have the patient stand with hands pressed to the sides and wrap the patient in the sheet from the shoulders to the ankles.[21] The sheet is then secured with tape that is easy to cut. Another method is to wrap the patient with the bed sheet in a mummy-like fashion and fasten the ends with large safety pins. This procedure is not usually frightening and may even provide patients with a sense of security.

Advantage

- Inexpensive restraint.[22]

Disadvantages

- Frequent need for strapping, to maintain the patient position in the dental chair.
- Difficulty to use on small patients.
- Possibility of air way impingement if child slips downward and unnoticed.

Pedi wrap [23]

This is the most widely used paediatric arm immobilizer. Also referred to as paediatric splints which are available in pairs. It has reinforced nylon mesh sheet with Velcro closures, available in small, medium and large sizes. It can be placed on pre-positioned chair with Velcro fasteners around chest followed by arms and legs to avoid movement. It is designed to fit children from infancy to above ten years.

Types [24]

1. Medi wrap-adult arm/leg immobilizers
2. Pedi wrap-with thumb hole without thumb hole

Available in 3", 5", (new born-4months of age) 7" (1yr old), 9" (2yrs old), 11" (3yrs old), 13" length.

Pedi wrap arm immobilizer without thumb hole strap has cute, comfortable design, immobilizing wearer's arms while still allowing use of hands. They are available in pairs. To apply, simple wrap the immobilizer around the arm and overlap Velcro to secure it.

3. Pedi-wrap with Velcro wrist strap
4. Pedi-wrap IV wrap

It is designed to fit over an IV tube while still providing good bracing and support. It should be used with other Pedi-wrap arm immobilizers and a shoulder strap.

5. Snuggle wraps TM [25]

Allow adjustment to fit various arm widths. Standard size fit an average size child. Children those are larger or smaller than average should use the next size accordingly.

Directions for use

a. Position snuggle wraps with rough Velcro side facing out away from skin.

b. Wrap the smaller end around wrist, secure the tab with the soft Velcro onto the top of rough Velcro.

c. Wrap the wider end around the upper arm, secure Velcro. They should fit from wrist to upper arm.

6. Super slim sleeves TM [25]

New, anti-microbial, slimmest, coolest immobilizers with vertical Velcro's.

The child is wrapped in the device while lying on a reclined dental chair. Every effort is made to wrap the child comfortably.

Indications

- ✓ Highly recommended following cleft palate surgery.
- ✓ During X-rays exposure in young patient.
- ✓ Children with self-injurious habit.

Contra-indication

- ➢ Child with deformed bones.

Advantages

- Fast and easy to use.
- Simple wrap around arm and Velcro width allows adjustments around arm.
- Quickly controls arm movements.
- Limits disruptive child's movement to prevent injury and to enable the dentist to provide necessary treatment.
- Due to presence of mesh net fabric it permits better ventilation so they are lesser chances of patient developing hyperthermia.
- Non-rigid form of Pedi-wrap allows children to be treat in an up right or reclining position.

Disadvantages

- Does not have support or a backboard.
- High cost.

Precautions

1) Do not wrap tightly.
2) Immobilizers should be loose enough to fit your finger under the bands.
3) If child hands feel cold or have blue appearance immediately remove immobilizer, exercise arms, wait and reapply looser.
4) Remove ofen and exercise arms.

Bean bag (Bean bag chair)

Large, soft, frameless chair resembling a bean bag, typically a cloth like plastic shell, filled with foam rubber or polystyrene granules so that it moulds into a comfortable shape. Bean bag also called as "sag bag"[26] can be used as informal low seat. The first beanbag chairs were called Soccos which were pear-shaped leather bags filled with styro-foam beans and are still in production today.[27]

Bean bag dental chair insert [28]

A bean bag chair may be placed in the reclined dental chair and the patient may be placed on the bean bag. Helps accommodate the hypotonic and severely spastic persons who need more support and less restraining in the dental chair.

Advantages

- Outer surface of bag is made of vinyl like material that can be easily cleaned.
- Soft and comfortable.
- Re-sealable safety closure.
- Light weight can be easily moved.
- Molds into any shape for seating and storage.

Disadvantages

- Lack of rigidity.
- Chances of child slip out if not supervised.

Towel and Tape [29]

A simple restraint device is to wrap the patient's arms in a towel, then wrap adhesive tape around the towel and finally tape the arms to the chair arm rests. The same procedure may be used to restrain the patient's legs against the base of the dental chair. Care should be taken not to use adhesive tape that may remove the vinyl covering of some chairs. A folded towel placed on a patient's forehead and held by a dental assistant standing behind the dental chair, can limit minor head movements. This is a good example of a combination of a physical (dental assistant) and mechanical (towel) restraint. When the folded towel cannot be held such as during radiographic procedures, the towel may be taped to the dental chair.

Posey straps [30]

Posey straps also known as posey vest is a type of physical restraint used to restrain child to dental chair. The vest is placed on the patient, and meshy straps extending from each corner are tied either individually to each side or together to the back of a chair. They are fastened to the arms. They allow patients the freedom to move around their arms and legs if no limb restraints have been applied.

Indications

- ✓ Can be used if the movements of the extremities are the only problem.

Contraindication [31]

- ➢ Its use is contraindicated in the child with deformed bones.

Variations

A **cushion belt [32]** is a belt that does not include a vest, and simply fastens around the waist, and is tied to the sides of a chair. An alternate version of the Posey is a vest that is placed on with an opening in the back and a back zipper, and straps that extend from the sides.

Velcro straps

Advantages

- Less expensive, easy to install and remove.
- No tools or training needs for installation.
- Straps can be reusable.
- Infinitely adjustable and can secure closer every time.
- Less stigmatizing and frightening to the child.

Mouth props [33]

A mouth prop also known as 'BITE BLOCK' is a wedge shaped implement used in dentistry. It has a rubber like texture and made typically from 'thermoplastic vulcanizate' (TPV) material. Mouth props are often necessary for dental treatment of disabled patients who lack the ability to keep their mouths open. Mouth props are mechanical restraints that protect the patient and practitioner from injury that could occur during sudden and unexpected closing of the mouth. They also improve access and visibility.

Types

1) Molt mouth prop [34]

This scissors-type mouth prop is commercially available in adult, child and infant sizes. The metal blades must be covered with a soft material, such as surgical rubber tubing, to prevent damage to the teeth and soft tissues. The patient is able to remain open by biting against the rubber covered blades. The Molt mouth prop gives the dental practitioner the most positive control over mandibular movements and can also be used to open the mouth wider if necessary. Blades of the prop must be kept on posterior teeth to prevent subluxation of anterior teeth, soft tissue lacerations, or injury to the operator's hand.

Indications

- ✓ Can be used in un co-operative patients and in individuals with difficulty in mouth opening.
- ✓ During injecting LA, prevent children from closing mouth.
- ✓ Children who are fatigued from a long appointment.

- ✓ Can be used in stubborn or defiant children who constantly closed his mouth in order to interrupt treatment.

Contra indication

- ➢ Child with cleft lip or palate.
- ➢ Should not be used by non-professionals such as technicians and dental surgery assistants.

Advantages

- Due to availability in different sizes prop can be used for pediatric and adult patients.
- Allows accessibility to the opposite side of the mouth.
- Operates in reverse scissor action.

Disadvantages

- Possibility of lip and palate lacerations.
- Luxation of teeth if not used correctly.
- Patient mouth is forced to open beyond natural limits.
- Maximum opening of mouth by mouth prop increases risk of upper air way constriction.[35]

2) Mc Kesson Rubber Bite Block [36]

A commercially available device usually made of rubber to maintain mouth open prolonged during treatment. This wedge shaped rubber block can be placed between the biting surfaces of posterior teeth distal to the canines. Dental floss should be attached to the mouth prop to prevent the block from being swallowed and for easy removal. Examples-ISO bite block, Prop Gard mouth prop

Advantages

- Available in different sizes can use for paediatric and adult patients.
- They have floss attachment for easy retrieval if they become dislodged in the mouth.
- Reduce fatigue during long term treatment.
- Latex free.
- Joint support.
- Stabilization.
- Autoclavable and chemo sterilizable.
- Prevents vertical overlap of front teeth.

Disadvantages

- Luxation of teeth if not used properly.

3) Disposable mouth prop (EZ-Prop)[37]

Made of non elastic styrofoam. Thread strand of dental floss through pre-drilled hole. Disposable mouth props are molded with traditional ridged bite channels and safety line eyelets. Available in small, medium, large sizes with different colors.

4) Silicone mouth prop[38]

Available in three colors. Purple (small sized child), blue (medium sized child), green (adult).

Advantages

- They can be auto clavable up to 275o F or 1340c/18min.
- Dry heat to 3500F or 1600C/2 hrs.
- Had special finger channel for easy insertion.

5) Pearson mouth prop [39]

These mouth props are with stain-less steel inserts to maintain their shape under stress.

Types

a. Rubber - can be autoclavable with dry heat up to 4600F

b. Silicone

6) Open wide mouth wrap-wrap around handle [40]

The Open-wide mouth prop is a relatively new commercially available prop. It is re-usable with wrap around handles curves away from the mouth, so it will not block oral access. A unique receptor holds a saliva ejector in place without a second set of hands. It is available in two sizes, small and large. The prop itself consists of soft durable foam head attached to a tongue blade-like handle. It is inexpensive enough to be disposable, easy to use, and applicable to professional as well as home use. The Open-Wide mouth prop is very helpful with small, fragile patients.

7) Other mouth-props

In addition to the previously mentioned mouth props, an acrylic bite block, collapsible stainless steel finger guards, metal tailor's thimbles can also be used as mouth props.

Disadvantage

Due to their hardness they can damage teeth, or slip and damage the clinician's fingers.

How to use mouth prop?

Wiggle in between back teeth. Don't insert between front teeth as they can chip or break teeth. Turn mouth props so that wider dimension is between resident's back teeth, allowing more room. To reposition turn mouth props to narrower dimension and slide around to other side. Turn again so that resident's back teeth rest on wider dimension.

Padded and wrapped tongue blades

Previously they are called as Craft sticks or Meyer haffer sticks.[41]

They are available as

1. **Standard [42]**

It is flat, thin, wooden blade, smoothed and rounded at both ends. Made of balsa, pine, red wood woods. Available in 6''length.

Indication

- ✓ During oral examination and keep the mouth opens for short period.

Advantages

- Inexpensive
- Can easily fabricated
- Customerized for amount of bite opening that is desired.
- Mouth can be opened wider by placing tongue blades posteriorly.

Disadvantage

- Non sterile and disposed after single use.
- Heavy wedging force may cause splinter and may result in soft tissue lacerations.
- Improper use results in luxation of anterior teeth.

2. **Flavored plastic tongue blade [43]**

Ex:- Tic-Tong TM, Animal Jr

They are available in different fun animal shapes and pleasing fruit flavors (grape, strawberry, cherry). They are made from non toxic plastic.

Advantages

- Examination completed faster
- Less stressful for child
- Simply good taste

Tongue blades-'junior'

Cherry flavored, individually wrapped available in 5 1/2 inches length.

Finger guard or inter-occlusal thimble [44]

Advantages

- Inexpensive
- Fit's dentist finger

Disadvantages

- Limited mobility for dentist's hand once the splint is in place.

Conclusion

A wide variety of behavioral management techniques are available to paediatric dentistry which must be used as appropriate for the benefit of each child patient, importantly must take into account all cultures, philosophical and legal requirements in the country dentist concerned with dental care of children. The physical intervention must always be of the minimum necessary to accomplish the task, likely to cause minimal or no psychological distress and never for the convenience of the professional. Any such intervention must follow important parental policy that is inform before we perform. A debriefing should take place with child and family after the procedure. Finally no one should undertake any form of intervention without appropriate training.

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