

## Modification of Papoose Board® restraint to facilitate airway management of the sedated pediatric dental patient

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### Abstract

*Transitory loss of airway patency in sedated pediatric dental patients is generally managed easily by extending the patient's head and neck to restore an open airway. This procedure can be difficult if the patient is restrained in a rigid support, such as a Papoose Board®. Modification of the small Papoose Board to allow extension of the head is accomplished by cutting off the upper 8-9 inches of the support and reattaching it with a piano hinge and rivets.*

The use of physical restraint in the management of certain types of children in the dental setting is a well documented, accepted technique (Kelly 1976; Pinkham 1982; Wright et al. 1983). In a survey of 120 diplomates of the American Board of Pediatric Dentistry, 101 responded that they used restraint in "selected cases" (Association of Pedodontic Diplomates 1972). Patients with mental retardation and neuro-motor dysfunction, or those displaying aggressive and resistant behavior were most frequently cited as requiring consideration for restraint. Troutman et al. (1982) also suggested that restraint be utilized when sedative premedication is employed, and a survey of postdoctoral pediatric dentistry programs revealed that restraint frequently was used for the premedicated patient (Davis and Rombom 1979).

Of the various forms of total body restraint available, the Papoose Board<sup>a</sup> is particularly popular. It is available in 3 sizes and can be used with removable head stabilizers. Wright et al. (1983) stated that it offers the advantages of usually controlling the hands and preventing the child from squirming. Kelly (1976) noted that it can create hyperthermia in very active patients. Lynch et al. (1983) echoed this concern, and also pointed out that the flaps covering the chest make

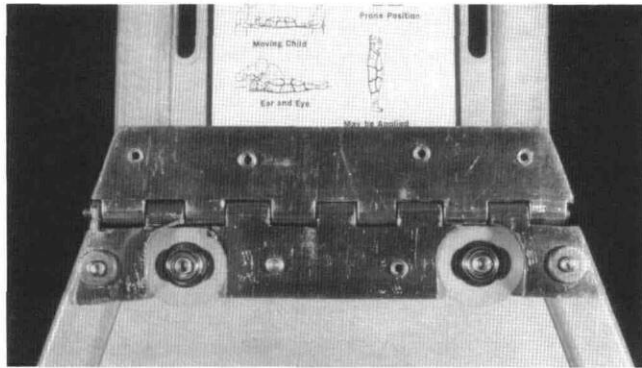
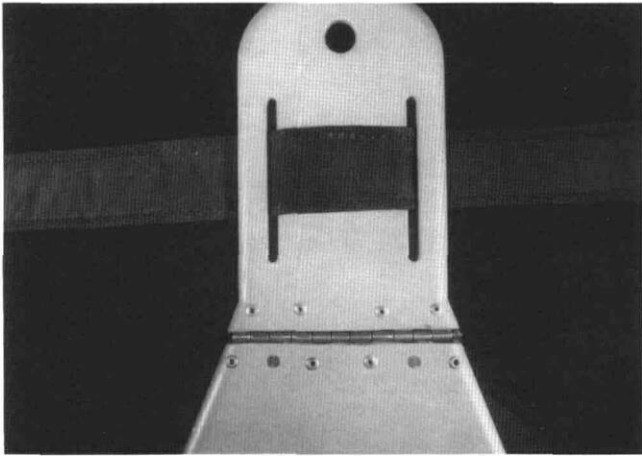
it difficult to monitor respirations. They suggested use of a stethoscope for this function. Another disadvantage of the Papoose Board is the fact that its flat, rigid design does not conform to the shape of some dental chairs (Lynch et al. 1983; Wright et al. 1983).

The rigid design also can interfere with attempts to extend the head and neck to maintain airway patency in sedated children. Houpt et al. (1986) noted reduced gas exchange in some sedated patients who were restrained in a Papoose Board for dental restorations. They attributed this to inadvertent depression of the mandible which created a partial blockage of the airway. Chest movements continued unchanged during these episodes. Clinical experience also indicates that sedated patients may undergo partial blockage of the airway as relaxation of the musculature of the pharynx and tongue allow the tongue



FIG 1. Towels positioned under the shoulders and neck of patients in a Papoose Board extend the head and maintain a patent airway.

<sup>a</sup> Olympic Surgical Co; Seattle, WA.



**FIG 2.** A. (top) Front of modified Papoose Board with hinge in place. B. Rear view showing placement of hinge and cutouts for snaps which hold cloth restraints.

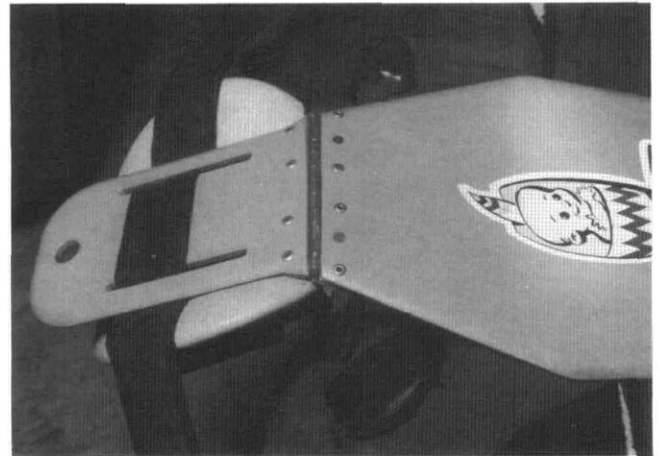
to drop posteriorly. This is analogous to the transient hypoxia (sleep apnea) periodically suffered by chronic snorers. In fact, snoring by a sedated patient is recognized as a sign of partial airway blockage by the tongue. The situation usually is rectified by extending the head and neck to open the airway.

One way to prevent this from occurring in patients restrained in a Papoose Board is to place folded towels under the neck and shoulders of the patient (Fig 1). This procedure may be difficult to accomplish with an uncooperative patient, and such a safety measure may have to be delayed until the patient is effectively sedated.

The following modification of the small (regular) Papoose Board may prove useful as a means of allowing head and neck extension in dental chairs with articulated head rests.

### Modification

The modification described can only be done on the Papoose Board which is sized for patients 2 to 5 years old and which has an unpadded, fiberglass support.



**FIG 3.** Modified Papoose Board in dental chair with articulated head rest demonstrating flexion of head support.

The upper 8-9" of the support were removed with a single cut using a fine-toothed handsaw. An aluminum piano hinge was cut with a hacksaw to match the width of the support at the cut. The lower flange of the hinge was modified with 2 circular cutouts using a file so as not to cover the snaps which support the cloth restraints. The sides of the hinge were filed to match the edges of the support, and the hinge was attached with rivets (Fig 2). The modification required about 1 hr to complete. The materials cost less than \$5.

As Figs 3 and 4 illustrate, this modification allows for extension of the head in a dental chair with an articulated head rest. This could be supplemented with towels under the neck, but that additional support is probably unnecessary. The changes do not prevent the use of either the head strap or the head stabilizer with this size Papoose Board. This modification also can improve operator visibility in non-



**FIG 4.** Patient in modified Papoose Board demonstrating extension of head and neck.

sedated patients or in patients wearing a nasal mask for the administration of nitrous oxide and oxygen.

Modification of the larger Papoose Boards is unnecessary; these supports are padded and covered by vinyl, and the head portion flexes somewhat.

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Association of Pedodontic Diplomates: Technique for behavior management—a survey. *J Dent Child* 39:368-72, 1972.

Davis MJ, Rombom HM: Survey of the utilization of and rationale for hand-over-mouth (HOM) and restraint in postdoctoral pedodontic education. *Pediatr Dent* 1:87-90, 1979.

Haupt MI, Koenigsberg SR, Weiss NJ, Desjardins PJ: Comparison of chloral hydrate with and without promethazine in the sedation of young children. *Pediatr Dent* 7:41-46, 1986.

Kelly JR: The use of restraints in pedodontics. *J Pedod* 1:57-68, 1976.

Lynch TR, Jones JE, Weddell JA: Dental problems of the handicapped child, in *Dentistry for the Child and Adolescent*, 4th ed, McDonald RE, Avery DR, eds. St Louis; CV Mosby Co, 1983 pp 642-86.

Pinkham JR: Nonpharmacologic management of pain and anxiety, in *Pediatric Dentistry—Scientific Foundations and Clinical Practice*, Stewart RE, Barber TK, Troutman KC, Wei SHY, eds. St Louis; CV Mosby Co, 1982 pp 793-802.

Troutman KC, Full CA, Bystrom EB: Developmental disabilities: considerations in dental management, in *Pediatric Dentistry—Scientific Foundations and Clinical Practice*, Stewart RE, Barber TK, Troutman KC, Wei SHY, eds. St Louis; CV Mosby Co, 1982 pp 833-54.

Wright GA, Starkey PE, Gardner DE: Infants and toddlers, in *Managing Children's Behavior in the Dental Office*, Wright GZ, Starkey PE, Gardner DE, eds. St Louis: CV Mosby Co, 1983 pp 218-31.

## Drunk drivers beware!

How do other countries deal with drunken drivers? The Minnesota Licensed Beverage Association has reported various sentences that may all but eliminate second offenses.

**Australia** — The names of convicted drunken drivers are published in the local newspapers under the heading: *Drunk and in Jail*.

**South Africa** — A drunken driver is given a 10-year prison term, a fine of \$10,000 or both, depending on the circumstances.

**Turkey** — Drunken drivers are taken 20 miles out of town by the police and forced to walk back under escort.

**Malaysia** — The drunken driver is jailed. If he is married, his wife is jailed, too.

**Norway** — Three weeks in jail at hard labor, and the drunken driver loses his license for 1 year. A second offense within 5 years and the driving license is revoked permanently.

**Finland and Sweden** — Automatic jail sentence for 1 year at hard labor.

**England** — 1 year in jail, 1-year suspension of driver's license, and a fine of \$250.

**Russia** — Driver's license is revoked for life.

**France** — 1 year in jail, the loss of license for 3 years, and a fine of \$1,000.

**Poland** — Jail and fine determined by a judge. All drunken drivers are forced to listen to a set of lectures about the effects of drunken driving on families and the community.

**Bulgaria** — A second conviction of drunken driving is the last. The punishment is execution.

**El Salvador** — Drunken drivers (first offenders) are executed by a firing squad.