



## Innovative orthodontic band matrices in pediatric dentistry for class II restorations

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Although they are not a finding in contemporary pediatric dentistry textbooks or other literature, the utilization of orthodontic bands for Class II fillings in pediatric dentistry because of good gingival fit and interproximal contours can be very useful.

In the deciduous dentition for the first primary molar, a lower first bicuspid band is recommended. For the second deciduous molar, an upper bicuspid band or lower second bicuspid band can be utilized. For Class II restorations in permanent teeth clinicians are encouraged to use the appropriate permanent band for the tooth being restored.

The technique requires that the band is reduced gingivally and occlusally on the interproximal side of the tooth that is not cariously involved to allow deeper seating on the interproximal side with caries involvement (Fig 1).

If the caries extends deep gingivally in the interproximal area, the orthodontic band can be elongated by the addition of a custom-made stainless steel "apron" welded to the orthodontic band made out of .003x.125 or .003x.150 permachrome band material (Fig 2).

In using the orthodontic band, optional holes can be cut on the lingual and buccal labial surfaces to allow for transenamel polymerization of light cured materials (Fig 3).

It has not been the author's experience that this is necessary but the interior of the band can be painted with a separating medium to facilitate removal of the band with no adhesion of the filling material.

In adapting the band as a matrix, it is most important that the fit be very secure and snug at the gingival seat of the preparation's interproximal box. The buccal and lingual proximal sides of the box can have some flair, which with appropriate cavity preparation is easy to manipulate for the removal of the "flash".

To insure an excellent tight contact the following should be performed:

- Deciduous molars: After securing anesthesia, place separating wedges mesial and distal to the tooth being restored and maintain separating pressure throughout the procedure. The orthodontic band is also tightly wedged on the interproximal surface to be restored to insure a good gingival seal during placement of the restorative material.
- Permanent teeth: The patient should be appointed the day prior to the operative appointment for placement of separating wires mesial and distal to the tooth to be restored. This procedure can be delegated to an auxiliary. Wedges are utilized at the operative appointment as previously described.



Fig 1. Orthodontic band on maxillary first primary molar.



Fig 2. Custom orthodontic band with stainless steel "apron".



Fig 3. Orthodontic band with optional holes.

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The advantage of using an orthodontic band is the excellent interproximal contour. There is minimal shaping of the restoration necessary and the band gives an excellent gingival seal as well as isolation from saliva or blood contamination.

The initial disadvantage is fabrication time. Prior to routine use, a variety of bands need to be shaped both for the right

and left side and for the mesial and distal for both the maxillary and mandibular teeth.

The bands also have to be fabricated in two styles. The first is plain. The second is with welded aprons. Once fabricated, the matrix bands should be separated by type and size for easy operator selection.

## ABSTRACT OF THE SCIENTIFIC LITERATURE



### INTRAVENOUS MIDAZOLAM FOR SEDATION OF CHILDREN UNDERGOING PROCEDURES

A multi-centered retrospective analysis was conducted on intravenous midazolam doses used as the benzodiazepam component of a sedative regimen during a prospective flumazenil study. Data regarding doses of midazolam, age of the patients, frequency and severity of adverse events, and drug-drug interactions were analyzed.

One hundred seven pediatric patients (ages 1 to 17 years) from 10 centers were involved in a flumazenil study protocol. Ninety-one of these patients received midazolam as the only sedative and thus met the criterion for analysis of data regarding various aspects of midazolam usage obtained from the flumazenil study case report forms. Data was also collected regarding opioids (fentanyl and meperidine) used as concomitant medications on 84% of the patients.

The results, discussed in detail, are summarized, as essentially:

- midazolam doses ranged from 0.03 to 0.6 mg/kg.
- there was an inverse relationship between doses of midazolam and opioids required and the age of the patient.
- 90% of the patients with low oxygen saturation (defined in this study as < 93%) had also received opioids.
- patients deeply asleep at the end of the procedure had received substantially more midazolam and opioid over a longer time than patients who were more alert.
- patients deeply sedated had the highest proportion of desaturation events.

**Comments:** This article shows similarities and differences in midazolam utilization across the country. Despite a 20-fold range in doses utilized, midazolam proved to be a safe and effective medication as described. As the data regarding midazolam was overlapped with data on fentanyl, meperidine and flumazenil, it takes careful analysis of the information to sort out the effects related to midazolam alone. A Table is presented on "Observer's Assessment of Alertness/Sedation" or OAA/S, a 5-point responsiveness index based on speech, facial expression and eyes (ptosis). The American Academy of Pediatrics recommendation regarding an independent observer during deep sedation procedures is discussed. The broad geographic range (from Boston to Seattle) of the 10 centers involved was of interest, it would be of value to have a similar study conducted regarding sedation practices in pediatric dentistry. RFM

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**Intravenous midazolam for sedation of children undergoing procedures: An analysis of age- and procedure-related factors.** Karl HW, Cote CJ, McCubbin MM, Kelley M, Liebelt, E, Kaufman S, Burkhart K, Albers G, Wasserman G: *Pediatr Emerg Care* 15(3):167-72, 1999.

26 references

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### HEAD POSTURE AND MALOCCLUSIONS

This study determined if there is a relationship between head and neck posture and malocclusion. Forty-five male and fifty-one female caucasian children aged 7-13 years who presented for orthodontic treatment were studied. Cephalometric tracings were used to describe both malocclusion and head posture. Space anomalies, describing both crowding and spacing, were recorded. The results showed that "lack of space in the dental arches was associated with an increase in the craniocervical angulation." Therefore, in this study, it appears that dental crowding may be associated with craniocervical posture.

**Comments:** None of the subjects in this study had a diagnosed craniofacial anomaly or symptoms of upper airway obstruction. JEP

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**Head posture and malocclusions.** Solow B, Sonnesen L. *European J. Ortho* 20:685-693, 1998.