

Chairside Space Maintainers

Fabricating a space maintainer when primary molars are lost prematurely is one of the most important services a dentist can provide for a pediatric patient.

Very early loss of a primary molar, when the adult premolar is not quite ready to erupt, can result in severe orthodontic consequences. If the adult molar is allowed to drift anteriorly, into the space reserved for the unerupted premolar, extensive orthodontic treatment will be required.

By providing the child with a proper space maintainer, the dentist preserves arch length and allows the permanent premolar to erupt normally.

Being able to provide a simple, cost-effective, chairside space maintainer efficiently is an important tool for a dentist who treats children.

» Space Maintainer Indications

As a general rule, early loss of anterior teeth does not require a space maintainer.

Early loss of a first primary molar requires a space maintainer if the adult first premolar will not be erupting for six months or longer, and if the adult first molars have not yet grown into proper occlusion. If the adult first molars have already grown into proper occlusion, even very early loss of a first primary molar does not require a space maintainer.

Early loss of a second primary molar requires a space maintainer if the adult second premolar will not be erupting in the following six months.

Rule of thumb: it will take about six months for a premolar to erupt if it is still covered by one millimeter of bone, as measured on a bite-wing x-ray. Another good predictor of eruption is root development of the premolar. When root formation is 60 - 70% completed, the premolar is ready to erupt.

An especially important warning sign indicating the need for a lower space maintainer when early loss of a second primary molar occurs: the position of the adult second molar. If the erupting twelve-year molar is mesially angulated, it is a clear threat that the first molar might be forced forward and tipped into the space needed for the Unerupted second premolar.

Loss of arch length can cause serious orthodontic complications. It is best to be more aggressive rather than conservative when it comes to assessing the need for a space maintainer.

» Types of Space Maintainers

Depending on the particular situation and on the dentist preference choices may include: band and

loop, crown and loop, lower lingual holding arch, distal shoe, Nance, or a removable appliance. The most common of these appliances is a fixed band and loop.

To provide a patient with a band and loop space maintainer, a dentist can take an impression of the patient, and, at a second appointment, insert the laboratory-fabricated appliance.

A laboratory space maintainer works very well, but has several disadvantages:

- It requires a second appointment.
- It increases the overhead cost to the dentist.
- It is sometimes challenging to obtain a good impression: either because the child is difficult, or because there is a great deal of gingival tissue still remaining on the distal wall of the tooth that requires a band.

By contrast, chairside space maintainers are simple to fabricate, cost-effective, one-visit procedures that are generally uncomplicated, and trouble-free.

» Technique and Case Report

The following case illustrates the technique for easily fabricating a chair-side space maintainer.

An eight year old boy presented with an infected lower right second primary molar. The tooth was painful and mobile with mucogingival swelling and pus, and a radiograph showed an apical radiolucency (Figure 1).



Figure 1

The tooth, of course, was extracted, and because the adult second premolar was clearly not going to be erupting for several years, a space maintainer was required.

Step 1-

The Space Maintainer Kit contains bands, (with welded tubes), of varying sizes: for upper right, upper left, lower right, and lower left molars (Figure 2).



Figure 2

Select proper band by trial fitting. Choose a band that fits tightly around the tooth and is well-adapted to the shape of the molar. In this case, lower right size 37 1/2 fit nicely (Figure 3).



Figure 3

Step 2 -

A wire loop is selected to act as the spacer. Narrow width spacers are used for smaller bands and wide spacers are used for larger bands (Figure 4).

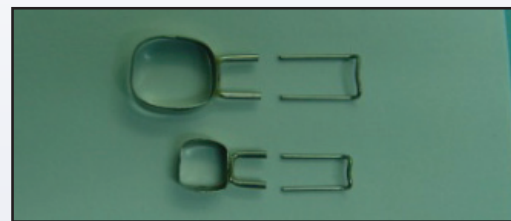


Figure 4

These wire loops come in three different styles. While it is not critical which loop is chosen, the loop with the added rest is generally used when extra stability is required. The drop loop is used when there is a path of insertion concern. The standard loop is used in typical cases (Figure 5).



Figure 5: Wire components, standard, standard with rests, drop-loop or distal shoe

Step 3 -

Holding the selected band in one hand, slide the wires like a trombone (Figures 6 and 7), into the tubes. Test the assembly in the mouth.

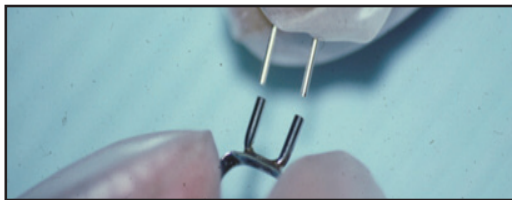


Figure 6

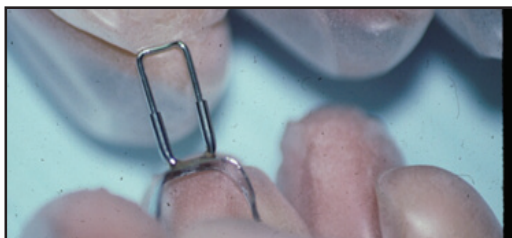


Figure 7

Usually, the wire is too long (Figure 8),



Figure 8

and it is necessary to use wire cutters to shorten the wires (Figure 9).



Figure 9

After several fittings, the end of the wire loop should fit snugly against the distal of the tooth (anterior to the missing molar) (Figure 10).



Figure 10

IMPORTANT: If it is necessary to shorten the tubes themselves, **DO NOT** use a wire cutter for cutting the tubes. A wire cutter will close the tubes and render them unusable. Instead, a separating disk can be used to trim the tubes. (Figure 11.)

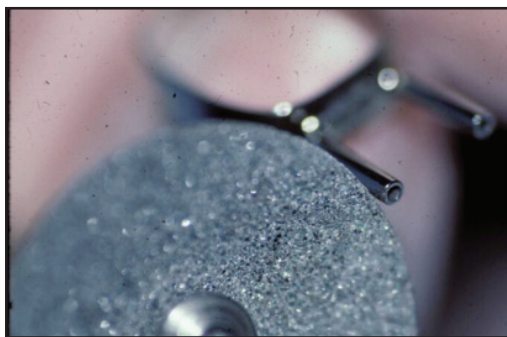


Figure 11

Step 4 -

Use tube crimping pliers to firmly crimp the tube over the inserted wire. After several crimps, the wire is firmly fixed in place (Figure 12).

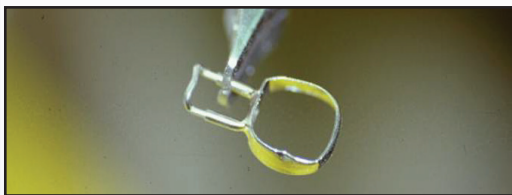


Figure 12

Step 5 -

Cement completed space maintainer, (preferably out of occlusion) in place. A good choice of cement is a highly filled, resin-modified glass ionomer, e.g. GC Ortho-Cem (Figure 13).

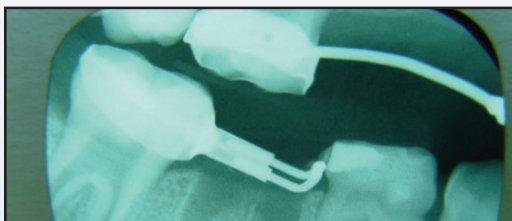


Figure 13 – Note excess cement on distal of primary molar

» Instructions for the Patient

Ask the parent to remind the child to maintain good oral hygiene: and to avoid hard candies, sticky foods, and ice cubes.

It is a good idea to give the parent a small, laboratory-type box, so that if the space maintainer does come loose, it can be preserved safely until the patient can return for re-cementation.

» Space Maintainer Removal

When the adult premolar begins to erupt successfully into its intended position, **remove space maintainer.** (Figure 14)

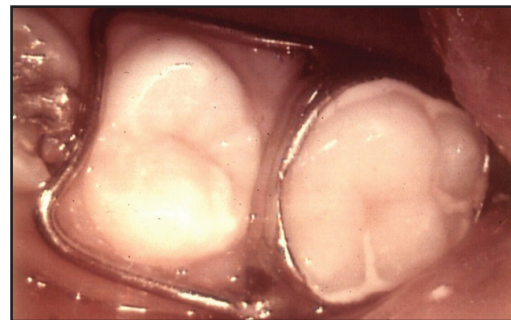


Figure 14

» Supplies:

- ☐ A selection of sizes of bands or crowns with tubes.
- ☐ Wire components, standard, standard with rests, drop-loop or distal shoe.
- ☐ Band-removing pliers.
- ☐ Component cutters.
- ☐ Tube crimping pliers.
- ☐ Band seating tool.
- ☐ Separating disks.
- ☐ Resin-modified glass ionomer cement.

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» References:

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