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Repairing a Broken Major Connecting Wire

Voice of Experience

Repairing a Broken Major Connecting Wire

One of the most common repair problems facing the doctor using functional appliances is the broken labial bow or palatial loop. Not only do we want to avoid the additional expense of a laboratory repair, but the lost "wearing time" by the patient can also present a problem. Therefore someone within the office staff should be trained in making minor repairs

. Before attempting to repair any broken appliance the clinician should evaluate the overall general condition of the appliance itself. If the appliance has previously been repaired, or if the acrylic is beginning to deteriorate then it is usually wise to construct a new appliance. Careful evaluation of each appliance can save both time and money.

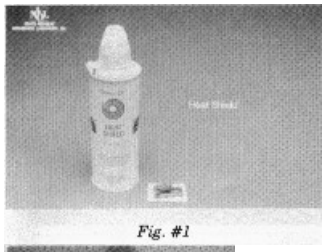

Fig. #1

Once the decision has been made to repair the broken appliance the clinician has two options available. In the first option a new cast can be obtained; the fractured wire is completely removed; the appliance is seated on the new cast; and a new wire is fabricated and reset into the appliance. This procedure obviously requires both time and skill on the part of the person doing the repair.

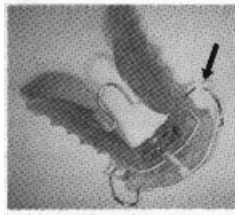

Fig. #2

A second option is to repair the broken wire without actually replacing it. If the fracture has occurred either in or adjacent to the acrylic the broken wire must first be exposed by about 5 mm. In addition "heat shield" (Fig. 1) must be sprayed on the surrounding acrylic to prevent blistering when the fracture is soldered.

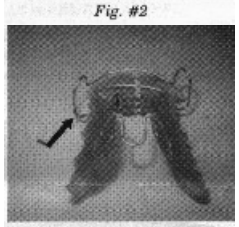

Fig. #3

The broken ends of the wire should be adjusted until they will stay together without any active force. Notice that the labial bow in (Fig. 2) needs to be adjusted so that the broken segments will stay together. The next step is to cut a 10mm section of .040 open coil spring. This segment of spring should be slipped over the broken wire to evenly straddle the fracture. (Fig. 3) Silver solder is wrapped around the coil spring. The goal is to allow the steel coil spring to reinforce the solder joint. (Fig. 4)

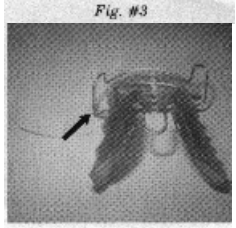

Fig. #4

The spring and silver solder should be thoroughly covered with water base stainless steel flux. Gas and air must be used as a heat source to solder the joint. (Fig. 5) Electrical soldering does not work well for this type of repair. The clinician can choose from an or- thodontic blow pipe, or a microtorch. (Fig. 6, 7)

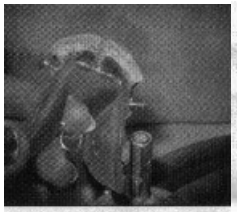

Fig. #5

Fig. #6

All of the rough edges of the solder joint should be smoothed with a sandpaper disk. (Fig. 8) The operator should leave the joint as thick as possible. The more solder that is re- moved, the weaker the repair. If any acrylic was removed to make the repair the final step is to replace the acrylic, cure it in hot tap water, and polish the appliance. Using a few inexpensive supplies it becomes a simple matter to produce high quality repairs in office. (Fig. 9) The clinician should try not to place any active force on the repaired wire. The more force that is placed on the wire the greater the chance of the fracture reoccurring.

Fig. #7

All of the materials that are needed for making any repairs can be obtained from North American Orthodontic Laboratory. Should you have any questions or problems in making these repairs, please feel free to con- tact North American Orthodontic Laboratory on our toll free number.

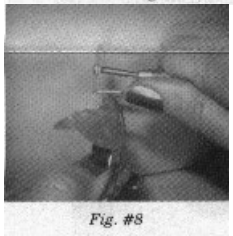

Fig. #8

Fig. #9

Voice of Experience

Q: I've heard debonding ceramic brackets can be difficult. Which method is best for removal?

A: There are two mechanical principles which must be understood to safely remove ceramic brackets.

First, the weak link in the adhesive bond is in the tooth adhesive interface. Second, enamel has almost twice the shear strength as tensile strength.

A special debonding tool must be used to rotate the bracket off the tooth. Remember to remove the excess bonding material from around the periphery of the bracket. In this way, the debonding tool will seat all the way down the bracket to the labial of the tooth. In addition, gently push the tool against the tooth, as you rotate the debonding tool. Rotational-shear force is the correct force for debonding ceramic brackets.

The teeth may be stabilized with cotton rolls or finger pressure to provide patient comfort. Advise the patient that they will hear a light popping sound as the bracket debonds.