How to use a fishing-line splint to stabilise poor-prognosis lower anterior teeth.

by Dr Geoff Knight

Background: With an aging dentate population, dentists are more likely to have patients where minimum-intervention solutions are required rather than the more traditional ones.

In this case an elderly patient with periodontally compromised and mobile lower central-incisor teeth wished to retain the teeth as long as possible.

Solution:

It was decided to splint the lower six anterior teeth together using a length of fishing line placed in a trough prepared along the incisal surfaces.

Technique:

1. Using a 1.1 mm diameter flat-fissure, end-cutting diamond bur (Intensiv product code 221) a trough, 1.5 mm deep, was prepared along the incisal surfaces of the lower anterior teeth.

2. The trough length was measured with a piece of dental floss.

3. Using the dental-floss length as the guide, two pieces of 30lb breaking strain, braided, fishing line (example product Fins Spectra Superline Braid - 30 lb) were cut from the spool. They were coated with a layer of unfilled resin (example product Enamel Bond Resin - SDI). The resin coating was left uncured.

4. The trough and surrounding area was etched with 35% phosphoric acid, washed and dried.

5. The trough was lined with a layer of Fuji Lining LC (GC Corp) mixed to a creamy consistency. To ensure no pooling, the lining was thinned with a stream of air. The lining was then light cured for 5 seconds.

6. A layer of flowable resin composite was placed in the trough and left uncured.

7. The two strands of fishing line were inserted into the flowable composite with the aid of the tip of a 1/2 Hollenback Carver.

8. A layer of hybrid resin composite was placed over the flowable composite. The correct incisal table was established by placing a piece of freezer bag over the composite and asking the patient to close together with the tongue touching the back of the palate. (This gave a registration with the mandible in its most retruded position).

Two cotton rolls were placed behind the lower teeth during this step.

9. After being light cured, the splint was contoured and finished.

Above: Cross-section of the prepared trough showing the various components. The thin layer of resin-modified glass-ionomer cement is covered by a flowable resin composite housing the two lengths of braided fishing line. A hybrid resin composite is used for the surface layer.
How to use a fishing-line splint to stabilise poor-prognosis lower anterior teeth. (cont)

Left: Photographs showing stages in splint placement:
1. After preparing the trough the site was etched with 35% phosphoric acid, washed and dried.
2. The base of the trough was lined with a thin layer of resin-modified glass-ionomer cement and light cured. A flowable resin composite was placed and the two lengths of resin-covered braided fishing line inserted into the flowable composite with a 1/2 Hollenback Carver.
3. A hybrid resin composite was laid down as the final layer but not cured.
4. A piece of freezer bag was placed over the resin composite and the patient asked to close together with the mandible in its most retruded position.
5. Appearance of resin composite layer after the previous step.
6. Final result following light curing and finishing.

How to sectionally remove the root of a splinted lower anterior tooth without disturbing the crown.

Background: As discussed in the previous section, occasions can arise where a periodontally-involved lower anterior tooth is splinted to neighbouring teeth to prolong its functioning life.

If a time comes when it is necessary to remove the tooth, the question is can the crown be kept as a pontic and only the root removed?

Solution:

By removing the root in sections it is possible to retain the crown without it being disturbed by the extraction process.

Technique:

1. With a suitable high-speed bur cut right through the root as close to the gingival margin as practicable. This will leave a gap between the remaining section of the root and the crown.
2. Using a suitable instrument, such as a small Coupland-type elevator, slightly elevate the remaining root until it just touches the crown above.
3. Holding it in place with the elevator make another cut through the root at the level of the gingival margin.
4. Elevate the remaining section of root until it touches the tooth crown and repeat the cutting process described above.
5. The above sequence is repeated until all the root is gone.

Clinical example

Before: Two periodontally compromised lower central incisor teeth were splinted to the adjacent anterior teeth to retain them for as long as possible (see previous section).

After: Several years later the periodontal situation had deteriorated further. It was decided to keep the tooth crowns as pontics but remove the roots. This was done using the sectional-removal method as described.

After a healing period of one week the spaces under the teeth were filled with resin-modified glass-ionomer cement using the technique described on next page.
How to sectionally remove the root of a splinted lower anterior tooth without disturbing the crown. (cont)

1. The exposed root section of the compromised tooth is cut through at the level of the gingival margin.

2. Using a suitable instrument, such as a small Coupland-type elevator, the remaining root is elevated to touch the tooth crown.

3. The newly exposed section of the root is sectioned at the level of the gingival margin. The above procedures are repeated until all the root is removed.

4. After a one-week healing period, a sectional matrix is placed on the underlying soft tissue and the space between it and the tooth filled with resin-modified glass-ionomer cement.