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Splinting LOWER INCISORS

The management of mobile lower incisors is a problem for patients and dentists alike. Traditionally, these teeth have been removed and replaced with a denture that may well improve the aesthetics but spends more time out of the mouth than in. Many techniques are available for splinting lower incisors and many types of fibres are commercially available. Most procedures involve bonding the fibres onto the lingual aspect of these teeth. However, this interferes with the tongue and it is difficult to maintain adhesion because there is no mechanical retention. The following splinting technique was originally written up in Aesthetic update, March 2000. Since then the procedure has evolved to reduce the placement time and improving predictability.

The fibres of choice for this procedure are 'Fly Line Backing'* [3M Scientific Anglers] (Fig 1). These fibres are well known to fly fishermen and available in most angling shops throughout Australia. They are a woven polyester fibre that is readily impregnated with resin and with a breaking strain of over 16 kg are extremely strong. These fibres have no internal memory and are easily bent in any direction along the incisal edge of irregular lower incisors.

*Originally the idea of retired dentist and angler, John Mathieson of Bunbury WA.

CLINICAL CASE

The patient presented with #3 level mobility of lower incisors 31 and 41 (Fig 2). Although there was significant bone loss both teeth were vital. Teeth 32 and 42 were less mobile and 32 was well outside the arch, the treatment plan was to splint the teeth between the canines and extract tooth 32 to facilitate oral hygiene and improve aesthetics.

- A 1.5 mm deep groove was prepared two-thirds of the way along the incisal edges of the canines and along the incisal edges of teeth 42, 41, and 31 using a narrow high speed flat fissure bur (Fig 3). A 1.5 mm deep groove is required to maintain stability of the splint. Irreversible tooth preparation has to be weighed against the doubtful prognosis of these teeth if no intervention was undertaken. The age of these patients is generally such that sclerotic changes within the pulp reduce the chance of an exposure. However, it is prudent to warn patients beforehand of this possibility.
- The teeth were etched for 5 seconds with 37% phosphoric acid, washed and dried with oil-free air (Fig 4).
- Following isolation with cotton rolls, two lengths of fibre were cut so they would closely fit into the length of the preparation. They

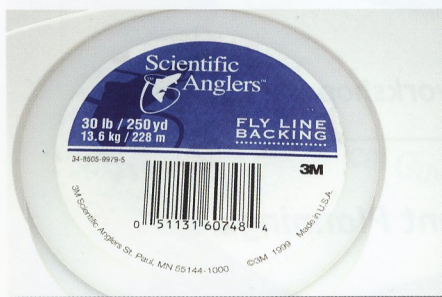


Fig 1. 3M Scientific Anglers 'Fly Line Backing' fibre.



Fig 2. Patient presented with mobile lower incisors.



Fig 3. Incisors and canines prepared with a 1.5 mm deep groove along incisal edges.



Fig 4. Teeth etched for 5 seconds with 37% phosphoric acid.



Fig 5. Fibre splints embedded with bonding resin prior to placement.



Fig 6. Apply dentine bond.



Fig 7. Inject flowable composite into preparation prior to adding fibres.



Fig 8. Inserting both fibres into the flowable composite resin.



Fig 9. Puddling a small increment of composite resin onto the fibres.



Fig 10. Placing the freezer bag over the uncured composite prior to asking the patient to occlude.



Fig 11. Ten second cure of the splint in retruded occlusion.



Fig 12. Further 10 second cure of the splint.

were then embedded in resin bond (Fig 5). Two lengths of fibre are required to improve strength and resist rotation of the splint.

- A dentine bonding agent of choice was placed into the preparation (Fig 6).
- Following this, a small amount of flowable composite resin was injected into the preparation (Fig 7) into which both impregnated fibres were placed with the aid of a periodontal probe (Fig 8).
- A small amount of composite resin was next puddled into the preparation above the fibres. It is useful to remember that placing too much resin extends the time required to contour the restoration after curing (Fig 9).

- A 3cm square piece of 'freezer bag' was placed over the uncured restoration (Fig10) and prior to closing the patient was instructed to place his tongue at the back of his hard palate to assure a retruded bite. Having the patient occlude in a retruded position prior to curing assures that the mobile incisors are in a stable position within the bite. The 'freezer bag' also acts as an occlusal matrix significantly reducing the time required to contour the restoration.

- With the patient closed in a retruded position an initial cure of 10 seconds was carried out (Fig 11) followed by a further 10 seconds cure after the patient had opened and the 'freezer bag' removed (Fig 12).



Fig 13. Cured resin with teeth in stabilized position.

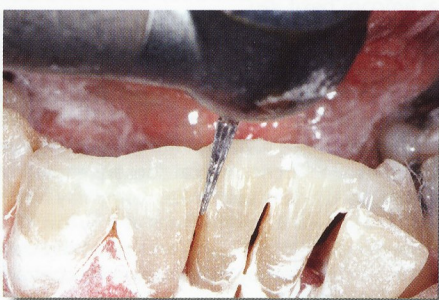


Fig 14. Initial contouring with 12 fluted TC bur.



Fig 15. Removing sharp resin tags with a low speed diamond sphere.

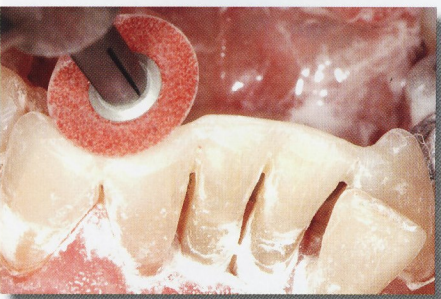


Fig 16. Complete contouring the splint with a coarse mini disc.



Fig 17. Polishing the restoration with an abrasive rubber cup.



Fig 18. Checking the bite for occlusal interference.

aesthetic update

- The slide shows the splint immediately after curing, demonstrating how the incisors are correctly positioned and the minimal amount of contouring required to complete the restoration (Fig 13).
- Initial contouring was carried out on labial and lingual surfaces using a 12 fluted high-speed TC bur. These burs rapidly remove composite resin but are not as aggressive on tooth enamel (Fig 14).
- A slow-speed diamond sphere was used to remove any sharp tags left by the 12 fluted TC bur, this is particularly important on the lingual surfaces (Fig 15).
- A small abrasive disc was used to smooth over the restoration (Fig 16) prior to polishing with an abrasive rubber cup (Fig 17).
- Following checking the occlusion with articulating paper (Fig 18) tooth 32 was extracted under local anaesthetic to complete the case (Fig 19).

These splints are relatively easy to fabricate, take little clinical time and have proved to be a reliable clinical procedure. Patients are delighted with the outcome as they are able to eat again without discomfort or fear of losing a tooth.

Occasionally, an abscess may develop under one of the splinted teeth. As the cause is usually periodontal in origin the problem can be resolved by sectioning the affected tooth at the gingival margin and extracting the root beneath. The patient may be recalled in a couple of weeks to place a RMGIC restoration at the gingival margin using a section matrix positioned on the gingivae to form the base of the restoration.



Fig 19. Removal of tooth 32 and the completed splint.

The 'Fly Line Backing' fibres have multiple clinical applications, they are easy to place and do not swell if exposed to the oral environment as some fibres do.

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