and were also associated with a greater frequency of pulp necrosis and pulp canal obliteration. Semi-rigid splinting is therefore a common and preferred method that allows controlled passive mobilization of the traumatized tooth. Requirements for an ideal splint are given in Figure 1. A basic requirement is that the splint should be passive and semi-rigid whilst maintaining physiologic tooth mobility (micromovement of less than 150 µm).

During splinting, the tooth is immobilized by fixing it to the adjacent unaffected teeth. Generally, the traumatized tooth is fixed to just one tooth on the adjacent side, since evidence does not indicate an additional benefit if the splint is extended to more than one tooth. It is also noted that, if the distance between the traumatized tooth and its neighbors is increased, it results in more elastic deviation of the splint and reduced controlled immobilization. This means that the splinting effect may not be the same between spaced arches and non-spaced arches.

Types of splints

Splints used for immobilizing a traumatized tooth can be classified either as:
- Rigid:
  - Suture splints;
  - Arch bar splints;
  - Acrylic cap splints;
  - Composite splints;
- Semi-rigid:
  - Orthodontic wire and bracket splints;
  - Wire and composite splints;
  - Fibre splints;
  - Titanium trauma splints

Suture splints

These are used when there are multiple missing teeth or during the mixed dentition period when routine devices cannot be placed. They use a soft wire that is fixed around the teeth as a figure of eight (Figure 2) or as a continuous loop. This type of fixation is used when there is need for a short-term intermaxillary fixation. The disadvantage of this splint is that the steel wire breaks easily on tightening and the chance of it becoming loose is high. Maintaining oral hygiene is also very difficult and gingivitis is common. Since they have a short life, they are recommended to be used only for a few days.

Arch bar splints

Arch bars were first introduced by Hammond in the 1870s as splints for maxillary and mandibular fractures. They consist of a metal arch bar bent into the shape of an arch which is secured in place with ligature wires (Figure 3). The main disadvantage of this type of splint is that it is a rigid splint and hence its use, in the case of dental injuries, is limited. In addition, where the arch bar is not bent into the correct shape, it can exert orthodontic forces on the tooth. It has also been noted that arch bar splints can become loose and rest on marginal gingivae causing mechanical irritation.

Acrylic cap splints

This splint is made of rigid acrylic material (Figure 4) and has been used to fix luxated teeth with alveolar fractures. It can cause great inconvenience to the patient if prepared directly over the teeth, therefore it is recommended that it be fabricated on a model. But that too has its disadvantage, as it requires an impression, which is contraindicated in cases of luxation. Therefore, an acrylic cap splint is not routinely used for immobilization of isolated dental trauma.

Composite splints

These splints are fabricated from a band of composite material which is placed directly on the labial surface of the teeth to be splinted together (Figure 5). The resin is applied continuously to the labial surface of the crowns, using a syringe, connecting all the teeth to be splinted. Such splints are easy to prepare but they tend to break easily in the interdental region when placed under occlusal load, and therefore are not recommended for long-term splinting. It was also noticed, by Filippi et al., that composite splints produced an increased irritation to the gingival tissue compared to the use of wire and composite, an orthodontic bracket splint or the titanium trauma splint.

Orthodontic wire and bracket splints

These splints consist of brackets bonded to the middle third of the labial surface of the tooth with light curing composite resin. A 0.3 mm soft wire is then braided from bracket to bracket to connect all the teeth (Figure 6). Bracket...