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Separators in Dentistry

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Separation of contact points between adjacent teeth is an integral part of any orthodontic treatment protocol as well as certain dental procedures. Separators were developed with the intention of separating adjacent teeth to aid in banding of teeth for initiating orthodontic treatment. Initially they were made of brass wires [1] and subsequently by rubber [2]. These were developed due to the need of the clinician rather than any scientific back-ground.

The average Periodontal Ligament (PDL) space is 0.25 mm, placement of a 0.16 mm thick orthodontic band without proper separation risks contracting the alveolar bone, producing hyalinization areas in the PDL and evoking an acute pain response, which hinders the patient from performing routine oral functions. Kesling [3] introduced the most economical and commonly used wire separator in 1957 which was made of a 0.016" SS Australian wire and conformed to actual biological needs of the periodontium.

The brass wire separator was the first to lose popularity because of the inherent problem of unpredictability of forces generated, the occlusal interferences caused due to the 0.20" thickness of the wire and the bent pig tails lacerating the oral soft tissues. The elastomeric separators saw modifications over time with improvement in the material sciences and manufacturing processes. The addition of the orthodontic separator loop by Krupp [4] and the use of hydrophilic materials for their formation by Hansen and Tzou [5] were aimed in that direction.

Ideally, a separator should give rapid and good separation without causing the patient discomfort or pain, providing enough space to permit proper selection and adaptation of a band to the tooth surface as well as should not dislodge during the inter appointment duration. Least of all slips gingivally causing inflammation in the interdental region and should be radiopaque so as to be detected radiographically. Unfortunately none of the so far developed separators fulfilled all of the above and this led to the development of yet another separator- the "2 in 1" Self-Secured Orthodontic Spring Separator (also called the Kansal Separator) [6].

The Kansal separator has shown promise as it overcomes certain short comings of the previously available separators. The "2 in 1" feature enables the clinician to separate mesial and distal aspect of a tooth with one single separator. The "self-secured connecting bar" prevent dislodgement of the separator even after sufficient separation is achieved hence avoiding it to slip interdentally, does not cause occlusal interferences yet is capable of causing adequate and predictable separation. Along with this, it can be customised as per the dimensions of the tooth to be separated as well as the activation can be adjusted to suite the tolerance of the individual patient.

Dentistry shall require the use of separators as long as the identity of individual teeth requires to be maintained. The purpose may vary from banding in orthodontics to reproximation or contouring restorations. The variety of separators available are able to solve majority of present day clinical need of the dentist but with the advent of newer methods and the increasing use of digital technology for the prosthetic and rehabilitation work the separator will need to be reinvented even further to maybe provide separation within minutes and hopefully painlessly.

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