

Demystifying self-ligating brackets

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Abstract

Currently self-ligating brackets have been associated to faster and more efficient treatments, which arouse the curiosity to compare them to the conventional system. Unlike traditional appliances, self-ligating brackets do not require elastomeric or metal ligatures. The literature is abundant in concluding that this feature decreases, ostensibly, the friction resistance during sliding mechanics. Moreover, there are reports on minimizing the need of extractions and maxillary expansion using these accessories. Therefore, the purpose of this literature review was to seek the newest studies about self-ligating brackets currently used in orthodontic treatments, confirming or correcting current speculations.

Keywords: Orthodontic brackets. Friction. Treatment outcome.

Editor's summary

Self-ligating brackets have been associated with faster and more efficient treatments, which raises the issue of comparing them to conventional systems. Contrary to conventional devices, self-ligating brackets do not require ligatures, and some authors have argued that this characteristic clearly reduces friction and resistance to sliding. Moreover, treatments that use these brackets seem to be more conservative. The purpose of this review of the literature was to evaluate the scientific evidence about the effect of these devices on orthodontic treatments according to the most recent studies about self-ligating brackets currently available in the market.

Some facts about the use of self-ligating brackets are unquestionable. They actually do not promote greater root resorption than conventional brackets, and their use does not require ligatures, which results in less plaque accumulation in both the appliance and the enamel around the bracket. Other aspects have not been defined yet, and results suggest that their application demands less chair time, reduces friction during sliding and shortens total treatment time. Moreover, as their slot closing mechanism is more effective than the one found in conventional devices, some authors suggest that intervals between visits may be longer.

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However, evidence of the excellent performance of self-ligating brackets has been obtained mostly from in vitro studies. Clinical trials have yielded less encouraging results, and studies that evaluated friction are a good example of it. When crowding is taken into consideration, the levels of friction seem to be similar to those found when using conventional brackets. The arguments that support the possibility of adopting a more conservative treatment are assumptions that disregard the individual needs of each patient. Indiscriminate expansion may lead to poor esthetic results,

compromise periodontal structures and increase the chances of recurrence. Moreover, expansion mechanics is more closely associated with the shape of the CuNiTi arch wire than with the use of self-ligating brackets. When making decisions about self-ligating brackets, dental healthcare workers should not confuse orthodontic appliances with treatment philosophy. The promise of treating all using the same mechanical and systematic approach seems to ignore the individuality of each case and distort treatment goals that should aim at excellence in orthodontics.

Questions to the authors

1) What are the advantages of the clinical use of self-ligating brackets? And the disadvantages?

The advantages are less plaque around the device and full insertion of the wire in the slot, which provides more effective torque control when using arch wires of a larger size. The disadvantages are the lower rotation correction rate in the first stages of alignment and the consequent increase in pain when the second wire is inserted, as well as the high cost of these devices when compared to conventional brackets.

2) Would the authors suggest that further studies should be conducted to investigate the effect of self-ligating brackets on orthodontic treatment outcomes?

Clinical studies should compare cases with the same type of malocclusion and similar severity based on occlusal indices and divided into groups with conventional or self-ligating brackets. Comparisons should be made of the

number of device breaks, pain during treatment, treatment time and final occlusal results. Also, studies should evaluate stability in the long term.

3) Are self-ligating brackets the future of orthodontics?

Self-ligating brackets do not warrant the development of faster treatments or better treatment plans than the ones made when using conventional brackets. They are just an option and should be chosen according to each dentist's skills and experience, rather than on the promises of better or more efficient outcomes.

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