THERMO-MECHANICAL CONDENSATION WITH THE GUTTA CONDENSOR

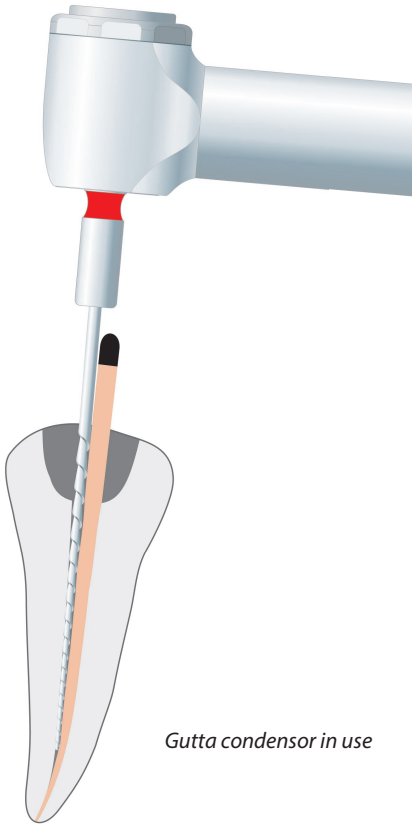
Endodontic treatment success is dependent on a perfect, three-dimensional filling of a root canal system which has been well treated and irrigated. Nowadays, a certain type of gutta-percha compacting is used with advantage in almost any filling method, with a very few exceptions. Gutta-percha may be condensed in cold state by the lateral condensation method or in warm state by either the vertical condensation method (System B, BeeFill etc.) or by inserting warmed-up gutta-percha by means of a carrier instrument (Thermafill etc.).

Gutta condensor 035 L25

As the root canal irrigation techniques have improved (thin rinsing cannula, ultra-sound activation, negative-pressure irrigation), we are witnessing more and more frequent filling of various ramifications or isthmi of the root system. In case that such cavities can be filled not only by sealer but also by gutta-percha, the quality of obturation increases and the treatment prognosis improves. In this respect, the thermal condensation techniques have proven to be significantly better than the lateral condensation technique.

The more or less rounded canals may be prepared in a manner assuring a larger degree of taper, which significantly simplifies and accelerates the lateral condensation technique (providing that a suitable main gutta-percha point is used). However, the disadvantage of this technique is large pressure (up to 1.5 kg!) which is applied on the walls of the tooth root. This may lead to infraction or fracture of the root – a totally devastating complication for a tooth. A tricky part of such treatment is achieving a perfect filling of canals of a non-rounded cross sections. Such perfect filling can be achieved by lateral condensation technique. However, at the expense of a lot of effort and time investment. Thermal condensation techniques can fill such cross sections easily and quickly. The disadvantage is that they are highly equipment and experience demanding. Let alone the high price of the necessary consumable supplies.

A **thermomechanical** technique approximates the thermal condensation techniques as regards the quality of filling and, at the same time, it is comparable to the lateral condensation technique as regards the accessibility. It was described by Mr. McSpadden in the late 1970s. The technique is based on the use of a special instrument – a **gutta condensor**. In its structure, it is similar to the Hedström file. Its threads are however oriented in the opposite direction. The blades engage in the apical direction. The instrument is attached to a shank with an elbowed attachment. As the gutta condensor rotates, the gutta-percha is friction-melted and moved in apical direction.



Gutta condensor in use

The technique is very simple and quick, in case of wide canals of non-rounded cross sections in particular. However, several preconditions must be met. The root must be prepared in a high-quality manner. A solid apical obstacle must be created as a prevention of excessive apical extrusion of gutta-percha. In this regard, a higher taper ratio of the preparation achieved by nickel-titanium instruments seems to be of an advantage, when gutta-percha points exactly matching the shape of the prepared cavity are available. In case of wide and non-rounded canals, only the apical part shall be prepared in such manner.

Then only a very small amount of sealer shall be applied into the irrigated and dried canal (such as on a paper insert or by means of a K-file). Excessive sealer would reduce the friction between the gutta condensor and gutta-percha. Then place a suitable main gutta-percha point into the cavity and push along it by means of a spreader. In case that it is possible to push the spreader closer than 3 mm from the apical obstacle, it is advisable to add further points in order to provide solid support for subsequent thermo-mechanical melting of gutta-percha.

Insert a gutta condensor of suitable dimensions into the space created by the spreader. It shall be rotating at 8,000 to 12,000 rpm. Within several seconds, the gutta-percha starts melting and condensing in the apical and lateral direction, which is indicated by the instrument being pushed out of the canal. The process is finished within several seconds. In case that the amount of condensed gutta-percha is insufficient, the procedure can be repeated with another point.

Apart from high quality of obturation, other main advantages of the thermo-mechanical condensation are: high accessibility, easiness of application, cost-effectiveness and time-effectiveness. It is interesting that this technique has never spread much in Europe. On the other hand, it became very popular and wide spread in South America. The impulses, for which the MEDIN company decided to reintroduce the gutta condensor in its production, also came from the South American market. It is available in 2 % taper ratio, in 25 mm length and 25–60 ISO sizes.

I started using gutta condensor in my own clinical practice. I had been aware of this technique before but had not used it. I was pleased by the quality of results and ease of application. Another very pleasant bonus is the time-effectiveness of this technique.

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