

"Methods Of Instrumental Treatment of Root Canals"

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Annotation: In order to eliminate the shortcomings of instrumental processing when using the deviation technique, it has been modified. What is the difference between the modern methodologies? Channel processing is started in the same way as with the traditional method, but after using file No. 25, the apical third of the channel is once again processed to larger files that are better suited for adequate channel cleaning.

Key words: flexibility of large files, principle of instrumental processing of the tooth

Stainless steel files lose flexibility as the diameter increases. Usually, this lack of flexibility of large files is referred to as the main cause of most complications, such as tool blocking in the channel, the formation of steps.

Funnels, straightening (false move), perforations. However, the reason for these complications lies not in the lack of flexibility of the file, but in the very principle of instrumental processing of the tooth in the direction from the apex to the crown. At the beginning after processing, a smaller diameter file is inserted to the apical opening of the unprepared channel. Instrumental processing leads to the formation of a fairly large amount of dentine sawdust along the entire length of the canal. In order to avoid blocking the channel and preventing the passage of the next large file, first of all, it is necessary to remove all sawdust. In addition, to prevent blockage of the canal and the previously described clinical complications, the movement of dentine "debris" should occur coronal, and not apically. Instrumental processing of files from No. 10 to No. 40 or No. 50 according to ISO, using the method of deviation, will lead to blockage of the apex with dentine chips, shortening and straightening of the channel. This is not due to the flexibility of the files, but rather due to the cumulative effect of successive exposure to seven or nine files.

Thus, we see that the method of retreat is not effective enough at the stage of infection control of endodontic treatment.

In order to eliminate the shortcomings of instrumental processing when using the deviation technique, it has been modified. What is the difference between the modern methodologies? Channel processing is started in the same way as with the traditional method, but after using file No. 25, the apical third of the channel is once again processed to larger files that are better suited for adequate channel cleaning. File No. 30 passes to the working length, and subsequent files, gradually increasing; expand the apical third of the channel. The use of larger diameter files becomes possible due to the creation of sufficient space in the coronal and middle thirds of the channel according to the traditional method. The created space allows larger files to freely pass almost the entire working length, and only 3-4 mm of the apical part is involved. At the same time, much less dentine chips are formed than when the file comes into contact with the intact walls of the channel, and the necessary space is created to move the sawdust in the coronal direction. The modified method of retreat involves the use of steel files and allows the operator to carry out adequate infection control, as well as more predictably create the necessary channel shape compared to the traditional method of retreat.

In the last few years, there have been revolutionary changes in the instrumental treatment of root canals. Among the most significant of them is the development of extremely flexible and elastic nickel-titanium alloy files, for example, NiTi Liberator files from Miltex, which received the certificate of the International Organization for Standardization 9001 and the International Organization for Standardization 13485, as well as the certificate of the Warranty Council of Europe.

Such files bend under pressure and assume their original position after the pressure stops, so they can relatively easily overcome the curvature of the channels, which was quite problematic when working with steel files. The disadvantage of nickel-titanium files is the low plasticity of the material, i.e. the point of tension and the point of fracture are very close to each other. This means that the tension of the metal can lead to a file fracture unexpectedly for the doctor. However, with careful work and following the instructions, the fracture of these files is unlikely.

Another change in the design of files that has occurred in recent years concerns the appearance of tools with different cutting parts of which is 16 mm independent the length of the file, and the taper is 2 mm of the cutting part (only 32%), modern files have different cutting length and taper in the range from 2 mm in the cutting part to 12 mm in the tip area. The disadvantage of files with a large taper is excessive removal of dentin in the coronal part when the file is immersed in the channel. Creating a pronounced cone increases the likelihood of a tooth fracture, so files with a large taper should be used in the coronal part of the canal and reduces the taper as the files move deeper.

The result of the appearance of files with different tapers was the possibility of instrumental processing of root canals from the crown to the tip. This technique is called crown-down and consists in selecting files with a taper that allows you to freely penetrate into the channel at a depth of about 4 mm and cut into the mouth when the taper of the file exceeds the taper of the channel.

The file is rotated manually or with the help of a special device and is advanced by 1 mm until the apical part of the tool is inserted into the channel by 3-4 mm. At this point, the work of the file is stopped, because its too large surface cuts into the walls of the channel, which can lead to a fracture of the file and the advancement of dentine sawdust apically. In this case, it is worth going to a smaller file (possibly with a smaller taper) for more

Atraumatic bullet-shaped tip. NiTi alloy.

deep penetration into the channel, observing the rule requiring that the apical part of the file be free in the channel, and the file itself could safely continue advancing by 1 mm, without increasing the likelihood of fracture or jamming of the dentine chips. Thus, the working length can be achieved by a relatively small number of files.

It is much easier to achieve the working length with the help of nickel-titanium file No. 25 using the crown-down technique than with steel files, while the tool will not be unduly affected. At this point, the same result is achieved as with the method of retreat, the disadvantages of which were indicated above. Therefore, in the apical third of the channel, one more additional step needs to be done, as with the modified method of retreat, which is much easier to do with new generation files. During this stage, even files larger than those needed when working with steel files can be used. This approach makes it possible to safely achieve a channel shape similar to that achieved by using a modified deviation technique.

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