NEW TYPES OF ORTHODONTIC SCREW RETAINERS

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Two-sided orthodontic screw retainers having a sectional body, a screw with differently directed threads, and one or two guide pins are presently known. When treating complex irregularities and deformations it is often necessary to act on the jaw in several directions and to broaden and shorten the jaw simultaneously, to broaden the jaw in three directions, to narrow and broaden the jaw at different sites, etc. The orthodontic appliances with several screw retainers presently used are complicated to manufacture and use and cumbersome and inconvenient for the patients, and in this connection the results of treatment become worse. In most cases dentists must treat in stages first one and then another irregularity, which almost doubles the time of treatment and adversely affects the mental state of children.

Taking into consideration the shortcomings of the existing screw retainers when treating complex irregularities of the maxillodental system, we developed a three-sided screw retainer (Fig. 1).

The proposed orthodontic screw retainer consists of a body 9 in which are made a groove for screw 10 with differently directed threads and a hole for guide pin 6. On the free ends of screw 10 and guide pin 6 are seated cleats 11 having a cushioning slot 7 and retention points 8. The body 9 is hinged by screw-axle 5 with the base 12 of the adapter, having groove 4 for screw 3. The guide pin 1 is connected with the base 12 of the adapter and together with screw 3 carries cleat 2.

Before modeling the orthodontic appliance, the adapter is set at the necessary angle to the body 9 of the retainer and fixed by means of screw-axle 5. Cleats 2 and 11, which are intended for broadening the jaws and protraction of malposed teeth, are preliminarily brought up to the body 9 or base 12 of the adapter, and the cleats intended for narrowing the jaws and retraction are separated maximally from the body of the retainer or from the base of the adapter. The protracting sectors of the plate are equipped, according to the indications, with various clamp bands - Adams', Duisings', interdental, one-arm, etc. - and the narrowing and retracting sectors are equipped with retractions arch bridges, M. A. Napadov's locks, A. M. Shvarts' sagittal clamp bands, or multilink clamp bands encompassing the group of teeth being moved.

The proposed three-sided orthodontic screw retainers have a number of advantages over existing ones. The hinge connection of the adapter to the body makes it possible to set and attach one of the sectors of the appliance in the necessary position relative to the other two.

The orthodontic appliance with the screw retainer of the new design permits acting on the jaw in three
Fig. 2. Main variants of using the three-sided orthodontic screw retainers.

Fig. 3. Wrench for turning screws of three-sided orthodontic retainers.

directions and simultaneous treatment of several complex maxillodental irregularities and deformations — micro- and macrognathia, narrowing of the upper jaw in combination with prognathia, deformations at various sites of the jaw — and to reposition two and three fragments of the upper jaw in the case of cleft palate before the start of plastic surgery, after it, and before applying the prothesis (Fig. 2).

The hinge allows changing the direction of action on the jaw during treatment. It can be positioned closer to the palate without covering the cleats with a thick layer of plastic.

To facilitate the dentist's work we have proposed a special instrument, a wrench for the orthodontic appliance (Fig. 3), which consists of a handle, on one end of which, in a vertical groove on the axis, is hinged a pin having a 120° angle of turn relative to the handle. This part of the wrench serves for turning the screw located transversally (when broadening or narrowing the jaw).

When working on the appliance mounted in the oral cavity, the pin 1 is inserted into the opening of the screw with