Palatal expansion with Nitanium Palatal Expander-2: device management and choice of the correct size.

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AIMS OF THE WORK
The purpose of this paper is to evaluate the Nitanium® Palatal Expander 2™ with its main features, focusing on the appliance management and control, which include the correct choice of the appliance size, the insertion, the active expansion late stages, and many other steps.

MATERIALS AND METHODS.
The formula used to choose the NPE-2 right size is: [dSPS - 3mm] + [dFCI - dMPS]. dSPS represents the distance between the upper first molars palatal surfaces, 3mm is the thickness of bands and tubes, dFCI represents the distance between the lower molars central fossae and dMPS is the the distance between the upper mesio-palatal cusps. The NPE-2’s action is possible thanks to the shape memory and the transition temperature. The shape memory consists in the constant returning of a material to the pre-established shape after being deformed. Nickel – titanium is in its active form at 94°F (34.4°C). NPE-2 is indicated in many cases, but its main function is to solve maxillary superior transverse defects which are frequently associated with unilateral or bilateral cross bite.

RESULTS
The NPE-2 can be used when a maximum of 4 mm maxillary expansion is required, so it can be useful for 90% maxillary expansion cases. This method, despite of its precision, can be applied only if the lower molars erupt in a normal position. Therefore, according to the authors, the choice of the correct expansion quantity must be made considering the physiological inter-arches relationship. Unlike the transpalatal bar or the RME, NPE-2 is in an active form from the beginning. The steel omega loops can be opened to obtain a transverse expansion which can reach 2-3 mm; the loops can also be modified to control the upper first molars rotation.

CONCLUSIONS
The appliance described in this paper has many management advantages. Unlike other expansion appliances, once the correct size has been chosen, it doesn’t require further activations and it doesn’t expand more than the established value. The continuous and light forces reduce a root resorption risk and it requires a shorter retaining period than usual. The NPE-2 can be used as an anchorage appliance, therefore it becomes useful to complete a multi-bracket orthodontic therapy. The NPE-2 at first creates orthodontic changes and then orthopaedic ones, leading to a physiologic and atraumatic bone remodeling.

References