GNATHOMETRIC COMPARATIVE ANALYSIS ON CONVENCIONAL PLASTER MODELS AND DIGITAL MODELS

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Introduction: : With the advancement of technology, digital models represent an alternative that allows three-dimensional representation of teeth and dental relationships.

Aim: to make a comparison of gnathometric analysis of teeth and dental arch made on conventional plaster models and digital models.

Material and method: Orthodontic plaster models of 60 patients with dental crowding, aged 13-18 year were observed.Gnathometric analysis was performed first manually with a digital caliper and than digitaly with 3Shape's OrthoAnalyzer TM software program on the scanned plaster models with 3Shape D800 TM scanner. Tooth dimensions, arch width, length and height by Harper, overjet and overbite and the analysis of dental harmony by Bolton were performed.
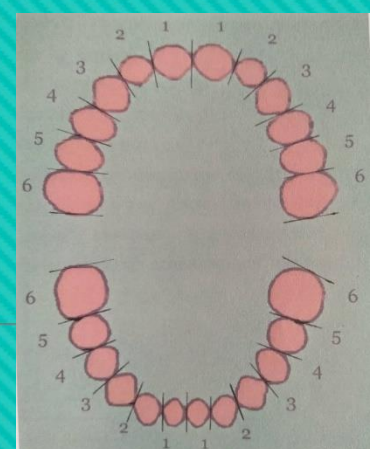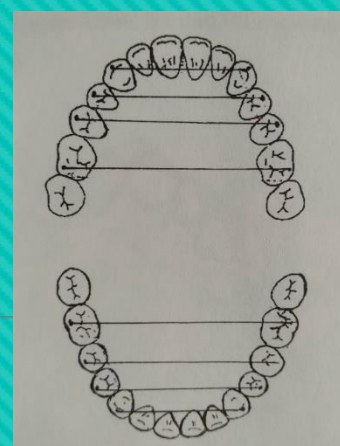

Fig.1 Mesiodistal tooth size
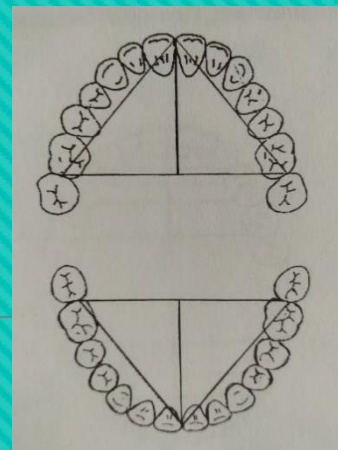

Fig.2 Width of the dental arches by Harper
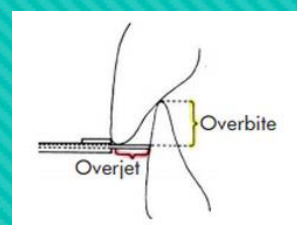

Fig.3 Length and hight of the dental arches by Harper

Fig.4 Oj and Ob

Fig.5 Bolton analysis

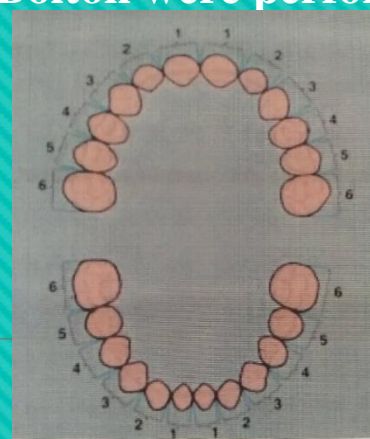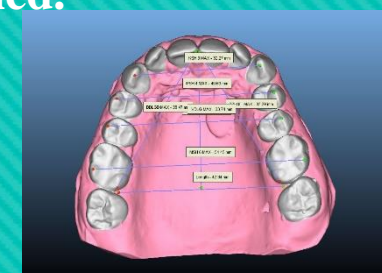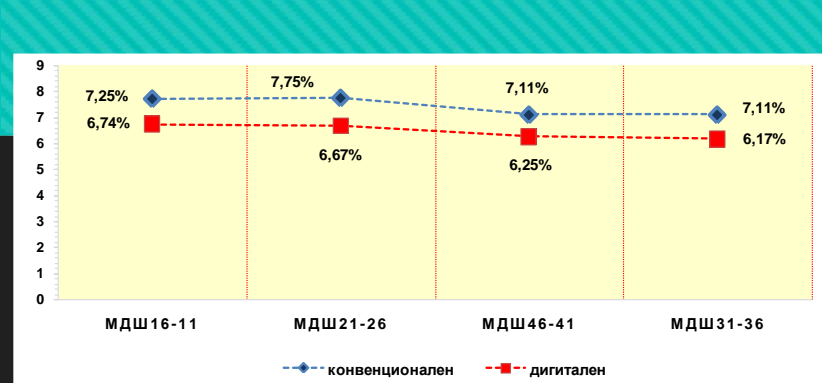Fig.6 Scanned plaster models with 3Shape D800 ™ scanner

Results: There is statistically significant difference in mesiodistal tooth size, in the summary dimension of teeth,in the length, height of the both dental arches in favor of smaller dimensions in digital models. There is no statistically significant difference in width of dental arches, in overjet(p = 0.5479), overbite(p = 0.3315) in the Bolton anterior (p = 0.6595) and overall Bolton analysis (p = 0.2775) between plaster and digital models. The time that was analyzed showed a difference in values in favor of smaller values in the digital method.
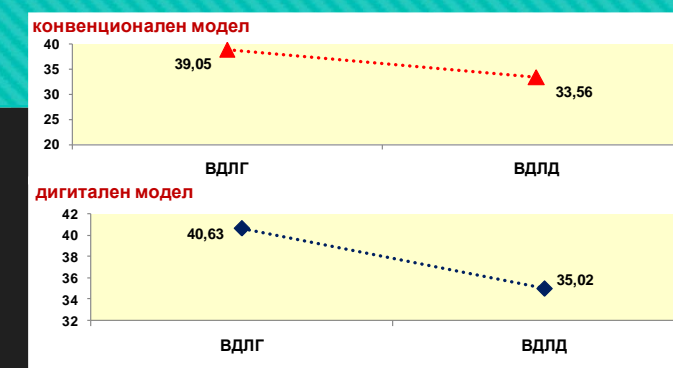

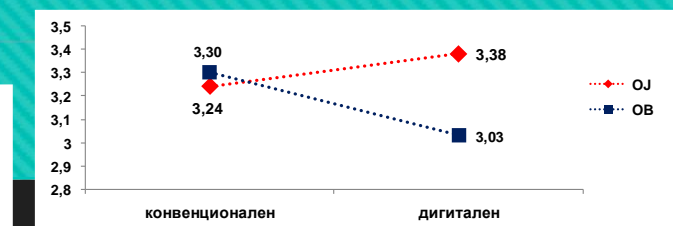Graph 1. Comparison of the summary MD tooth size between conventional and digital models
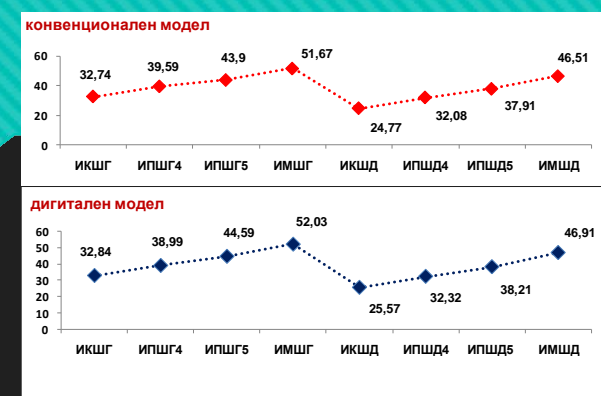
Graph 2. Comparison of the width of dental arches between conventional and digital models
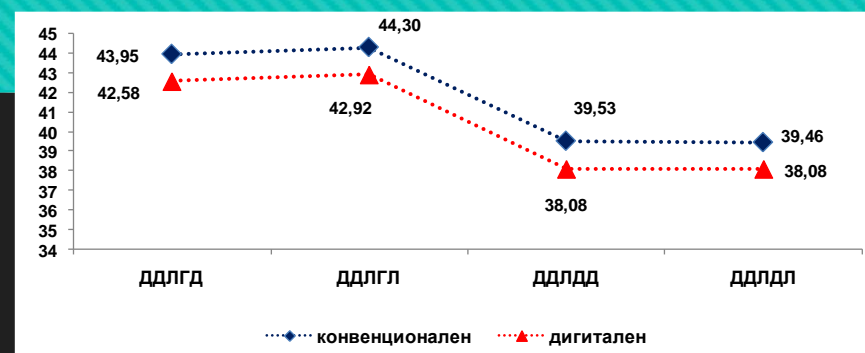
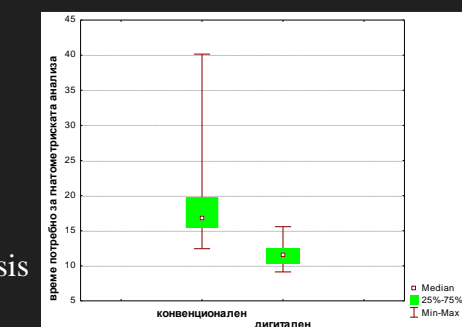Graph 3. Comparison of the lenght of dental arches between conventional and digital models

Graph 4. Comparison of the height of dental arches between conventional and digital models

Graph 5. Comparison of the Bolton analysis btw conventional and digital models

Graph 6. Comparison of the time of gnathom.analysis between conventional and digital models

Conclusions: Digital models will offer a replacement for plaster models that is accurate and reliable in setting the diagnosis and treatment plan. Despite the certain advantages and disadvantages of these models, it remains for the orthodontists to decide for themselves on which method to choose to use.