

The range of application of the material "LitAr" in dentistry

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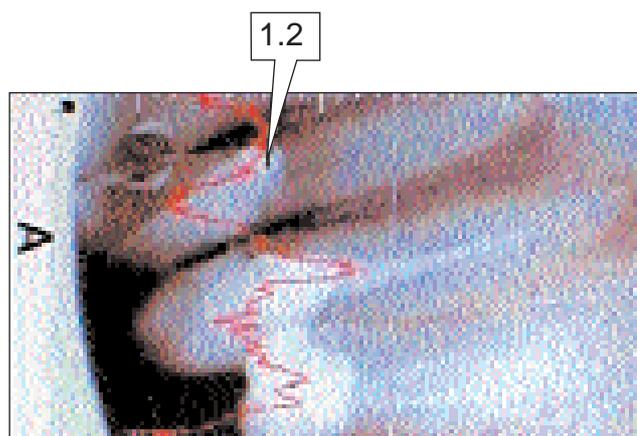
The wide range of application of the implant automatically lowers its economic characteristics which makes it accessible to the widest sections of population and which, at the same time, is brought into the attention of very many dental doctors. Therefore the implants which enter the market of dental materials - the implants which can be used in surgical and in therapeutic stomatology as well as in periodontology, in child stomatology, in the related fields of otorhynolaryngology, stirs increased interest not only from the phenomenological standpoint (general - purpose), but, to a greater extent from the standpoint of practical interests of stomatology.

One such material is the hydroxyapatite-collagen composite material "LitAr" which has been put on the "State list of medical articles" of February 18, 2002, # 29/13050501/3011 - 02 (Russia).

Among the first investigations of experimental and clinical nature were those dedicated to the possibilities of applying the material "LitAr" in therapeutic stomatology for filling the root canals of the single-rooted teeth after amputation of the pulp in case of acute pulpitis [1].

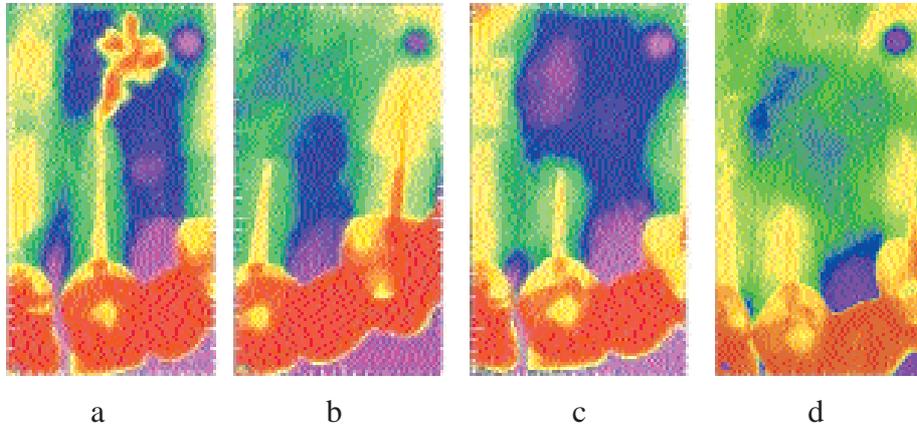
All the results were revolutionary and progressive as we were able to obturate not only the central canal, but also the dentinal canals and this circumstance has made it possible to eliminate porosity in the periapical zone of the tooth being filled. The formed rooted biological filling (adventitious dentine) in the course of obturating the apical hole ensured against periodontal inflammation. In 5.5 months after filling with "LitAr" we did not detect the root canal (patient X, 36 years old, figure 1).

Fig. 1. Histogram of frontal section of the teeth: the root canals are filled with zinc-eugenol paste and with material "LitAr" (1.2)



The next stage of introducing the material "LitAr" into dental practice was its application for filling the cystophorous cavities of the upper jaw in the periapical zone (Figure 2).

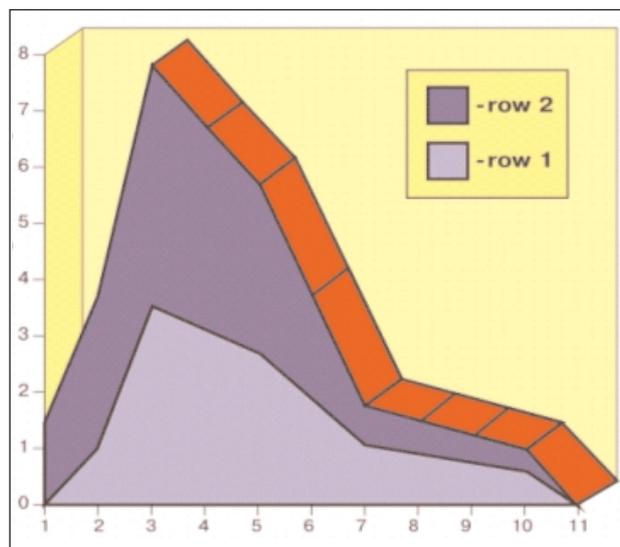
Fig. 2. Visiograms of jaw fragment after filling the cystophorous cavity with "LitAr" material: a - before, b - the 1st day, c - the 40th day, d - the 90th day postoperative.



The biotransformation of the material was checked by high-informing and independent noninvasive methods: by visiography and scintigraphy. All obtained results showed forming the bone tissue developed under the condition of total disappearance of the material. This fact created the effect of irreversible disintegration in the defective

zone to be regenerated. Nevertheless we detected thickening by palpation on the 30th day. There was little difference by the 90th day from the native bone tissue density (according to the visiography data). In Figure 3 we see the graph of the optical density alteration and of accumulation of "Technephor" in the form of Tc^{99m} in the cyst zone for 3 months [2].

Fig. 3. Curves of visiography (row 2) and scintigraphy (row 1) checking the biotransformation of the material "LitAr" in the zone of cyst of the upper jaw (horizontal - observation time, 1 division = 10 days; vertical - relative accumulation of Tc^{99m} (%) or X-ray density, H).



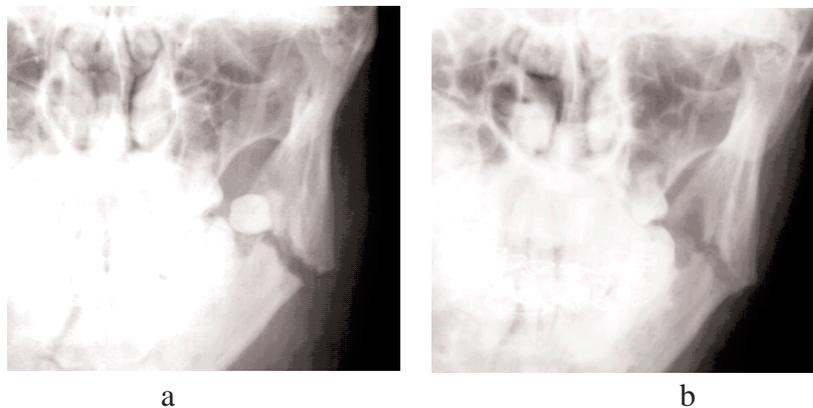
The material "LitAr" was also used in periodontology for restoring the resorbable part of the alveolar bone in the zone of furcation of the devitalized molars. After filling the bone pocket with the material and after thoroughly isolating it we performed check examinations in the course of the 1st month, then in 2, 4, 6 months. In 20 days we observed the bone tissue taking shape [3], and in 2 months we were able to achieve an increase of the bone up to the level that was close to the physiological norm [4].

The other field of application was child's age dentistry (surgery). The material "LitAr" was

used here for filling big (gigantic) defects, according to radiograms, with an extent of 5-6 cm. The first bone structures were formed after 20-25 days [5]. These results made it possible to use the composite material "LitAr" for fixation of the impacted rudiment of the permanent tooth once it was set in proper position. Teething took place in time and the tooth performed the ideal occlusion [6]. Along with the intraoperative application of the material its injection was performed for Patient Y. into the low jaw fracture zone [7].

The result is seen in Figure 4 (a, b).

Fig. 4: a - radiogram of Patient Y. before injection of the material "LitAr" into the fracture zone; b - in 3 months after injection.



The represented range of applying the material "LitAr" brings out visibly good prospects of its use as well as the expansion of the field of its application in other various sections of stomatology.

References

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