Flourishing of endodontics at this
time required more profound anesthesia of
tooth and this appeared to be the point [5]. Many investigators [9, 10] and especially endodontists [11, 12] responded to such variant. German authors [9, 13] referred IIA to the principal
of local anesthesia. Complication by
illa became widespread in the last decade.

Malamed’s errors.

1. True frequency of positive aspiration in injection is not given. This value presented in Malamed’s textbook of 1997, 2004, 2010 and his other handbooks [17, 18, 19] is designated with the figure 0%
that testifies to virtuality of his findings. All investigations carried out in Russia instead indicate to very high frequency of positive aspirations. This is one of the evidences of vascular mechanism of intraosseous (spongious) injections [8, 20, 21, 22, 23, 24, 45, 26, 27]. Fig. 3

2. Mechanism of spongious (supplemental, intraosseous) method Malamed explains by diffuse distribution of anesthetic as in classic infiltration and conduction injections. Clinical features

of anesthetic effect and reactions of cardio-vascular system (CVS) keep within this mechanism. Our vascular-diffuse-pulpal theory of mechanism of spongious (intraosseous) anesthesias is presented in several publications in Russian [23, 24, 25, etc.]. For the first time this theory was introduced in The Journal of the Israeli Dental Association in English [26]. We both expressed our suggestion about the vascular nature of dental intraosseous anesthesias earlier [27].

The essence of our hypothesis is in the following. The bone within spongious substance is presented by abundant quantity of arteries, veins, vein sinuses, capillaries, which are in cellules passing from one to another. Dense plates of compact substance protect them. Vessels concentration especially of vein there is huge. Veins due to bone protection have a very thin delicate wall. Solution of anesthetic with vasoconstrictor injected into the cellules under pressure inevitably breaks through into the veins bed, distributing both along blood flow and against it. The reverse blood flow the anesthetic solution reaches arterioles and adrenoceptors, which are there, and blocking further distribution of anesthetic. Thus, this creates depot of anesthetic solution, which includes the pulp of teeth and surrounding tissues within the bone (fig. 5). In contrast to the widespread vascular theory [1, 9, 11, 17] the depot includes the dental pulp, not only periodontal tissue (fig. 6). This is one of the factors that explain the maximum depth of anesthesia. Depending on the dose, the zone of intraligamentous anesthesia can cover some teeth, on the average 3.6 ones [21]. Infiltration mechanism of spongious anesthesias takes part not only in the first phase of injection – delivery of anesthetic solution to thin veins of bones cellules. In 5% intraligamentous anesthesias of lower first molar developed in the absence of positive aspiration with typical signs of infiltrating anesthesia: slow onset of the effect in 2-3 min and not maximum increase of pain threshold (170-180 mA).

3. Reaction of cardiovascular system to additional (intraosseous) methods of anesthetic injection is presented by Malamed superficially. While evaluating their manifestation, Malamed is influenced by the use of minimum anesthetic doses as well as their rapid (4 min) circulation, ignoring moreover vascular mechanism of distribution. Epinephrine is assigned a secondary part because it is considered that anesthesics containing epinephrine could without any loss be substituted for 3% mepivacaine. Kim et al have shown that it shouldn’t be done (fig. 7) [28].

Many authors during introduction of intraosseous anesthesias indicated to their possible vascular character [29, 30, 31, 32].

4. Special importance in supplemental injection techniques acquires monitoring of CVS values. For the present, these techniques are not aggravated by tragic errors. First, the response of cardiovascular system is associated with epinephrine injection and more often has sympathetic trend of reactions. Manifestation of CVS reactions to spongious anesthesias is more than to infiltration and conduction ones [33, 34, 35, 36]. Second, these reactions (maximum shifts) arise at once and acutely, during the injection and at the first 1-2 min. Third, they are short-term in healthy patients (4 min – the period of adrenaline half-life). Epinephrine in spongious injections plays two parts: as a pharmacological agent and as a strong vasoconstrictor. Therefore, 2 forms of reactions are observed: sympathetic and parasympathetic. According to these 2 forms of reactions 2 forms complications are found: hypertensive (crisis) and hypotensive (syncope).

Prevalence of sympathetic direction in summarized average changes in the values of CVS investigated parameters is observed. The patients are approximately equally divided into hypertensive and hypotensive. It is necessary when any local anesthesia is used to individually follow up these values.

5. Single-tooth intraosseous anesthesia, Malamed stands up for (fig. 9), is also questionable and has not been discussed in the textbook. However, computer systems STA (Single Tooth Anesthesia) by their name aimed at single-tooth have been developed not without influence of the author’s book. By our findings the zone of intraligamentous anesthesia with epinephrine 1:200000 when 79 lower molars were treated for caries and pulpits in 75 patients, varied from 1 to 11 teeth, 3.6 teeth, on the average. Single tooth anesthesia took place only in 26,7% of teeth which underwent anesthesia [21].

Thus, chapter 15 of the wonderful textbook requires serious revision. We hope that this can be expected in the next edition.

The list of references is in the editorial office.