

## The theme of the class № 2

### Teeth number anomalies. Teeth eruption anomalies

#### **The content of the topic:**

#### **Teeth number anomalies.**

Normally a person has 32 teeth in the permanent period, and 20 – in the milk one. Adentia or teeth absence is shown.

There are such adentia types:

- 1) primary (i.e. congenital absence of germs);
- 2) secondary or acquired (germs absence because of their destruction as a result of temperature or radiation influence, an injury. But it is not expedient to refer here the secondary adentia caused by teeth extraction).

Besides there are:

- 1) partial adentia, when a couple of teeth are absent (1-3);
- 2) multiple adentia (4 teeth and more);
- 3) complete adentia.

Complete absence of teeth is a rare phenomenon. In our hospital there have been only three such cases in the last 20 years (in two of them there was one retained tooth).

Partial adentia is observed very often. This phenomenon, as D.A. Kalvelis (1964) notes, is explained by the physiological reduction of teeth quantity. Subject to reduction are the upper lateral incisors and 3rd molars – from form change (spinous) to complete disappearance. The slightest form of partial adentia is the absence of one lateral incisor. When two of them are absent, esthetic defect becomes more visible. If lateral incisors absence causes spaces appearance between teeth, multiple adentia causes dental arches defects with the following deformation of occlusive interrelations and also occlusion as a whole; thus it requires complex special interventions. Therefore it is impossible to view the multiple congenital absence of teeth as a phenomenon of phylogenetic reduction. In such cases we should talk about a general systemic disease – the so-called syndrome of ectodermal dysplasia.

3rd molars absence does not provoke any dento-gnathic apparatus complications. But their presence in a jaw may lead to recurrences or complications of dento-gnathic anomalies (in corresponding cases) in case of their coming out. Taking this into account, some authors consider timely extraction of 3rd molars germs expedient.

Adentia treatment must aim at the restoration of dental arch integrity with a positive esthetic effect. In other words, at providing functional and cosmetic value of the dento-gnathic apparatus.

Treatment methods at adentias are orthopedic (prosthetic) and combined – in complex with orthodontic (instrument) and surgical methods.

The orthopedic method, restoration of dental arch defects with removable and fixed dentures, is not full-value. The combined method, i.e. complex treatment, should be preferred. First of all preliminary preparation of the oral cavity to prosthetics is needed: endodontic preparation, which consists in the removal of the

persistent temporary teeth pulp under the condition of root resorption absence. This allows timely elimination of undesirable diseases of the pulp as a resorption organ and in such a way the prolongation of temporary teeth staying in the dental arch, which is especially important at multiple adentia of permanent teeth. Such teeth, as it has been shown by our chair workers, may be used as support for dentures of more efficient construction; orthodontic preparation consists in correct distribution of teeth in the dental arch with the help of orthodontic appliances.

If lateral teeth are absent (one or two) diastems and diaereses appear. Canine teeth shift to the place of lateral incisors. Preliminary preparation consists in instrument dislocation of canine teeth distally and central incisors – medially (i.e. diastems reduction) with the purpose of creating space for false lateral incisors. There can be used both removable and fixed orthodontic appliances for teeth transfer. Not infrequently spaces in the dental arch at lateral incisors adentia are, vice versa, reduced by means of transferring them to the place of canine teeth. In such cases with esthetic purpose canine teeth are restored by the form of absent teeth with composites or are covered with esthetic crowns (plastic, combined). Larger defects are compensated with removable dental prostheses.

Surgical preparation is especially important at multiple or complete adentia and consists in teeth transposition or implantation. Multiple and partial adentia is referred to ectodermal pathology. There are observed deviations in other organs at multiple and complete adentia. Thus, in patients with adentia hair-covering is underdeveloped (lanugo or absence of hair), they have less or no sweat glands. In this connection evident xeroderma develops (asperity, fissures, etc.). Water and warmth metabolism is violated, which leads to complications, especially in warm periods of the year and at physical loads. Organism superheating may cause shock and more severe consequences.

At adentias there is marked the inferiority not only of the dental tissue but also of the bony one. Such an important biological stimulation of growth as eruption is absent. As a result the alveolar processes are underdeveloped. Removable dental prostheses application, especially of irrational construction, complicates the situation, and bony tissue atrophy progresses. Alveolar processes are not adapted to such a way of mastication load transfer. Attempts of wide usage of implantation have been futile, which is explained by bony tissue inferiority. Thus, for now we have germs transplantation and search for new methods of treatment.

G.Y. Dranovskiy (Makhachkala, Daghestan) is reported to have successfully transplanted teeth germs. He conducted germs transplantation (allotransplantation) experimentally on 331 dogs (puppies and mature animals), and then on patients (14 of them had positive results). The technique consisted in taking germs from a donor (cadaver) and preservation; the bank was created. Then the germs were implanted into the recipient's bone. Germs transplantation may be conducted:

- 1) by the intraoral method (it has its drawbacks, at block anesthesia, wound infection, more long-term healing);

2) by the extraoral method (at general anesthesia but quicker; a scar remains on the face, which is not advantageous from the esthetic point of view, especially in girls).

The surgery consists in the following: a trapezoid mucoperiosteal flap is detached, the bony tissue is exposed; an appropriate bed for the allograft is prepared in the bone; the wound is sutured.

### **Supplemental teeth (hyperdentia)**

In last the dental arch of many mammals, including human predecessors, consisted of 44 teeth. Appearance of more than 32 teeth in the human dentition in the permanent period is considered by A. Stemfild (1898) and D.A. Kalvelis (1964) an obvious return to the past – an atavism. Supplemental teeth appear mainly in the places where mammals used to have a lot of them. Indeed, rather often we observe teeth number increase in the region of incisors and premolars (3rd incisors, 3rd or even 4th premolars).

Thus, we can speak of teeth number increase in the cases when there are more than 20 teeth in milk occlusion and more than 32 – in the permanent one.

Busch singles out three types of supplemental teeth:

- 1) aculeiform with a peg-shaped crown and root;
- 2) tuberos teeth with a tuberos crown and a fimnel-form retraction of its surface (these are also called premolar-like teeth);
- 3) resembling complete teeth.

Kollmann differentiates two types of supplemental teeth formation:

- appear simultaneously with permanent teeth;
- develop slowly oae after another. The author explains this in such a way: detachment of “odd” germs (“enamel processes”) from the dental plate may happen both horizontally and vertically.

Supplemental teeth not only violate the correctness of incisors structure, but also may violate the process of eruption. Supplemental teeth eruption is connected with excessive jaw growth, which in its turn may condition dento-gnathic deformation appearance. Most often supplemental teeth come out between the central incisors or in their place.

The treatment lies in extracting such teeth, as a rule. But sometimes supplemental teeth, reminding complete ones by their shape, are preserved, and affected; irregularly located complete teeth are extracted. After extracting supplemental teeth orthodontic (instrument) treatment is often needed with the purpose of regular teeth location.

## **ERUPTION ANOMALIES**

### **Retained Teeth**

Eruption delay is called retention. Both permanent and milk teeth may be retained, but milk teeth – rarely. Permanent teeth are retained more often, as a rule, in the following location: canine teeth, 2nd premolars, 3rd molars, central incisors, lateral incisors. Canine teeth are retained because of insufficient jaw growth; 2nd

premolars are often retained because a 2nd temporary molar is prematurely extracted, then the 1st permanent premolar shifts medially to the 1st molar.

Retained teeth may cause incorrect location of neighboring teeth, their inclination and formation of spaces between teeth. Retention is considered to be caused by the general disease of endocrine glands; genetic conditionality of the process is possible. Today the reasons for teeth retention are premature extraction of milk teeth, mastication insufficiency, disuse of hard food – dried crusts, not grinded carrot, apples, etc.

Retention may be partial (absence of one or a couple of teeth) and complete (all teeth are absent). At permanent teeth retention sometimes in the roentgenogram there can be seen rudimentary clavicles, crown of head and cranial sutures nonclosure; this anomaly was named after the authors – Anderson-Pekker's syndrome). We observed complete retention in a 15-year-old female patient with hypophysial nanism, conditioned by the violation of adenohypophysis function. The patient is of dwarfish stature (disproportional dwarf), has underdeveloped limbs, joints osteochondrosis. There are no teeth on the upper jaw, and on the lower one there comes out one of incisors with considerable inclination to the alveolar process. In the roentgenogram in the bone thickness there are almost all the germs of teeth of ugly form. Teeth crowns are at the stage of mineralization, they are kind of "corroded" with resorption areas in the form of varnish, resembling "melted snow". The alveolar crests are round and wide, the palate is deformed.

Besides, retention may be caused by: root apices deviation; injury; cysts; inadequacy of crowns and jaws sizes.

Retention is diagnosed by roentgenograms. Retained teeth may be completely formed or not formed and located with a different degree of inclination. F.Y. Khoroshilkina with co-authors (1977, 1982) offered to divide eruption disturbances into three retention degrees:

- the 1st degree – idiopathic (conditioned) retention, characterized by slow germ development compared to the symmetrical one;
- the 2nd degree – dental retention is conditioned by the inclination of their longitudinal axes by 15° relative to the tooth in front; lack of space, dental arches underdevelopment, etc.;
- the 3rd degree – constant retention, characterized by tooth anlage not in the direction of its coming out.

V.P. Nespriadko (1985) singles out three clinical forms of eruption pathology:

- 1) temporary retention;
- 2) half-retention;
- 3) constant retention of permanent teeth.

The main criteria of this division were the terms of permanent teeth coming out, the degree of their roots formation, and also the mechanism of the eruption of permanent teeth, retained earlier.

The choice of treatment method depends on retention degree and type. The teeth standing straight after the extraction of supplemental and milk teeth and bony

tissue decortication can be “placed” into the dental arch. If it is impossible to have the tooth come out, at space present in the dental arch, transplantation is possible, but such a tooth is short-lived. An original technique of treating retained teeth was offered by V.P. Nespriadko. The technique consists in the following: a trapezoid incision is made on the soft tissues to the bone under block anesthesia and a mucoperiosteal flap is detached. With the help of a drill or chisel a bone layer is taken off, the retained tooth crown is exposed. The crown is exposed to the equator, the bony tissue adjacent to it is removed with a thin drill. An elongated metal crown (previously prepared) is selected for the exposed part of the retained tooth crown, the crown is to be put onto the tooth without effort but fit it tightly and project over the crest of the alveolar process by not less than 5-6 mm. If the retained tooth is directed to the side of the opposite dental arch, it is desirable that the elongated crown touches the opposing teeth with its alveolar surface by the type of inclined plane. If it is necessary to correct the position of the retained tooth, hooks are soldered to the crown and the necessary orthodontic appliance is made. To the author’s mind, the elongated crown promotes the transfer of functional pressure, which is the strongest stimulator of eruption, onto the retained tooth.

There are other surgical methods of treating dental retention: decortication, tooth crown exposure with subsequent plugging; decortication – relieving the crown part of the retained tooth from the bony tissue, attaching a metal loop (ligature) around the anatomic neck with the following delivering of the free end of the ligature into the oral cavity. But their fundamental defect is the fact that all of them are too traumatic and cause complications: wound infection, loop rupture (requires repeated intervention), bony tissue loss, development of the mucous tunic and bone healing tissue.

In recent years more protective treatment methods have been widespread. Thus, I.Y. Androsova (1977) with the purpose of eruption stimulation offered to use hansurid, V.V. Halenko (1986) – impulsive electrostimulation and electrophoresis with adrenaline in the region of retained teeth.

Positive results of treating retained teeth have been obtained at the application of new treatment methods, offered by the workers of the Chair of Orthodontics and Prosthodontics Propedeutics of O.O. Bohomolets NMU (vibratory influence with the application of lydasa phonophoresis with hansurid; vacuum therapy).

Another important question concerns the time when it is expedient to extract a retained tooth and whether it should be extracted if there is no hope of eruption. In this connection the publication of English scholars C. Tracey and R.T. Lee (1985) is interesting: they demonstrated that retained teeth may be “aggressive”, i.e. cause destruction of neighboring teeth roots, sometimes with pulp dragging.

An essential question is the presence of space in the dental arch for retained tooth eruption. At that, complex treatment is important – it includes instrument treatment, stimulation methods, and teeth extraction according to indications.

There are differentiated premature and delayed eruption.

Specialists have observed cases of erupted temporary teeth present in newborns. In such cases the teeth are as a rule extracted to provide normal feeding of the child.

Teeth eruption is one of morphophysiological signs of organism development. Children with higher indices of physical development have more premature teeth erupted. It has been ascertained that most teeth come out in girls earlier than in boys.

Thus, the process of teeth eruption is influenced by a number of different factors: local and general, endogenous and exogenous.

A special place is taken by retention caused by irregular teeth anlage (atypical position). Literature describes cases of teeth coming out into the nasal cavity, maxillary sinus, and even eyesocket (A.I. Marchenko, 1962).