

**STRUCTURE OF TUMORS AND TUMOR-LIKE FORMATIONS OF THE  
MAXILLOFACIAL REGION IN CHILDREN**

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**Abstract.** The structure and localization of tumors and tumor-like formations of the oral cavity in children were analyzed. Tumors of the oral cavity were more common than tumor formations. Benign tumors of the oral cavity were more common (96.3%) than malignant (3.7%) tumors. Tumors and tumor-like formations of the oral cavity were more common in girls. Tumors of the minor salivary glands were less common than tumor-like formations. Retention cysts were mainly found on the lower lip (80.6%).

**Key words:** dentistry, benign tumors, malignant tumors, tumor-like formations.

**СТРУКТУРА ОПУХОЛЕЙ И ОПУХОЛЕПОДОБНЫХ ОБРАЗОВАНИЙ  
ЧЕЛЮСТНО-ЛИЦЕВОЙ ОБЛАСТИ У ДЕТЕЙ**

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**Аннотация.** Анализированы структура и локализация опухолей и опухолеподобных образований полости рта у детей. Опухоли полости рта встречались часто чем опухолевые образования. Доброкачественные опухоли полости рта встречались чаще (96.3%), чем злокачественные (3,7 %) опухоли. Опухоли и опухолеподобные образования полости рта чаще встречались у девочек. Опухоли малых слюнных желёз встречались реже, чем опухолеподобные образования. Ретенционные кисты в основном встречались на нижней губе (80,6%).

**Ключевые слова:** стоматология, доброкачественные опухоли, злокачественные опухоли, опухолеподобные образования.

**Relevance.** Over the past 10-15 years, the interest of dentists in the problem of tumors in children has increased significantly. However, it is still difficult to reliably judge the frequency and nature of tumors of the face, tissues and organs of the oral cavity, jaw bones and neck in childhood, since the data in domestic and foreign literature on this issue are contradictory and very scarce.

Most published works contain descriptions of individual nosological forms of neoplasms, and their data are based on small material. Data on the influence of age on the manifestation of neoplasms are scarce and contradictory. Unfortunately, it is difficult to identify data on the frequency and course of neoplasms in children from the materials of many surgical dentistry clinics, since this issue is not given due attention and age groups are not distinguished. Most works only indicate ages from 1 to 10 years or from 10 to 19 years. The age factor is of great importance in the development of neoplasms, which suggests the presence of pathogenetic differences in the occurrence of tumors in children of different ages and adults [Soloviev Yu. N., 1970]. There is an opinion that at a young age the development of bone tumors is associated with vigorous bone growth, accompanied by their intensive restructuring [Vinogradova T. P. 1973]. According to some authors, children make up 12.4–21.7% of all patients with tumors of the maxillofacial region.

In childhood, benign tumors and tumor-like processes predominate (about 90% of patients) [Simanovskaya E. Yu., 1967; Mukhin M.V., 1970, etc.].

P. D. Godorozha and N. M. Godorozha describe tumors and tumor-like processes of the head and neck in children. The authors do not indicate the total number of observations. It is difficult to establish the frequency of individual nosological forms, since data on it are not given in all sections of the work. The problem of early diagnosis is one of the most important in pediatric dental oncology.

The pediatric dentist must remember that any atypically manifested syndrome in a sick child, rapid progression of symptoms, and ineffectiveness of therapy serve as strong grounds for suspecting the presence of a tumor.

This suspicion must either be confirmed or rejected. During each examination of a child, the doctor must exercise maximum oncological vigilance, and treatment of children with benign neoplasms should be carried out according to the principle of medical examination at the dentist.

**Material and methods.** The retrospective study included 121 children from 2 to 18 years old who visited the surgical office of the Department of Maxillofacial Surgery of the Samarkand Regional Multidisciplinary Children's Medical Center in 2021-2023. Patients are distributed by gender and age (Table 1)

Clinical examination of patients included the study of complaints, disease development, life history, and examination data. The oral cavity was examined under additional artificial lighting. The mucous membrane and pathological changes in the oral cavity were visualized using a dental mirror. The consistency, boundaries, and nature of the surface of pathological formations of the oral mucosa were assessed by palpation.

To verify the diagnosis, incisional or excisional surgical biopsies were performed under local anesthesia. The biopsy material was examined in the pathohistological laboratory of the 1st SamMu clinic.

Table 1

Distribution of patients with tumors and tumor-like diseases by gender and age

Age	Girls	Boys	Total	Total %
2-4	9	9	18	14,87
5-7	16	13	29	23,96
8-12	22	11	33	27,27
13-18	28	13	41	33,88
Bcero	75	46	121	100

Quantitative data obtained from examining patients was processed using the Microsoft® Excel, Statistica 7, StatSoft application package. Statistical processing included the calculation of the arithmetic mean (M) and the standard error of the mean t ( $M \pm t$ ).

**Research results.** Among 121 examined patients, tumor diseases of the oral mucosa were diagnosed in 55.3% (27.5% boys, 72.5% girls), and tumor-like diseases of the mucous membrane were diagnosed in 44.7% (34.1% boys, 65.9% girls) oral cavity.

Among the tumor diseases of the oral mucosa, the following were identified: papilloma (41.3%), fibroma (11.7%), hemangioma (3.7%), carcinoma (1.3%), pleomorphic adenoma (1.0%), Abrikosov tumor (0.3%), adenoid cystic carcinoma (0.3%), teratoma (0.3%). Among the tumor-like diseases of the oral mucosa, the following were identified: retention cyst (18.8%), epulis (22.1%).

**Papilloma** (ICD-10 D10) (Fig. 1) develops from stratified squamous epithelium. Papilloma occurred in patients aged from 15 to 89 years (average age  $47.7 \pm 4.35$  years). The female to male ratio was 3:1. Most often (77.5%) papilloma was detected in people aged 30-69 years. Localization of papillomas: on the tongue (35%), buccal mucosa (25%), hard palate (15.8%), lip (15%), alveolar process of the jaw (7.5%), the bottom of the oral cavity (1.7%) often singly (Fig. 1).



Figure.1 Papilloma of the tip of the tongue

**Papilloma** is clinically a neoplasm of oval or round shape, on a broad base or stalk, pale pink in color, with a fine-grained, folded, villous or smooth surface, painless on palpation. The surface of the papilloma may have a whitish color due to keratinization of the surface layer of the epithelium (Fig. 1.) After injury, the papilloma may have a red, bluish-red color, ulceration. Treatment is surgical.

**Fibroma** (ICD-10 D21) is a benign tumor formed by mature elements of connective tissue. Fibroma itself includes solid fibroma, which was diagnosed by us in 74.3% of cases. Other fibromas had a mixed structure: angiofibroma (14.2%), lipofibroma (8.6%), dermatofibroma (2.9%). The boys/girls ratio was 2.5:1.

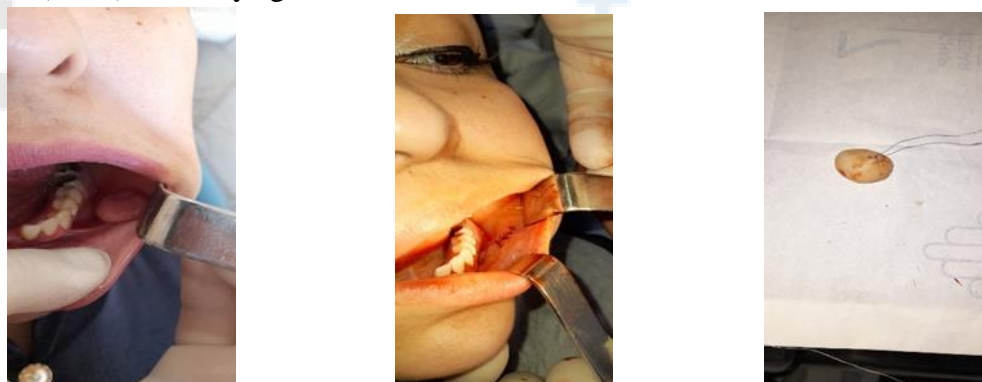


Figure 2. A-fibroma of the neck B-after removal C-tumor

Localization of fibromas: on the buccal mucosa (45.7%), alveolar process of the jaw (20%), tongue (14.3%), hard palate (14.3%), lip (5.7%) (Fig. 2). Fibroma clinically represents a tumor node of an oval or round shape, on a wide base or stalk, pale pink in color, with a smooth surface, dense consistency, painless on palpation (Fig. 2). When injured, the surface of fibroids may be bright red or whitish. Treatment is surgical.

**Hemangioma** (ICD-10 D18) is a benign vascular tumor. Hemangioma occurred in patients aged 1 month to 18 years. The girls/boys ratio was 3.5:1. Based on their structure, we diagnosed: capillary (36.4%), cavernous (45.5%), mixed (11.1%) hemangiomas. Hemangiomas were localized on the lip (45.4%), alveolar process of the jaw (18.2%), hard palate (18.2%), and cheek (9.1%). (Fig. 3).

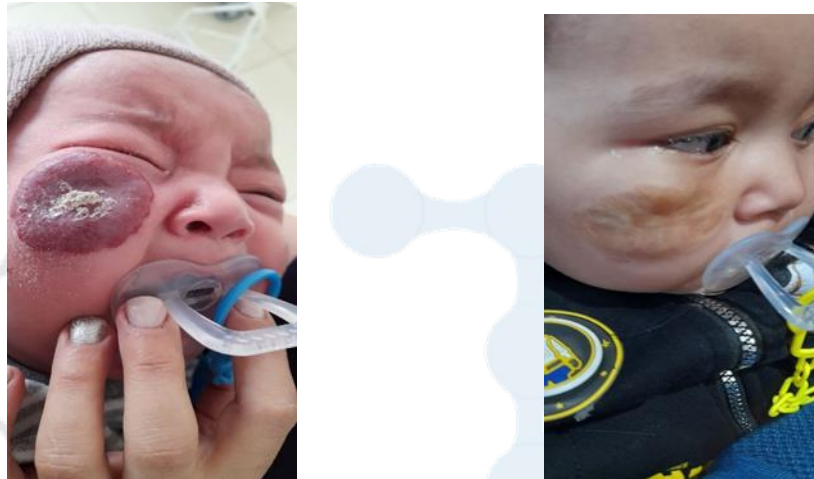


Figure 3. A. Cavernous hemangioma. B- After cryodestruction

Hemangioma is clinically a smooth or lumpy neoplasm, oval or round in shape, rising above the surface of the skin, mucous membrane or with submucosal localization. Soft pink or bright red, bluish in color, painless on palpation (Fig. 3). Surgical treatment, cryodestruction with liquid nitrogen, sclerotherapy.

**Abrikosov tumor** (ICD-10 L37) was observed in 1 case in a 16-year-old man. Abrikosov's tumor is a rare tumor of unknown origin. There are many synonyms (granular cell tumor, myoblast myoma, embryonal rhabdomyoblastoma) and different points of view about the histogenesis of the tumor (myogenic, neurogenic, histiocytic). A tumor node up to 1 cm in diameter, pale pink in color, with clear boundaries, a smooth surface, dense consistency, painless on palpation, was located under the mucous membrane on the back of the tongue. Treatment is surgical.

**Retention cyst** (ICD-10 K11.6) is a tumor-like formation as a result of obstruction of the excretory duct of the salivary gland, resulting from injury or local inflammation. Retention cysts occurred in patients aged 6 to 18 years.



Figure 4 retention cyst of the lower lip before and after treatment

The girls/boys ratio was 1:1. Most often (69.6%) the cyst was detected in people aged 12 years. The cyst was localized on the lip (82.1%) (Fig. 4), floor of the mouth (12.5%), cheek (3.6%), soft palate (1.8%). Clinically, the cyst is an oval or round formation, with clear boundaries, a smooth surface, elastic consistency, pale pink color, painless on palpation (Fig. 4). Treatment is surgical.

**Epulis** (ICD-10 K06.8) is a tumor-like formation that develops from periodontal tissue, periosteum, and deep layers of the gums. Epulis occurred in patients aged 12 to 18 years (mean age 13.4±1.12 years). The girls/boys ratio was 3:1.



Figure 5. Epulis of the gum mucosa

Epulis were localized on the alveolar processes of the jaws (marginal gums, interdental papillae) next to the teeth. Based on their structure, the following were diagnosed: fibrous (42.4%), fibrous-angiomaticous (30.3%), angiomaticous (18.2%), giant cell (9.1%) epulis. Clinically, epulis is a formation of round or irregular shape, with clear boundaries, with a smooth or lumpy surface, on a wide base, soft-elastic or dense consistency, pale pink or bright red in color with a cyanotic tint, painless on palpation (Fig. 5).

Fibrous-angiomaticous epulis may bleed when touched or eaten. After injury, an ulcer with a fibrinous coating may form on the surface of the epulis. Treatment is surgical.

**Discussion.** In the scientific literature one can find a large number of descriptions of cases of tumors and tumor-like diseases of the oral cavity and minor salivary glands. However, there are contradictions in the indications of the frequency of occurrence, gender differences, and the structure of oral lesions in these diseases, and there is no description of these diseases in one study.

**Squamous cell papilloma** of the oral cavity is well described in the literature. According to P.S. Karapetyan et al. papillomas are more common in girls than boys over 12 years of age on the tongue. Oral papillomas are detected more often in adulthood, which coincides with our data. However, we identified this benign tumor more often in girls. Papillomas are localized in different parts of the oral cavity, but most often on the tongue or palate (34.3%). Data on the frequent localization of papillomas on the red border of the lips and the development of malignancy in modern studies and in our study are not confirmed.

**Oral fibroids** are diagnosed 13.9-45.2% more often in girls aged 10 to 19 years, average age 12.1 years [5, 6, 12, 16]. Fibroma is most often localized on the alveolar process of the jaw. In our study, girls predominated with fibroids often localized on the neck and alveolar process of the jaw.

**Hemangiomas** make up 2-3% of all tumors and in 60-80% are localized in the maxillofacial area, especially on the lip and in the oral cavity. The term "hemangioma" describes a large number of malformations and neoplasms of benign blood vessels and is often classified according to the predominance of a certain type of vessel in the tumor. The highest frequency of hemangiomas is in girls than in boys at a young age, with localization on the skin of the face, lip, and oral mucosa, which coincides with our data. Localization of hemangiomas on the hard palate and tongue is extremely rare. In the presented study, the localization of hemangiomas on the hard palate was not rare and in frequency corresponded to the localization on the alveolar process of the jaw.

**Tumors of the salivary glands** account for 1-3% of head and neck tumors. Among them, tumors of epithelial origin predominate (95%). Pleomorphic adenoma is the most common benign tumor of the major and minor salivary glands. Malignant tumors of the salivary glands account for 0.3%. The minor salivary glands are affected in 12-17.1% of cases, more often on the hard palate (65%). Tumors of the minor salivary glands are most often diagnosed in patients aged 11-18 years on the upper lip, less often on the lower lip and buccal mucosa.

**Retention cysts** (mucoceles) are common in the minor salivary glands, especially the labial glands. According to I.S. Karepetyan et al. retention cysts are more often localized on the lower lip in boys than in girls under the age of 19 years. The main factor in the development of mucocele is considered to be trauma to the oral mucosa. The term "ranula" is used to describe a retention cyst of the floor of the mouth that develops after trauma to the sublingual salivary gland or obstruction of the ducts. Ranulas occur at any age, but are slightly more common in women than in men. In the presented study, retention cysts were more often localized on the lip equally often in boys and girls aged 12 to 19 years.

The term "epulis" is used to describe any benign localized hyperplasia of the gums, periodontium, or periosteum in response to local irritation. Histological examination of such hyperplasia identifies peripheral ossifying fibroma (ossifying fibrous epulis), peripheral fibroma (fibrous epulis), peripheral giant cell granuloma (giant cell epulis). In modern literature, there is considerable confusion in the nomenclature of different forms of gingival hyperplastic benign changes.

Various forms of epulis are diagnosed in 15.8-61.1% of cases. Giant cell epulis occurs equally often in boys and girls, the average age of patients is 15 years. Clinical diagnosis of common neoplasms of the oral cavity is not difficult, with the exception of rare tumors. For all observations of neoplasms and tumor-like diseases, the dentist must perform a biopsy, which will ensure verification of diseases and eliminate possible diagnostic errors.

### Conclusions

1. Tumor diseases (58.7%) of the oral mucosa were detected more often than tumor-like diseases. Benign tumors of the oral mucosa were diagnosed in 97.1% of cases, malignant tumors - in 2.9% of cases.
2. Among patients with tumor and tumor-like diseases of the oral mucosa, females predominated (70.5%).
3. Among benign tumors of the mucous membrane of the oral cavity, the most common is papilloma (41.3%) with frequent localization on the tongue (35%) and cheek (25%).
4. Oral fibroma was detected in 11.7% of cases with frequent localization on the cheek (45.7%).

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