

Systematized diagnostic and treatment algorithm for tumors of the parotid salivary gland

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Abstract

Purpose: The lack of a generally accepted protocol for diagnostic and therapeutic behavior in patients with tumors of the parotid salivary gland determines the need to create a systematized diagnostic and treatment algorithm.

Material and methods: A prospective study was conducted for the period 2007 – 2017. 185 patients with salivary gland tumors aged between 12 and 84 years, 91 men and 94 women, including 5 children (3 boys and 2 girls) were included.

Results: For the ten-year period (2007 - 2017) 185 patients the main complaint in 91.35% of patients is the swelling in the respective facial area, 7.57% report discomfort when swallowing (except for swelling), 1.08% have a feeling of a foreign body For the considered period in 47% of the patients the left parotid gland is involved, in 45.7% - the right one. Bilateral localization was manifested in 1.3%. The type of surgical interventions is as follows: total conservative parotidectomy - 90%, radical parotidectomy - 6%, enucleation - 2.7%, lateral parotidectomy - 1.4%. In 89% of patients, no transient paresis or paralysis was observed; 10.81% of them have such, including patients who underwent radical parotidectomy (6%).

Conclusion: Based on the analysis of the obtained results, developed algorithms could be applied for better diagnosis, treatment and follow-up of patients with salivary gland tumors. They refine the behavior and minimize treatment and diagnostic errors of clinicians treating such disease, also standardize follow-up, improve survival, and support a multidisciplinary therapeutic approach in patients with salivary gland tumors.

Keywords: parotid salivary gland, tumors, diagnostic, treatment

Introduction

Tumor diseases represents significant part of the pathology. In terms of the annual incidence of salivary gland tumors, data for Europe from 2010 range from 0.5 to 2 per 100,000 population (1).

In 80% of all salivary gland tumors the parotid gland is affected, the submandibular gland is involved in 10% of cases, the sublingual salivary gland - in 1%, and the remaining patients have involvement of the small salivary glands under the oral mucosa (2). In the parotid glands, 20–25% of tumors are malignant (3).

There are disagreements regarding the therapeutic behavior depending on the biological behavior of the tumor. They are related to the scope of surgery, the scope of lymph dissection and the period of reconstruction. Studies have shown that enucleation of benign tumors is associated with an unacceptably high risk of recurrence, especially in pleomorphic adenomas (45%) (4). Superficial parotidectomy has been shown in some benign tumors (monomorphic adenoma) in which there is no evidence of multifocality in the glandular parenchyma. Total parotidectomy with preservation of the facial nerve is also indicated in tumors with high malignant risk and tumor stage T3-4 (5, 6). Radical parotidectomy with removal of the facial nerve is mandatory for tumor nerve infiltration. After its resection, a one-step reconstruction with a free nerve graft is possible (7).

New diagnostic methods, and more effective ones, are changing the knowledge about salivary gland tumors, new, more rational methods and consumables are entering as a result of scientific and technical progress.

Aim

The lack of a generally accepted protocol for diagnostic and therapeutic behavior in patients with tumors of the parotid salivary gland determines the need to create a systematized diagnostic and treatment algorithm.

Material and methods

A prospective study was conducted on hospitalized patients in the Maxillofacial surgery hospital for the period 2007 - 2017 (the percentage distribution of patients is shown in Fig. 1). All persons included in the study have signed an informed consent for the relevant research and subsequent use of the data obtained. 185 patients with salivary gland tumors aged between 12 and 84 years, 91 men and 94 women, including 5 children (3 boys and 2 girls) were included. For the purposes of the study, the medical history stored in the hospital archives was used. From the data obtained after the analysis of the history of the disease, the observed indicators and statistical models of clinical algorithms are derived.

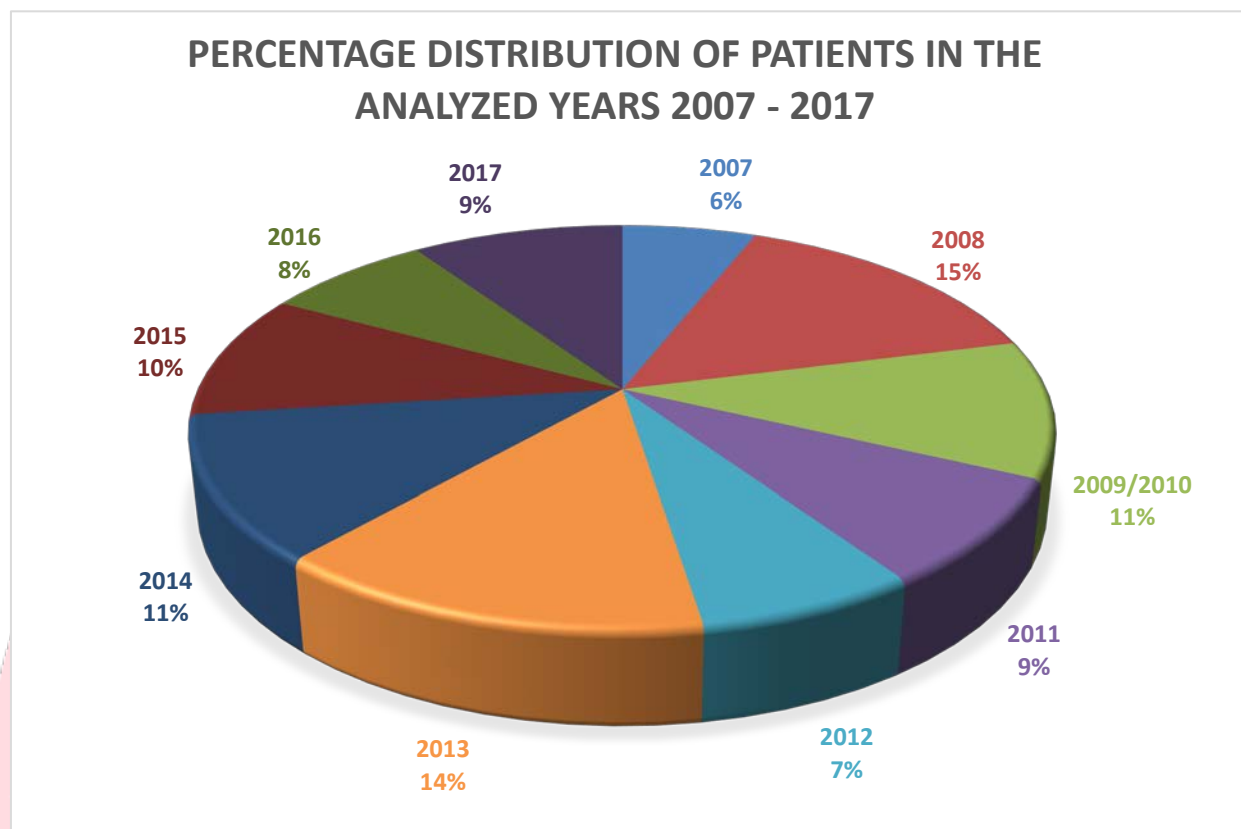


Figure 1. Percentage distribution of patients during the analyzed period 2007 – 2017

Results

For the ten-year period (2007 - 2017) 185 patients between 12 and 84 years (average age: 54 years) were treated, of which 51% were women and 49% - men. The main complaint in 91.35% of patients is the swelling in the respective facial area, 7.57% report discomfort when swallowing (except for swelling), 1.08% have a feeling of a foreign body (Fig. 2).

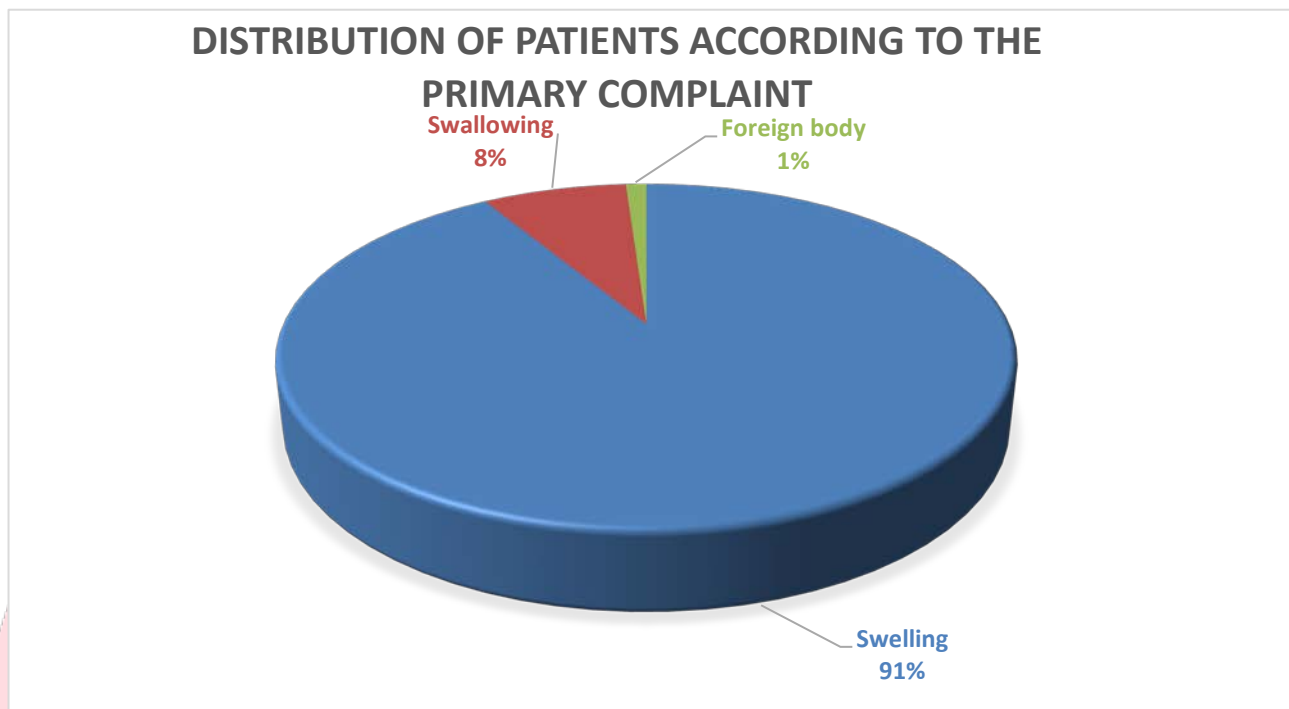


Figure 2 Distribution of patients according to the primary complaint

For the considered period in 47% of the patients the left parotid gland is involved, in 45.7% - the right one. Bilateral localization in the parotid glands was manifested in 1.3% of all examined patients (Fig. 3).

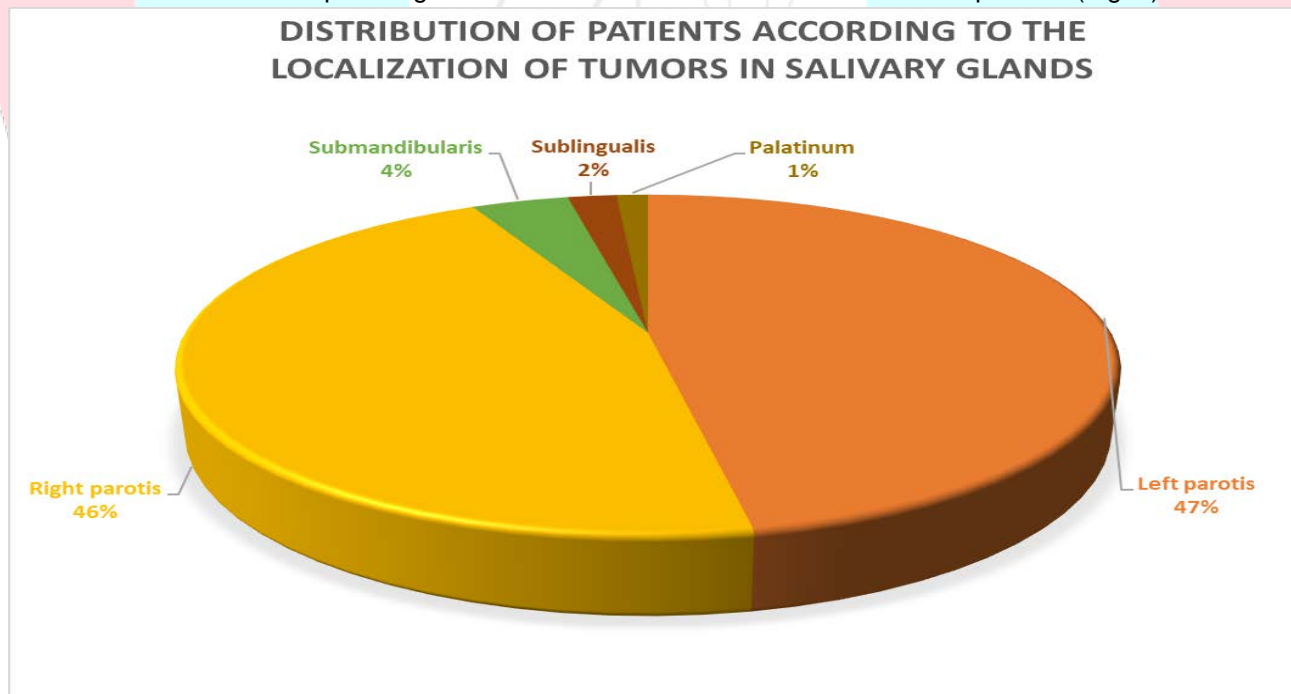


Figure 3. Distribution of patients according to the localization of tumors in salivary glands

All patients underwent laboratory blood tests, X-rays of the heart and lungs, and ultrasound examination of the salivary glands. In order to improve the diagnostic process, Computed Tomography and MRI were applied as an additional imaging examination. The incisional biopsy method is preferred for morphological diagnosis. The distribution of patients with salivary gland tumors according to the type of surgical interventions is as follows: total conservative parotidectomy - 90%, radical parotidectomy - 6%, enucleation - 2.7%, lateral parotidectomy - 1.4% (Fig. 4).

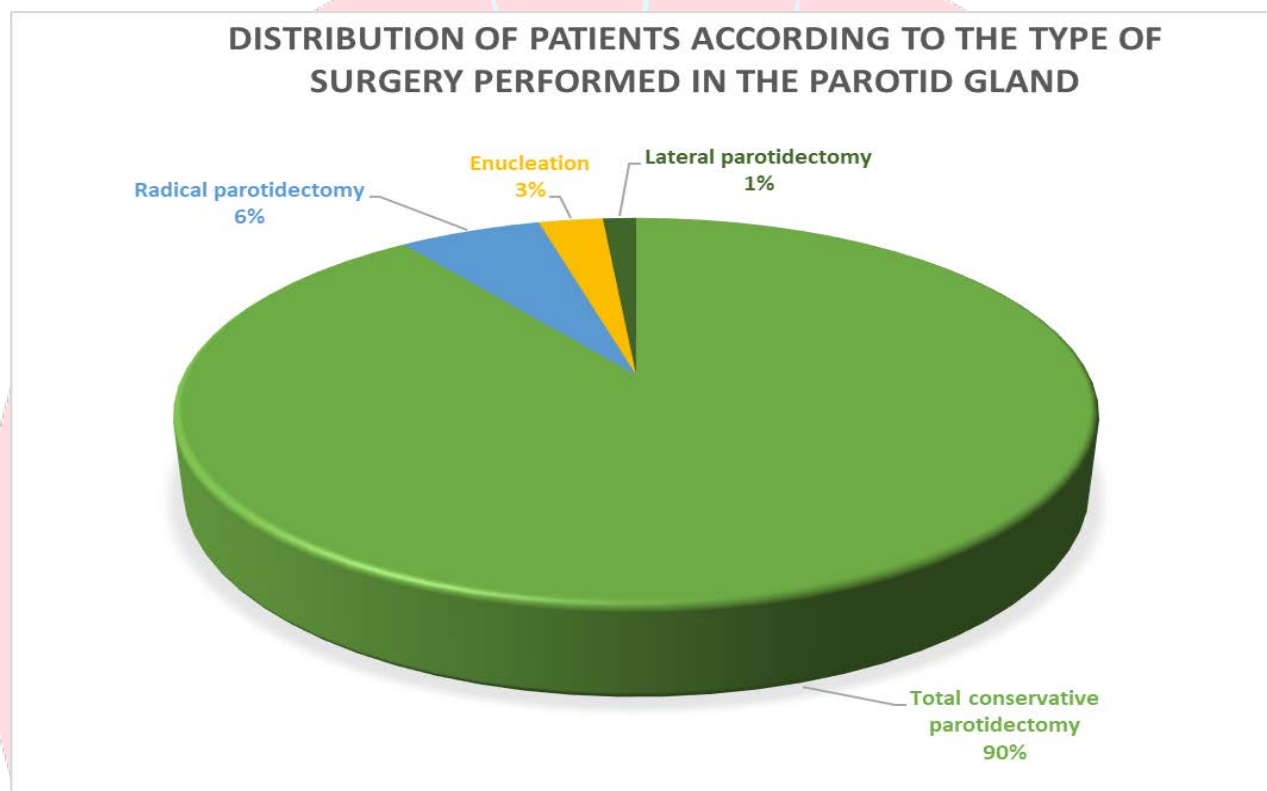


Figure 4. Distribution of patients according to the type of surgery performed in the parotid gland

In 89% of patients treated from 2007 to 2017, no transient paresis or paralysis was observed; 10.81% of them have such, including patients who underwent radical parotidectomy (6%) (Fig. 5). In 33% of patients the histological finding was pleomorphic adenoma, in 27% - cystadenolymphoma of Vartin; 10% of patients have a monomorphic adenoma.

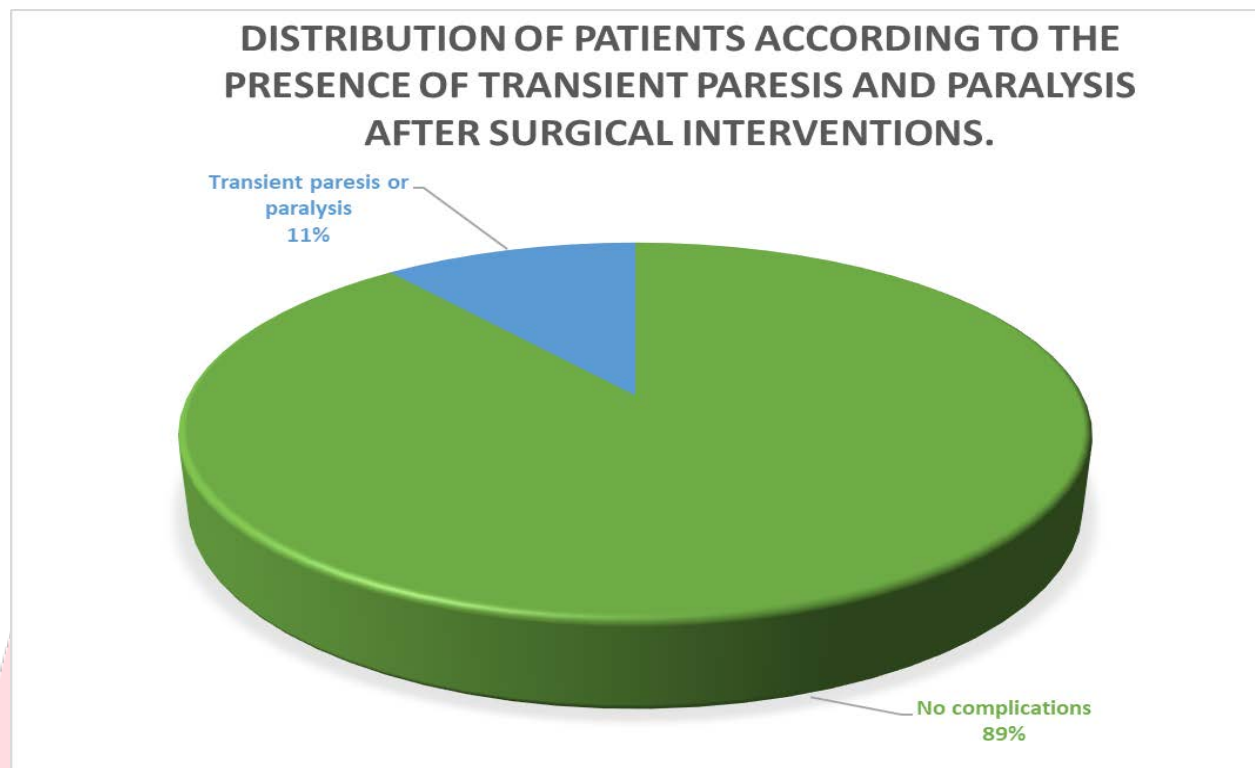


Figure 5. Distribution of patients according to the presence of transient paresis and paralysis after surgical interventions.

Discussion

Diagnostic Algorithm: In all patients suspected of having a tumor in the parotid gland, a thorough clinical examination is performed, including examination and palpation. The examination pays attention to the presence of facial asymmetry, a change in the color of the skin and mucous membranes. There is a change in the tone of the muscles and facial expressions. Tests are made to close the eyes, wink, whistle, wrinkle the forehead. Palpation determines the size of the formations, consistency, mobility and their relationship to the anatomical structures from which they originate, as well as to neighboring areas. The presence / absence of fixation of the proper skin or mucosa is specified. Bimanually, by massaging the gland, the patency of the salivary ducts is checked, as well as the amount and nature of the secreted saliva. Palpation looks for altered regional and cervical lymph nodes.

When abnormalities are found in the examined areas, ultrasound examination of the large salivary glands and the cervical region is performed to specify the changes in the size and structure of the glands and lymph nodes (8). The study is done bilaterally and symmetrically. In case of unclear findings and unresolved issues in the previous methods, as well as depending on the type of affected salivary gland, additional imaging studies are performed.

Contrast-enhanced MRI and CAT is the method of choice for tumor processes involving the large salivary glands (9). For cytological verification in cyst-like formations in the parotid or submandibular salivary gland, TAB is used with or without ultrasound assistance (10).

Fine-needle biopsy is used in solid formations, as well as in inoperable tumors of the large salivary glands and submandibular gland.

Treatment Algorithm I: In the case of preliminary data for a benign variant of the tumor, a total conservative or lateral parotidectomy is performed with preservation of the facial nerve, depending on the location. Lateral parotidectomy is performed only on a small tumor located in the lower pole of the gland.

Postoperative follow-up of patients with benign tumors of the parotid gland includes clinical examination and ultrasound in year I - every three months; II - V year - once a year.

During the first year, recurrence is mainly monitored, as well as paresis and paralysis of the facial nerve (11). Surgical scarring and possible late complications are observed. The quality of life of the patient after surgery is of special interest. Control MRI and / or CT is performed 6 months after surgery.

Treatment Algorithm II: In case of suspicion of a malignant histological variant and after presenting the case for examination by the Oncology Committee, a combined treatment is used: surgical, radiation and chemotherapy. Proximity, perineural invasion and / or intraoperative involvement of the tumor capsule are additional indicators for the appointment of radiation and chemotherapy.

In patients without any neurological symptoms of the facial nerve, a total conservative parotidectomy is performed with preservation of the facial nerve.

Radical parotidectomy with resection of the facial nerve is performed in preoperative neurological symptoms (paresis or paralysis of the facial nerve).

In case of iatrogenic rupture of the facial nerve, a one-moment reconstruction (n. Suralis, n. Hypoglossus, n. Auricularis magnus) is performed.

Radical cervical lymph dissection is a method of treatment for lymph node involvement of I - V level. Prophylactic supraomohyoid lymph dissection (level I - III) is performed in adeno-adenoid cystic, mucoepidermoid and squamous cell carcinoma, as well as in malignant pleomorphic adenoma.

Clinical examination and ultrasound are performed monthly until the 6th month of surgery, every 2 months until the end of the first year, every 3 months until the end of the second year and every 6 months until the end of the fifth year. The presence of recurrences and persistence is monitored, as well as metastases in the regional lymphatic basin and distant ones.

X-rays of the lungs and heart and ultrasound of abdominal organs are appointed on the 6th month, and in the period I - V year - once a year. The control follow-up is standard after the 6th month of the operative treatment, and in case of significant changes even earlier. PET-CT is done between the 6th and 12th month.

Conclusion

Based on the analysis of the obtained results, developed algorithms could be applied for better diagnosis, treatment and follow-up of patients with salivary gland tumors. They refine the behavior and minimize treatment and diagnostic errors of clinicians treating such disease, also standardize follow-up, improve survival, and support a multidisciplinary therapeutic approach in patients with salivary gland tumors.

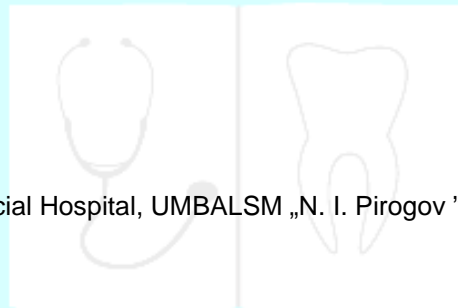
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