

A 10-year Retrospective Study of Salivary Glands Lesions in a Brazilian Population

Julia Nascimento de Mello,¹ Thays Teixeira de Souza,¹ Bruno Teixeira Gonçalves Rodrigues,¹ Carina Almeida Pires,¹ Thiago Moreira Pêsoa,¹ Ruth Tramontani Ramos,¹ Marília Heffer Cantisano,¹ Geraldo Oliveira Silva-Júnior¹

¹Department of Diagnosis and Therapeutics, School of Dentistry, State University of Rio de Janeiro, Rio de Janeiro, RJ, Brazil

• **Conflicts of interest:** none declared.

ABSTRACT

Objective: this study aimed to analyze the clinical characteristics of salivary gland lesions diagnosed in an Oral Medicine center in Brazil from 2010 to 2019. **Material and Methods:** the files describing all cases classified as salivary glands lesions at the Stomatology of the Polyclinic Piquet Carneiro of the State University of Rio de Janeiro from 2010 to 2019 (a 10-year period) were reviewed for the purposes of this study. Data were tabulated and analyzed descriptively and comparatively using Pearson's Chi-Square Test and Fisher's Exact Test using the Graph Pad Prism program (Version 6.07 by Windows, San Diego, California, USA), with a significance level of 5% ($p < 0.05$). **Results:** the analysis of 2,134 medical records - 166 (7.78%) presented with salivary glands lesions in which 117 were women (70.48%) and 49 men (29.52%); the mean age of patients was 39.30; the most common clinical lesion of the salivary glands observed was mucocele representing 59 cases (35.54%), followed by sialadenitis with 33 cases (19.88%). **Conclusions:** According to all data gathered in this work, we concluded that the salivary gland lesions show a low prevalence and affect more white female patients in the sixth decade of life.

Keywords: Salivary glands; Lesions; Stomatology; Oral medicine; Prevalence; Brazil.

Introduction

The salivary glands are exocrine glands responsible for the saliva production - a fluid that has digestive, immunologic and lubricating actions.¹ There are three pairs of major salivary glands in humans: the parotid, submandibular and sublingual glands, in addition to the large amount of minor salivary glands that are found dispersed throughout the oral cavity.¹⁻⁴ The minor salivary glands secrete only 10% of the total volume of saliva, however they secrete up to 70% of the produced mucus. The main function of the secreted saliva by these glands is to aid digestion, facilitates phonation and taste, pH management and dental integrity - as it acts an important role in the constant teeth remineralization - in addition to its local antimicrobial action provided by enzymes such as immunoglobulins, lysozymes, histamines and lactoperoxidase.¹

Innumerable are the diseases that may affect the salivary glands - from different etiology - such as those of a traumatic, inflammatory, neoplastic, autoimmune and developmental nature.² Clinically, these diseases manifest signs and symptoms that can be reported by the patient and/or observed by the professional, aiming for the differential diagnosis. When necessary and indicated, complementary exams are performed in order to obtain the definitive diagnosis.⁵

The performance of clinical procedures - such as an adequate acquisition of clinical data in anamnesis and a thorough physical examination as well as the correct indication for carrying out complementary exams - are of great importance to characterize a population group. Prevalence studies allow the real needs of a specific population to be established, in addition, it assists professionals in the elaboration of appropriate preventive actions and treatment plans.⁵

The main lesions that affect the salivary glands are caused either by viruses, bacterias, obstructive origin, autoimmune or neoplastic nature.^{2,3,5} However, despite the scarce literature with population studies on the prevalence of salivary glands pathologies² - including individualized case studies on malignant salivary diseases, perhaps due to the great complexity of clinical and anatomopathological characteristics that hinder the elaboration of its diagnosis.^{2,3,5,6}

Nevertheless, clinical history grants very specific characteristics for this pathologies group - the prevalence of correct answers found for the case's outcome is justified by the ease of only clinical based diagnosis. Thus, the objective of this study has a great clinical relevance as it will contribute with the prevalence data, which may characterize in a certain population, the knowledge of the clinical profile of the most common diseases that affect the salivary glands.

Therefore, due to the low number of epidemiological studies about this topic in the Brazilian population, this study aimed to analyze the clinical characteristics of salivary gland lesions diagnosed in an Oral Medicine center in Brazil from 2010 to 2019.

Material and Methods

This is a retrospective, observational and longitudinal study, approved by the Research Ethics Committee, under the CAAE protocol number: 84880317.8.0000.5259.

The files describing all cases classified as salivary glands lesions at the Stomatology of the Polyclinic Piquet Carneiro from 2010 to 2019 (a 10-year period) were reviewed for the purposes of this study.

Uncompleted files or cases in which the diagnosis of salivary gland lesions could not be confirmed were excluded

from the analysis. The information obtained from the clinic files included: age and sex, skin color, anatomical location, systemic changes and the use of medications. The lesions were classified according to their origin: traumatic, inflammatory, neoplastic, autoimmune or developmental (also in neoplastic and non-neoplastic).

Data analysis

Data were tabulated and analyzed descriptively and comparatively using Pearson's Chi-Square Test and Fisher's Exact Test using the Graph Pad Prism program (Version 6.07 by Windows, San Diego, California, USA), with a significance level of 5% ($p < 0.05$). The exact test evaluated differences between the biological behavior of oral lesions and their clinical and demographic characteristics, adopting a p-value of 0.05 and a 95% confidence interval.

Results

The analysis of 2134 medical records - 166 (7.78%) presented with salivary glands lesions. Furthermore, 90.96% were from a non-neoplastic nature and 9.04% were truly neoplasms confirmed by anatomopathological analysis. Table 1 shows the distribution and frequency of salivary gland lesions in this study.

Table 1. Distribution and frequency of 166 salivary gland lesions according to its type in between the 2010-2019 period.

Lesion	Frequency	%
Mucocele	59	35.54%
Sialadenitis	33	19.88%
Sjögren's syndrome	28	16.87%
Sialolithiasis	12	7.23%
Ranula	11	6.63%
Adenocarcinoma	6	3.61%
Salivary Duct Cyst	5	3.01%
Pleomorphic adenoma	4	2.41%
Secretory carcinoma	2	1.20%
Mucoepidermoid Carcinoma	2	1.20%
Adenoid Cystic Carcinoma	1	0.60%
Parotitis	1	0.60%
Cheilitis glandularis	1	0.60%
Necrotizing sialometaplasia	1	0.60%
Total	166	100%

The sample was composed of 166 cases diagnosed with salivary glands lesions - in which 117 were women (70.48%) and 49 men (29.52%). The mean age of patients was 39.30 (± 1.84) years (ranging from 0 to 83 years), with a statistically significant difference between the average age of male patients of 32.06 (± 0.70) years, ranging from 1 to 78 years and the

average age of female patients of 42.3 (± 2.18) years, ranging from 0 to 83 years ($p = 0.005$).

The most common clinical lesion of the salivary glands observed was mucocele representing 59 cases (35.54%), followed by sialadenitis with 33 cases (19.88%) and Sjogren's Syndrome with 28 cases (16.87%). In addition to these, other salivary glands lesions could be observed in the following order: sialolithiasis (7.23%), ranula (6.63%), low-grade polymorphous adenocarcinoma (3.61%), salivary duct cyst (3.01%), pleomorphic adenoma (2.41%), secretory carcinoma (1.20%), mucoepidermoid carcinoma (1.20%), cystic adenoid carcinoma (0.60%), infectious mumps (0.60%), cheilitis glandularis (0.60%) and finally, necrotizing sialometaplasia (0.60%). Figure 1 shows the clinical aspect of both rarely and commonly observed salivary glands lesions.

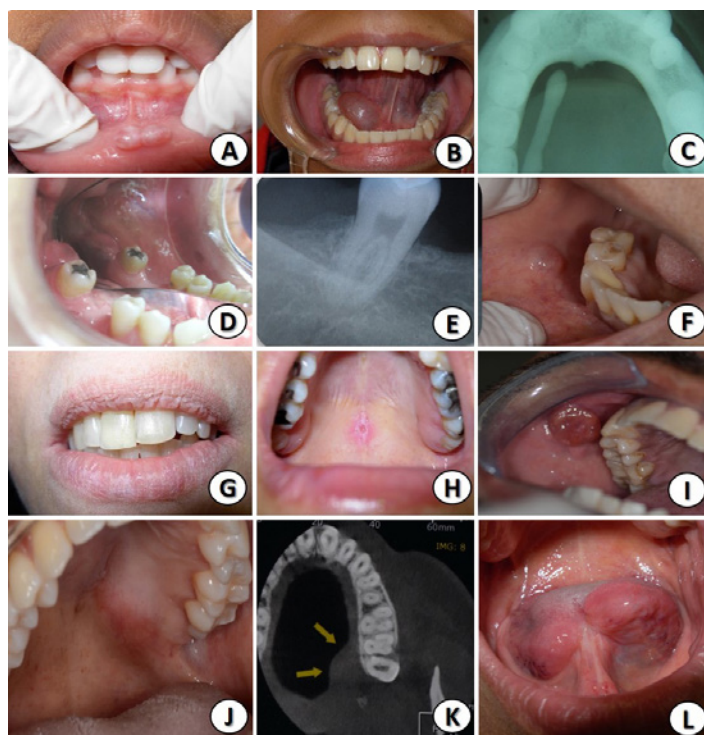


Figure 1. Clinical and radiographic aspects of salivary gland diseases. 'A' Mucocele in lower lip mucosa. 'B' Ranula. 'C' Occlusal X-ray of high proportion sialolithiasis modeling the Wharton duct. 'D' Indirect view of Mucoepidermal Carcinoma lingula. 'E' Periapical X-ray of right retro-molar region with rarefaction and bone absorption. 'F' Salivary duct cyst in cheek mucosa. 'G' Lip Xeroderma in Sjögren's Syndrome patient. 'H' Necrotizing sialometaplasia in median palatal rafe. 'I' Adenocarcinoma in cheek mucosa. 'J' Pleomorphic adenoma in soft palate. 'K' Cone-beam computed tomography of demarcated tumor lesion compatible with Pleomorphic adenoma. 'L' Cystic Adenoid carcinoma in floor of mouth.

Table 2 shows the distribution of the salivary gland lesions analyzed according to the gender variable. It is observed that only sialolithiasis shows prevalence for males, whereas mucocele, sialadenitis, Sjögren's syndrome, ranula, adenocarcinoma, salivary duct cyst, pleomorphic adenoma, mucoepidermoid carcinoma, infectious mumps, cheilitis glandularis and necrotizing sialometaplasia are frequently on females patients.

Table 2. Gender distribution of 166 salivary glands lesions.

Lesion	Female	%	Male	%
Mucocele	31	52.54%	28	47%
Sialadenitis	28	84.85%	5	15%
Sjögren's syndrome	26	92.86%	2	7%
Sialolithiasis	4	33.33%	8	67%
Ranula	9	81.82%	2	18%
Adenocarcinoma	5	83.33%	1	17%
Salivary Duct Cyst	4	80.00%	1	20%
Pleomorphic adenoma	4	100.00%	0	0%
Secretory carcinoma	0	0.00%	2	100%
Mucoepidermoid Carcinoma	2	100.00%	0	0%
Adenoid Cystic Carcinoma	1	100.00%	0	0%
Parotitis	1	100.00%	0	0%
Cheilitis glandularis	1	100.00%	0	0%
Necrotizing sialometaplasia	1	100.00%	0	0%
Total	117	70.48%	49	30%

Table 3 shows the distribution of 166 salivary glands lesions according to the skin color. It depicts that the vast majority these lesions (mucocele, sialadenitis, Sjogren's

Table 3. Ethnic distribution of 166 salivary glands lesions.

Lesion	White	%	Brown	%	Black	%	NS	%
Mucocele	26	44.07%	18	31%	13	22.03%	2	3.39%
Sialadenitis	18	54.55%	4	12%	10	30.30%	1	3.03%
Sjögren's syndrome	19	67.86%	3	11%	4	14.29%	2	7.14%
Sialolithiasis	8	66.67%	3	25%	1	8.33%	0	0.00%
Ranula	5	45.45%	2	18%	4	36.36%	0	0.00%
Adenocarcinoma	2	33.33%	1	17%	3	50.00%	0	0.00%
Salivary Duct Cyst	5	100.00%	0	0%	0	0.00%	0	0.00%
Pleomorphic adenoma	0	0.00%	3	75%	1	25.00%	0	0.00%
Secretory carcinoma	0	0.00%	0	0%	0	0.00%	2	100.00%
Mucoepidermoid Carcinoma	0	0.00%	2	100%	0	0.00%	0	0.00%
Adenoid Cystic Carcinoma	0	0.00%	0	0%	0	0.00%	1	100.00%
Parotitis	0	0.00%	0	0%	1	100.00%	0	0.00%
Cheilitis glandularis	1	0.00%	0	0%	0	0.00%	0	0.00%
Necrotizing sialometaplasia	1	0.00%	0	0%	0	0.00%	0	0.00%
Total	85	51.20%	36	22%	37	22.29%	8	4.82%

Syndrome, sialolithiasis, ranula, salivary duct cyst, cheilitis glandularis and necrotizing sialometaplasia) were more prevalent in white patients (51.20%), whereas the low-grade polymorphous adenocarcinoma showed a higher prevalence for black patients (50.00%). The pleomorphic adenoma - 3 cases (55.00%) observed on brown skin individuals and only 1 case (25.00%) on a black patient. The mucoepidermoid carcinoma presented 2 cases (100.00%) observed on brown skin patients, however the 2 cases diagnosed with secretory carcinoma, the skin color was not declared and, finally, the infectious parotitis with only 1 case (100%), the patient was black.

The distribution salivary glands lesions according to the variable age (Table 4) showed that mucocele was the most frequent in the first three decades of life; the ranula was commonly encountered in the second decade; the pleomorphic adenoma in the fourth; the mucoepidermoid carcinoma presented its 2 cases in the fifth decade. The sialadenitis, sialolithiasis, adenocarcinoma and infectious parotitis were most frequent in the sixth decade of life. Furthermore, Sjögren's syndrome showed a higher frequency between the sixth and seventh decades of life. The salivary duct cyst had a concentration of cases between the seventh and ninth decades, with a greater number of cases in the eighth. Secretory carcinoma had a case in the fourth and one in the seventh decade of life. The necrotizing sialometaplasia, as well as adenoid cystic carcinoma dissipated its cases in the seventh decade of life and the cheilitis glandularis in the eighth.



Table 4. Age group distribution (decade of life) of 166 salivary gland lesions.

Lesion	0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90
Mucocele	21	19	12	3	2	1	0	1	0
Sialadenitis	0	2	3	3	3	11	7	3	1
Sjögren's syndrome	0	1	0	2	3	8	8	6	0
Sialolithiasis	1	0	0	1	2	5	2	1	0
Ranula	3	5	1	2	0	0	0	0	0
Adenocarcinoma	0	0	0	0	1	3	2	0	0
Salivary Duct Cyst	0	0	0	1	0	0	1	2	1
Pleomorphic adenoma	0	0	0	3	0	1	0	0	0
Secretory carcinoma	0	0	0	1	0	0	1	0	0
Mucoepidermoid Carcinoma	0	0	0	0	2	0	0	0	0
Adenoid Cystic Carcinoma	0	0	0	0	0	0	1	0	0
Parotitis	0	0	0	0	0	1	0	0	0
Cheilitis glandularis	0	0	0	0	0	0	0	1	0
Necrotizing sialometaplasia	0	0	0	0	0	0	1	0	0
Total	25	27	16	16	13	30	23	14	2

Legend: NS- Not Stated.

Discussion

Epidemiology provides an understanding of the prevalence of salivary glands diseases in the analyzed population. The data obtained in epidemiological studies make it possible to plan preventive actions that aim at reducing the number of cases of certain pathologies, thus providing an improvement in the population's quality of life.²

This retrospective study analyzed the prevalence of salivary gland lesions in patients attended at the Stomatology of the Polyclinic Piquet Carneiro, between the years 2010 and 2019. The current literature regarding this subject is scarce, making comparison with other authors difficult and in general, published articles focus on lesions of neoplastic nature or at a specific type of disease.

A total of 2134 dental records were analyzed for this research in which 7.78% showed a salivary gland lesion diagnosis, a result slightly lower than those found by Souza *et al.*⁵ - which was 8.9% out of 125 records and Souto *et al.*⁶ reported a 13.4% of 762 cases. Both studies are of Brazilian origin, but from different regions, Souza *et al.*⁵ from the southeast region - as well as the study proposed here - and Souto *et al.*⁶ from the northeast region of Brazil.

From the data collected, we concluded that mucocele was the most prevalent lesion among the others, which is in accordance with the literature.^{2,3,6,7} The prevalence of this pathology was of 35.54% in this research, whereas Amadeu *et al.*⁸ reported 84.55% - in relation to all salivary glands' pathologies in their work - and Souto *et al.*⁶ pointed out a

62.7% frequency. A slight predilection for the female sex was noted in this study, differently from what was noticed by Bettio *et al.*² that reported no significant sex predilection in their research. Bezerra *et al.*⁷ found a slight predilection for females, - thus, highlighting how the sex variable can differ from one study to another.⁷ Analyzing the ethnic variable, a predilection for the white-skinned was observed, as also reported by Bezerra *et al.*⁷ Regarding the age variable, the most affected were the first three decades of life, with a slight prevalence for the first decade, which is in line to what was signaled by Bettio *et al.* and Bezerra *et al.*^{2,7}

Sialadenitis was the second most frequent lesion - 33 cases (18.88%) - and showed a significant predilection for white-skinned female patients in the sixth decade of life, in contrast to what was reported by Bettio *et al.*² - only 2 cases, 50% female, which affected the fourth and seventh decade of life.

The third most frequent lesions was Sjögren's Syndrome, showing 28 cases (16.87%) and a strong predilection for females - which is in accordance with the literature.^{4,9} The most affected ethnic group were the white-skinned and regarding the age variable, the sixth and seventh. This pathology can be associated with any autoimmune disease, among them the most frequent association is rheumatoid arthritis, in addition its secondary form can affect 30% of patients with systemic lupus erythematosus.⁴ Bettio *et al.*² reported only a single case of this syndrome, in contrast to what was observed with this study. The largest number of cases in our research may be explained due to the fact that there is a specialized clinic of

Rheumatology at the same center we attend, where many patients are referred to Oral Medicine (Stomatology) in order to establish the diagnosis and/or treat its oral manifestations such as xerostomy.

According to the literature, sialoliths show higher prevalence for the male and adult patients^{4,10} differently from what was observed within this study. There was a predilection for the white-skinned in the sixth decade of life.

According to Silva-Junior,⁴ the ranula shows predilection for children and young adults, as also observed in this study. The female sex had a significant incidence among the second decade of life.

The salivary duct cysts represent 10% of all salivary gland cysts¹¹ and show a higher incidence in adults⁴. Our study presented 4 cases affecting white-skinned female patients - what is not in accordance with what Vinaychandran and Sankarapandian,¹¹ as they reported no significant sex predilection for this lesion. The affected patients presented a large age range varying from the fourth to the ninth decade of life.

Other non-neoplastic pathologies related to the salivary glands, such as parotitis, cheilitis glandularis and necrotizing sialometaplasia showed a low incidence with only 1 case each. Regarding mumps, the literature states that it affects more middle-aged females¹² as was also observed in this study. Cheilitis glandularis is commonly found in males between middle age and the elderly⁴ however, the only reported case in this study was a female and elderly patient. Necrotizing sialometaplasia is a relatively rare lesion¹³ and most frequently found in males, commonly in the fifth decade of life¹⁴ in contrast to the case analyzed in this study, that was a woman in the seventh decade of life.

The salivary glands tumors represent between 1-10% of all head and neck neoplasms.^{3,15,16,17,18,19,20,21} Among the 166 records selected in this study, 9.04% had a neoplastic nature. The most frequent tumor was the adenocarcinoma - representing 6 cases - followed by the pleomorphic adenoma - 4 cases -, secretory carcinoma with 2 cases, 2 cases of mucoepidermoid carcinoma and cystic adenoid carcinoma showed only 1 case. The literature states that the mucoepidermoid carcinoma is one of the most common malignant tumors of the salivary glands,^{3,16,18,20}

however in this study, we reported the adenocarcinoma as the most frequent salivary malignant tumor. Bettio *et al.*², Vasconcelos *et al.*¹⁹ and Korba *et al.*²¹ reported the pleomorphic adenoma as the most frequent benign tumor - our study also associated the pleomorphic adenoma as the most common benign tumor diagnosed. Bettio *et al.*² and Vasconcelos *et al.*¹⁹ also proposed that the adenoid cystic carcinoma would be the most frequent malignant tumor followed by the mucoepidermoid carcinoma - which is in agreement with our results.

Adenocarcinoma is commonly diagnosed in females between the second and seventh decade of life⁴ - our study found this same association. The pleomorphic adenoma shows predilection for females around the sixth decade of life^{2,19,21} - which can be related to this study, even with our low casuistry, however 3 of our cases occurred in the fourth decade of life. According to Oliveira *et al.*¹⁸ mucoepidermoid carcinoma presents a higher frequency in females between the third and sixth decade of life. Ellies and Laskawi²⁰ stated that mucoepidermoid carcinoma is rare in the child population, showing a higher incidence in the second decade - the two cases analyzed in this study were females in the fourth decade of life.

The epidemiological data observed within this study reinforce the evidence presented in the literature, which highlights the low prevalence of salivary glands lesions.

Conclusion

According to all data gathered in this work, we concluded that the salivary gland lesions show a low prevalence - those of neoplastic origin are even less frequent, although it is extremely important that the dentist acquire the necessary knowledge to carry out their proper diagnosis and treatment - affecting more white female patients in the sixth decade of life.

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References

1. Borges ET, Abreu JM, Suarez EP, Hernández YR. Current considerations about dry mouth syndrome. *Rev Med Electrón.* 2016;36:583-95.
2. Bettio A, Salgado G, Azevedo-alanis LR, Machado MAN, Grécio ANT, Lima AAS. Prevalence of salivary gland lesions in histopathological reports from the PUCPR experimental pathology laboratory in the period of 1999-2008. *Rev sul-bras odontol.* 2009;6:231-6.
3. Shhadiabbas F, Akbarzadeh A, Kardouni P. Salivary gland tumors: a 15-year report from Iran. *Turk Patoloji Derg.* 2016;32:35-9.
4. Silva-junior A. Salivary gland pathology. In: Neville BW, Damm DD, Allen CM. *Patologia oral & maxilofacial.* Rio de Janeiro: Guanabara Koogan;2016;p.

455-501.

5. Souza JGS, Soares LA, Moreira G. Diagnostic of oral lesions frequency in a clinical dental university. *Rev Cubana Estomatol.* 2014;51:43-54.
6. Souto MLS, Piva MR, Martins-filho PRS, Takeshita WM. Maxillofacial lesions: a survey of 762 cases from the Federal University of Sergipe, Brazil. *Rev Odontol UNERP.* 2014; 43:185-190.
7. Bezerra TMM, Monteiro BVB, Henriques ACG, Carvalho MV, Nonaka CFW, Miguel MCC. Epidemiological survey of mucus extravasation phenomenon at an oral pathology referral center during a 43 year period. *Braz j otorhinolaryngol.* 2016; 82:536-42.

8. Amadeu JK, Schussel JL, Schussel P, Torres- pereira C, Amenábar JM. Oral and maxillofacial complex lesions in adolescents a retrospective study of 20 years. *Int J Odontostomatol.* 2015; 9:113-8.
9. Gupta S, Gupta N. Sjögren syndrome and pregnancy: a literature review. *Perm J.* 2017;21:16-7.
10. Cobos MR, Muñoz ZC, Caballero AD. Sialoliths in conducts and salivary glands: literature review. *Avances en odontoestomatología.* 2009;25: 311-7.
11. Vinayachandran D, Sankarapandian S. Salivary Duct Cyst: Histo-pathologic Correlation. *J Clin Imaging Sci.* 2013;3:3.
12. Saibaba M, Srinivas K, Patil S, Ganganna K. Chronic recurrent nonspecific parotitis: a case report and review. *Ethiop J health Sci.* 2017;27:95-100
13. Gutiérrez OG, Erazo J, Lagos LP, Pozo JA. Necrotizing sialometaplasia: case report and literature review. *Rev. Chilena de Cirugía.* 2016;69: 252-5.
14. Lima MA, Rocha LC, Siqueira LMS, Carmo LC, filho JH. Cystic of necrotizing sialometaplasia in sublingual salivary gland. *Rev. Bras. Otorrinolaringol.* 2002; 68:276-9.
15. Mariano RC, Oliveira MR, Silva AC, Mariano LCF, Vargas PA, Almeida OP. Papillary mucinous cystadenocarcinoma: rara malignant tumor in minor salivary gland. *Rev. Gaúch. Odon-tol.* 2016; 64:207-11.
16. Gomes DQC, Silva MFA, Pereira JV, Bento PM, Figueiredo RLQ, Miguel MCC. Mucoepidermoid carcinoma of the retromolar region: report of a clinical case. *Rev. Gaúch. Odontol.* 2015; 63:103-8.
17. Guevara-canales JO, Morales-vadillo R; Gusmán-Arias G, Cava-vergiú CE, Guerra-miller H, montes-gil JE. Mucoepidermoid carcinoma of the salivary glands: a retrospective study of 51 cases and review of the literature. *Acta Odontol. Latinoam.* 2016;29:230-8.
18. Oliveira LR, Soave DF, Oliveira-costa JP, Di Matteo MAS, Ribeiro-silva A. Mucoepidermoid carcinoma of the salivary glands in Brazil: clinicopathological outcomes and brief review. *Rev Cubana Estomatol.* 2012; 26:136-45.
19. Vasconcelos AC, Nör F, Meurer L, Salvadori G, Souza LB, Vargas PA, Martins MD. Clinicopathological analysis of salivary gland tumors over a 15-year period. *Braz Oral Res.* 2016; 30:1-7.
20. Ellies M, Laskawi R. Diseases of the salivary glands in infants and adolescents. *Head & Face Medicine.* 2016; 6:1-3.
21. Korba M, Chloupek A, Dabrowski J, Pietka T, Domanski W, Lesniak W. Pleomorphic adenoma. The results of a retrospective analysis of 104 patients treated at the clinical department of cranio-maxillofacial surgery, clinic of otolaryngology and laryngology oncology of the military institute of medicine. *Otolaryngol Pol.* 2017; 71:33-6.

Mini Curriculum and Author's Contribution

1. Julia Nascimento de Mello - Undergraduate Student in Dentistry. Contribution: Preparation, writing, and review of the manuscript. ORCID: 0000-0002-3809-2807
 2. Thays Teixeira de Souza - DDS; MsC. Contribution: Preparation, writing, and review of the manuscript. ORCID: 0000-0002-5957-3239
 3. Bruno Teixeira Gonçalves Rodrigues - DDS. Contribution: Preparation, writing, and review of the manuscript. ORCID: 000-0001-7678-2588
 4. Carina Almeida Pires - DDS. Contribution: Review of the manuscript. ORCID: 0000-0003-1632-0423
 5. Thiago Moreira Pêsoa - DDS; MsC. Contribution: Review of the manuscript. ORCID: 0000-0002-4596-9478
 6. Ruth Tramontani Ramos - DDS; PhD student. Contribution: Review of the manuscript. ORCID: 0000-0001-8202-4855
 7. Marília Heffer Cantisano - DDS; PhD. Contribution: Review of the manuscript. ORCID: 0000-0002-3121-295X
 8. Geraldo Oliveira Silva-Júnior - DDS; PhD. Contribution: Preparation, writing, and review of the manuscript. ORCID: 0000-0003-0987-2684
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Corresponding author:

Geraldo Oliveira Silva-Junior

E-mail: silvajuniorgo@gmail.com

