

## *Twists and Turns of Peritonsillar Abscess*

Received Date: 09.05.2023, Accepted Date: 23.06.2023

DOI: 10.56484/iamr.1294398

Caleb MANYA<sup>1,a,\*</sup>, Eche John OCHAI<sup>2,b</sup>, Rufai MAINASARA<sup>1,c</sup>,

Maisallah Mohammad JAFAR<sup>1,d</sup>, Abubakar Abubakar ABDULMUMINI<sup>1,e</sup>

<sup>1</sup> Federal Medical Centre, Department of Ear, Nose And Throat Surgery, P O Box 01008,  
Gusau, Zamfara State, Nigeria.

<sup>2</sup> Federal Medical Centre, Department of Paediatrics, P O Box 01008,  
Gusau, Zamfara State, Nigeria.

<sup>a</sup> ORCID: 0000-0003-2570-8606, <sup>b</sup> ORCID: 0009-0008-2348-071X

<sup>c</sup> ORCID: 0009-0004-9059-1672, <sup>d</sup> ORCID: 0009-0000-0536-264X

<sup>e</sup> ORCID: 0009-0001-6810-3861,

### Abstract

**Objective:** *The presence of untreated pus within the peritonsillar space can herald the occurrence of various clinical scenarios that could be difficult to describe. In this article we discuss the “TWISTS AND TURNS OF PERITONSILLAR ABSCESS” we have met in the Northwestern region of Nigeria that have not yet been reported in the literature and to compare the means of symptom duration at presentation among study groups.*

**Material and Methods:** *It is a retrospective study. A total number of 25 patients formed the study population (N) and were classified into three: Group 1 included patients who presented early with peritonsillar Abscess and had expected clinical course following treatment. Group 2 included patients who presented late and thus had one twist or the other from the usual presentation. Group 3 included patients who died.*

**Results:** *The mean age = 24 ± 11 years. Sore throat, dysphagia and fever were the most common symptoms. Asymmetrically enlarged tonsil was the most common oropharyngeal finding with occasionally occurring twists and turns such as gangrenous tonsil, auto-tonsillectomy, and severely bleeding tonsil.*

**Conclusion:** *Peritonsillar abscess (PTA) constitutes a relentless infection that needs urgent, adequate treatment based on acceptable methods, delay in presentation can herald the occurrence of pathologies that could be difficult to interpret.*

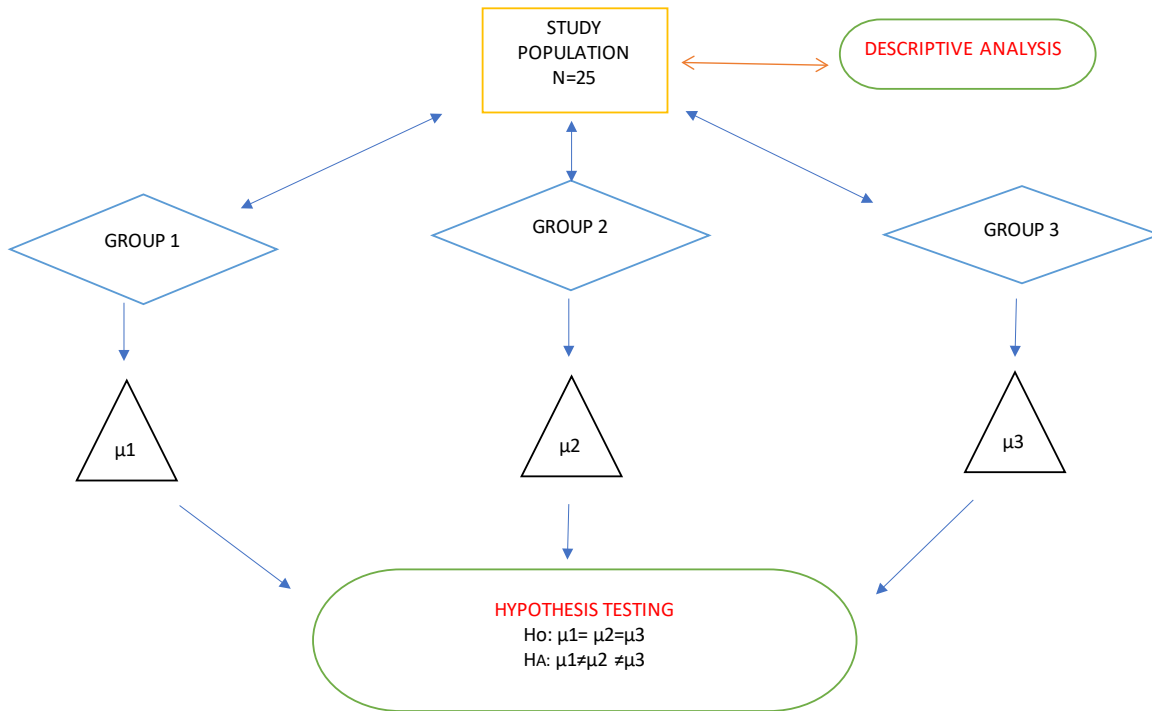
**Key Words:** Peritonsillar Abscess, Auto-tonsillectomy, Gangrenous tonsil.

## **Introduction**

Peritonsillar abscess (PTA) first described in the 14<sup>th</sup> century, is a commonly encountered pathology in ORL practice even in current antibiotic era<sup>1,2</sup>. It is a localized collection of pus within the tonsillar fossa between tonsillar capsule and superior constrictor muscle<sup>3-6</sup>. Presence of untreated pus within the peritonsillar space can herald the occurrence of various clinical scenarios and complications related to wide spread of infection to the heart ( carditis), brain (brain abscess) , various neck abscesses, Lemierre's syndrome<sup>7</sup>. In this article we describe the “*TWISTS AND TURNS OF PERITONSILLAR ABSCESS*” we have met in the Northwestern region of Nigeria that have not yet been reported in the literature and to compare the means of symptom duration at presentation among study groups.

## **Material and Methods**

It is a retrospective study done at Federal Medical Centre (FMC), Gusau between November 2020-April 2022. A total number of 25 patients formed the study population (N) and were classified into three groups: Group 1 formed of patients who presented early with peritonsillar Abscess (PTA) and had expected clinical course following treatment (n=14). Patients in Group 2 presented late and had one twist or the other from the usual presentation (n=9). Group 3 were patients who died (n=2). We retrieved clinical records of the patients from the ENT department of the Federal medical Centre, Gusau. The patient's age, gender, occupation, level education, symptoms and duration at presentation, oropharyngeal findings, clinical course of PTA were documented into a Microsoft Excel proforma, and the data was analyzed using SPSS version 25. Microsoft Excel was used for visualization. ANOVA was done to compare the means ( $\mu$ ) of symptom duration between groups 1,2 and 3, other results were presented in descriptive form. Only patients with positive oropharyngeal test aspirate considered to have PTA and those who had unusual twist relating to PTA were included in the study. See the flowchart below for summary.



## Results

Age range was 2-40 years with modal age group of 21-30 years and mean age of  $24 \pm 11$  years. Females were 17 (68%) and males 8 (32%) with M:F ratio 1:2.1 There is high illiteracy among the study population, up to (60%) had no formal education with most also not gainfully employed (68%), see table I. The most common symptoms were sore throat, dysphagia and fever noted in 100%, 100% and 60% respectively (Figure 1). Asymmetrically enlarged tonsil was the most common oropharyngeal finding seen in (52%), see figure 2. Group 1 had expected clinical course following treatment (56%), group 2 had occasionally occurring twists and turns such as gangrenous tonsil 4%, Auto-tonsillectomy (8%) and severely bleeding tonsil (4%) and group 3 were patients who died (8%), see figure 3.

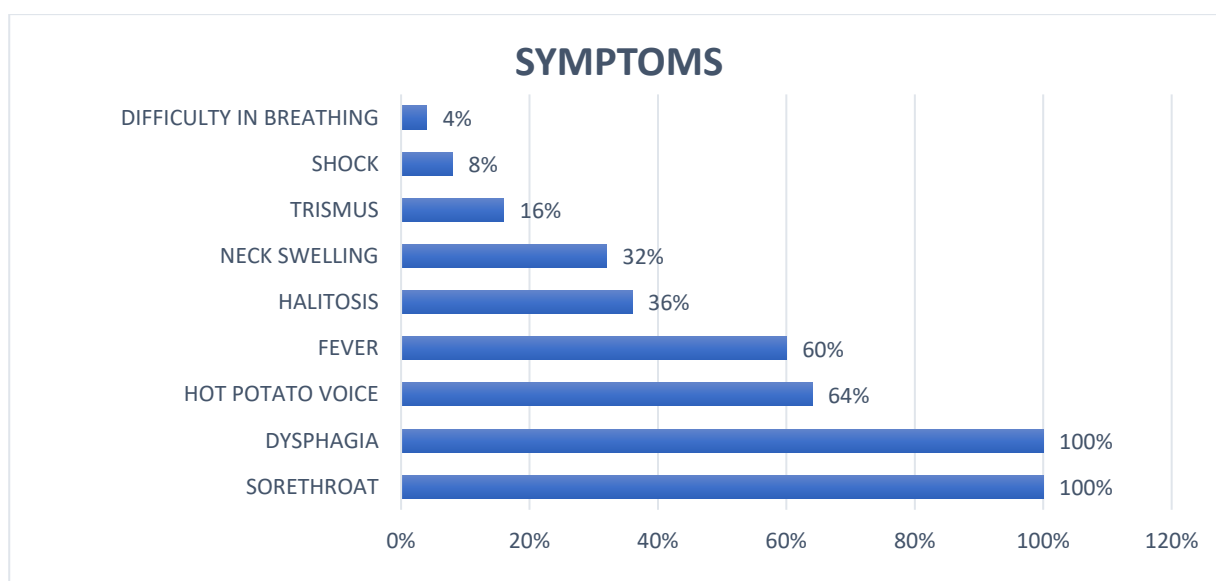
A one-way ANOVA to compare  $\mu_1$ ,  $\mu_2$  and  $\mu_3$  was done and there was a statistical difference.  $F(2,22) = 24.3$ , ( $p=0.000$ ) at 95% CI,  $\alpha \leq 0.005$ , a Turkey post-Hoc test revealed statistical difference between  $\mu_1$  and  $\mu_2$  ( $p=0.000$ ), between  $\mu_1$  and  $\mu_3$  ( $p=0.000$ ) but no statistical difference between  $\mu_2$  and  $\mu_3$  ( $p=0.078$ ). Eta- squared,  $\eta^2 = (SS \text{ between groups}) / (SS \text{ total}) = 829 / 1203 = 0.69$ , therefore we reject the HO hypothesis. See table II, III and figure 4.

**Table 1.** Demographics

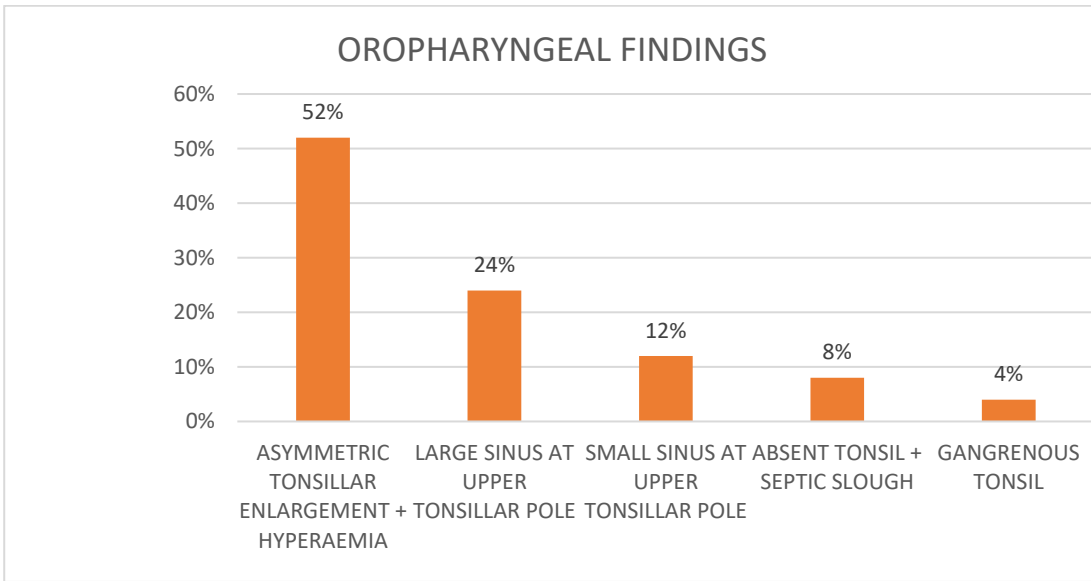
VARIABLES	FREQUENCY (N)	PERCENTAGE (%)
<b>AGE</b>		
1-10	3	12
11-20	6	24
21-30	9	36
31-40	7	28
<b>TOTAL</b>	<b>25</b>	<b>100%</b>
<b>GENDER</b>		
MALE	8	32
FEMALE	17	68
<b>TOTAL</b>	<b>25</b>	<b>100%</b>
<b>EDUCATIONAL STATUS</b>		
PRESCHOOL	1	4
NO FORMAL EDUCATION	15	60
PRIMARY LEVEL	7	28
SECONDARY LEVEL	1	4
TERTIARY LEVEL	1	4
<b>TOTAL</b>	<b>25</b>	<b>100%</b>
<b>OCCUPATION</b>		
NOT GAINFULLY EMPLOYED	17	68
FARMING	1	4
BUSINESS	2	8
CHILD*	5	20
<b>TOTAL</b>	<b>25</b>	<b>100%</b>

\*Not within the working age group.

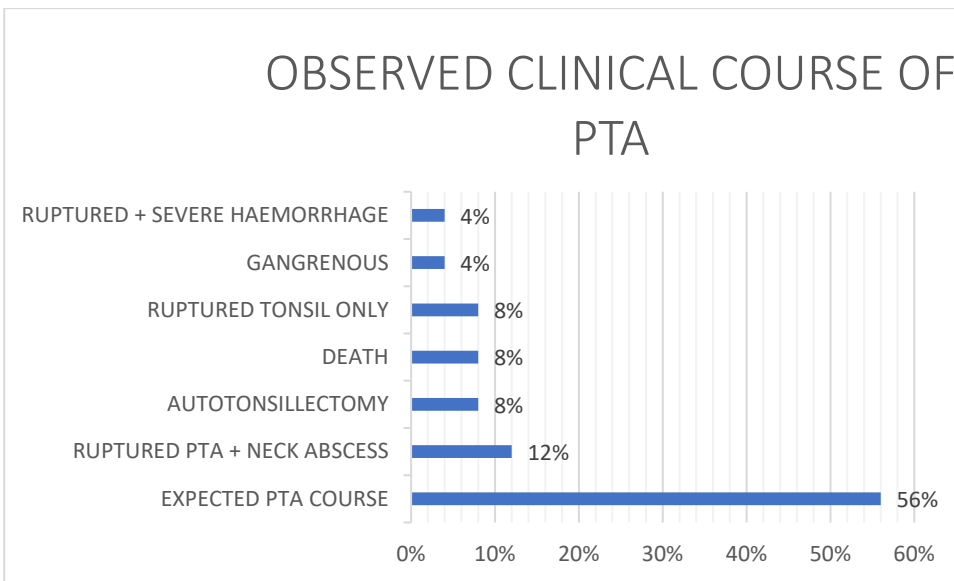
**Figure 1.** Symptoms



**Figure 2: Oropharyngeal Findings**



**Figure 3: Observed Clinical Course of Pta.**



**Table 2: Oneway Anova**

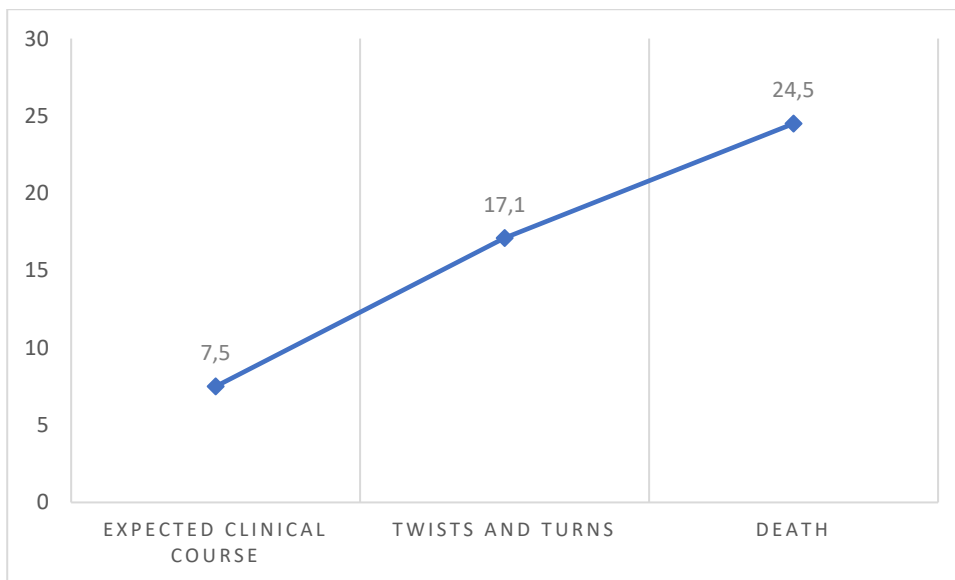
	<i>Sum of squares</i>	<i>df</i>	<i>Mean square</i>	<i>F</i>	<i>Sig.</i>
<i>Between Groups</i>	828.551	2	414.276	24.311	0.000
<i>Within Groups</i>	374.889	22	17.040		
<i>TOTAL</i>	1203.440	24			

**Table 3. Turkey Post-Hoc, Multiple Comparism**

(I) Disease Category	(J) Disease category	Mean Difference (I-J)	Std. Error	Sig
Expected clinical course.	Twists	-9.611*	1.764	.000
	DEATH	-17.000*	3.120	.000
Twists	Expected clinical course.	9.611*	1.764	.000
	DEATH	-7.389	3.227	.078
DEATH	Expected clinical course.	17.000*	3.120	.000
	Twists	7.389	3.227	.078

\*. The mean difference is significant at the 0.05 level.

**Figure 4: Mean Plot Of Symptom Duration In Days**



## Discussion

Peritonsillar Abscess (PTA) also called quinsy is a common pathology in otorhinolaryngological practice in our environment as we have treated 25 cases within 17 months compared to 24 cases seen over 12 years at Usmanu Danfodiyo University Teaching hospital Sokoto in earlier study<sup>8</sup>, this could be because there is another hospital within the same city rendering ENT services at secondary level so the patients are shared, however similar disparity in frequency of PTA occurrence exist throughout Nigeria as 87% of otorhinolaryngologist practicing in Nigeria who responded to a survey on management policy of PTA reported that it is not a frequent pathology<sup>9</sup>. Looking at other tropical countries such as Brazil a much higher frequency was reported almost similar to that reported in parts of Europe and east Asia<sup>10,11,12</sup>. In this study the mean age of presentation is  $24 \pm 11$  years, 12% of our patients were children between 1-10 years and the modal age group is 21-30 years old, this is similar to the study from a neighboring state, Sokoto<sup>8</sup>, and this may be due to strong similarities in factors relating to environment, culture and health care seeking behaviors of patients from North-Western Nigeria. There is a slight females' preponderance in this study (M: F= 1:2.1) however equal or males' preponderance have been reported (M: F = 1:2.1)<sup>3,8,11,13</sup> generally speaking tropical countries experience lower frequencies of PTA compared to some European countries even though high temperatures have been reported to have a positive correlation with PTA,<sup>10</sup> therefore other factors relating to lifestyle of the people could play a significant role in the occurrence of PTA. Jochen et al who treated about 680 cases of PTA identified smoking as one of the likely factors<sup>11</sup>.

Patients typically present with symptoms like that experienced in tonsillitis, sore throat, dysphagia, hot potato voice and fever were the most common, this is similar in recent or old studies,<sup>4,8,14</sup> others include trismus, halitosis, difficulty in breathing and shock and the presence of which should alert the attending physician to possibility of this pathology called peritonsillar abscess not a straightforward tonsillitis.

A careful physical examination would usually reveal an asymmetrically enlarged tonsil with hyperemia and a displaced uvular, this is expected to hold for patients who present early, however in those who present late for one reason, or the other, additional findings could be seen and sometimes difficult to describe in recognized medical terms, this formed the bedrock of the twists and turns of peritonsillar abscess in this literature. We have seen absent tonsil in 8% of our patients with pus and septic slough on the tonsillar bed resembling post-tonsillectomy patient, in our clinical notes we wrote amputated tonsil initially as the diagnosis but we were not satisfied about the

nomenclature and so we thought of a better term to describe what possibly happened entirely, we therefore coined the term AUTO-TONSILLECTOMY to describe the spontaneous removal or entire separation of the tonsil from its bed due to relentless and untreated peritonsillar abscess with subsequent expulsion or aspiration. Another finding was that of a gangrenous tonsil with pus but still within tonsillar bed and finally ruptured peritonsillar abscess with severe hemorrhage with rapidly expanding neck and chest swellings plus upper airway obstruction and shock, this type of severe spontaneous hemorrhage is ominous signs that have well been documented in the early 20th century with high mortality,<sup>15</sup> our patient survived after tracheostomy, hot tonsillectomy, and blood transfusion. Spontaneous rupture of PTA is well described in other literatures and the resulting sinus vary from small to large seen at the upper tonsillar pole<sup>8,16,17</sup>. (fig 2)

Early presentation and adequate treatment of peritonsillar abscess is the key to preventing these complications, we grouped our patients in to 3 groups depending on the clinical course of PTA. Group 1 comprised of those patients who presented early and had expected clinical course following needle aspiration, antibiotics, steroids and IV fluids, group 2 comprised of patients who presented late and had twists and turns of PTA, group 3 are those who died. Their mean ( $\mu$ ) duration at presentation in days are: ( $\mu_1$ ) = 7.5, ( $\mu_2$ ) = 17.1 and group 3 ( $\mu_3$ ) = 24.5. ANOVA showed statistical difference between the groups ( $p=0.000$ ), Turkey post Hoc showed a statistical difference between group 1 and group 2 ( $p=0.000$ ), and also between group 1 and group 3 ( $p=0.000$ ) but not between group 2 and group 3 ( $p=0.78$ ) therefore the best mean time for patients to have excellent outcome is 7.5 days any further delay pushes the patient to have either twists and turns of PTA or death. The size effect of symptom duration at presentation calculated using Eta-squared = 0.69 and considered large and further shows that up to 69% of complications of PTA in this study is attributable to symptom duration at presentation.

44% of patients stayed much longer at home<sup>4,8</sup> Tetsuo et al established that symptom duration was longer in patients with rare bilateral PTA<sup>16</sup>. In our environment some of the reasons why patients present late could be because of reliance on traditional or religious alternative treatments to orthodox medicine, ignorance, poverty, and unwanted quacks input.

Further areas of study should focus on host immune response, bacterial strains among others to see why patients in our environment try to expel tonsil affected by PTA within 4 weeks if not adequately treated. Tetsuo et al reported a much higher range of duration at presentation 0-67 days but have not met spontaneous expulsion of tonsil as seen in this study.



## Conclusion

Peritonsillar abscess (PTA) constitutes a relentless infection that needs urgent, adequate treatment based on acceptable methods, delay in presentation can herald the occurrence of pathologies that could be difficult to interpret.

## References

1. Gupta G, McDowell RH. Peritonsillar Abscess. In: StatPearls. Statpearls Publishing, Treasure Island (FL); 2022. PMID 30137805
2. Scott P. Stringer, Steven D. Schaefer, Lanny G. Close. A randomized Trial of outpatient management of peritonsillar Abscess. *Arch Otolaryngol Head Neck Surg* 1988; 114: 296-298
3. Waheed A.A, Gabriel T.O, Aluko A. A. Clinical profile and Management of Peritonsillar Abscess in Sub Saharan Africa. *International Journal of Innovative Research in Medical Science (IJIRMS)*. 2020;5 (1): 5-9
4. Olusola A.S, Emmanuel A. O. Management of Peritonsillar Abscess in A tertiary Hospital in Southwest Nigeria. *Ann Afr Surg*. 2022; 19 (2): 68-72
5. Maharaj D, Rajah V, Hemsley S. Management of peritonsillar abscess. *The Journal of Laryngology and Otology*. 1991; 105: 743-745
6. Tejs Ehlers K, Maria Rusan, Kurt Fuursted, Therese Ovesen. Pertonsillar Abscess; Complication of Acute Tonsillitis or Weber's glands Infection? *Otolaryngology-Head and Neck Surgery*. 2016; 155 (2): 199-207
7. Klug, T.E., Greve, T. & Hentze, M. Complications of peritonsillar abscess. *Ann Clin Microbiol Antimicrob* 19, 32 (2020). <https://doi.org/10.1186/s12941-020-00375-x>
8. Stanley B Amutta, Mohammed Abdullahi, Daniel Aliyu, Joshua C Okoro. Peritonsillar abscess: Pattern and treatment intervention in a tertiary health institution in Sokoto metropolis. *International Journal of Medical and Health Research*. 2018; 4 (10): 149-152
9. Kodiya AM, Ngamdu YB, Sandabe BM, Isa A, Garadawa HI. Management Strategies of Peritonsillar Abscess in the Tropics: A Survey of Surgeons' preference. *Indian J Otolaryngol Head Neck Surg*. 2014 Jun; 66 (2): 127-30. doi: 10.1007/s12070-012-0540-7
10. Freire, G., Dos Santos, J., Rolón, P., Pinheiro, G., & Sampaio, A. (2017). Peritonsillar abscess: Epidemiology and relationship with climate variations. *The Journal of Laryngology & Otology*, 131(7), 627-630. doi:10.1017/S0022215117000895
11. Windfuhr, J.P., Zurawski, A. Peritonsillar abscess: remember to always think twice. *Eur Arch Otorhinolaryngol* 273, 1269–1281 (2016). <https://doi.org/10.1007/s00405-015-3582-0>

12. Wang Y-P, Wang M-C, Lin H-C, Chou P (2014) The Impact of Prior Tonsillitis and Treatment Modality on the Recurrence of Peritonsillar Abscess: A Nationwide Cohort Study. PLoS ONE 9(10): e109887. <https://doi.org/10.1371/journal.pone.0109887>
13. Olushola Abdulrahman AFOLABI, Alli ABDULLAHI, Abimiku Soloman LABARAN et al. Peritonsillar Abscess in Northern Nigeria: A 7 Year Review. Malays J Med Sci. 2014 nov-Dec; 21(6): 14-18
14. Vitor Passy MD. Pathogenesis of peritonsillar abscess. The Laryngoscope. 1994; 104(2): 1185-190 <https://doi.org/10.1288/00005537-199402000-00011>
15. Salinger S, Pearman SJ. Hemorrhage from pharyngeal and Peritonsillar Abscess: Report of the cases , Résumé of the literature and discussion of ligation of the carotid artery. Arch Otolaryngol. 1933;18(4):464–509. doi:10.1001/archotol.1933.03580060496006
16. Watanabe T, Suzuki M. Bilateral Peritonsillar Abscesses: Our Experience and Clinical Features. Annals of Otology, Rhinology & Laryngology. 2010;119(10):662-666. doi:10.1177/000348941011901003
17. Nurdogan Ata, MD. Giant Fistula of the Peritonsillar Abscess. Ear, Nose & Throat Journal.2019; 98(3):126–127. DOI: 10.1177/0145561319836598