J CLIN PRACT RES

Original Article

Official Journal of Erciyes University Faculty of Medicine

DOI: 10.14744/cpr.2025.59275
J Clin Pract Res 2025;47(6):0–0

Clinical and Radiological Evaluation of Abscesses Detected on Computed Tomography in Neck Infections

Emre Emekli,[1,2] Mursel Serçek,[1] Hakan Arslan[1]

[1]Department of Radiology, Eskişehir Osmangazi University, Faculty of Medicine, Eskişehir, Türkiye
[2]Translational Medicine Application and Research Center, Eskişehir Osmangazi University, Eskişehir, Türkiye

ABSTRACT

Objective: The objective of this study is to evaluate the clinical and radiological findings of neck abscesses detected by contrast-enhanced computed tomography (CT) in emergency patients, and to analyze treatment approaches and the impact of abscess localization on outcomes.

Materials and Methods: This retrospective study included patients admitted between January 2018 and January 2024 with a CT-confirmed neck abscess. Data included demographics, abscess characteristics (size, side, location, extension), treatment methods, microbiological and pathological results, complications, and prognosis. Statistical analysis was performed using the Kruskal–Wallis test for age and abscess size, and the Chi-square test for location and treatment.

Results: Ninety-two patients (32 women; mean age: 37.79±16.49 years) were evaluated. The most frequent abscesses were peritonsillar (n=36) and odontogenic (n=33). The median abscess sizes were 30 mm (interquartile range, IQR: 18) and 18 mm (IQR: 11). Twelve patients showed extension to adjacent spaces. Local drainage with intravenous antibiotics was the most common treatment. Microbial growth was detected in 18 cases. Two patients (2.2%) died during follow-up, both requiring surgical drainage under general anesthesia. Peritonsillar abscesses were smaller than odontogenic and other deep neck abscesses ($p<0.001$). The treatment method showed no correlation with abscess size or etiology ($\chi^2(3)=2.65$, $p=0.580$).

Conclusion: Deep neck infections most commonly arise from peritonsillar and odontogenic sources. Contrast-enhanced CT is crucial for diagnosis, treatment planning, and early detection of complications. Although no significant association was found between abscess size and treatment method, larger abscesses more often required drainage under general anesthesia. Prompt imaging and timely intervention remain vital to reduce morbidity and mortality.

Keywords: Computed tomography, deep neck infections, neck abscess, odontogenic infections, peritonsillar abscess, treatment outcome.

Cite this article as:
Emekli E, Serçek M, Arslan H. Clinical and Radiological Evaluation of Abscesses Detected on Computed Tomography in Neck Infections. J Clin Pract Res 2025;47(6):0–0.

Address for correspondence:
Emre Emekli.
Department of Radiology, Eskişehir Osmangazi University, Faculty of Medicine, Eskişehir, Türkiye
Phone: +90 505 687 62 32
E-mail: emreemekli90@gmail.com

Submitted: 20.08.2025
Revised: 14.10.2025
Accepted: 28.10.2025
Available Online: 21.11.2025

Erciyes University Faculty of Medicine Publications - Available online at www.jcpres.com

INTRODUCTION

Deep neck infections are infections that affect the fascial spaces of the head and neck region, often presenting with potentially severe clinical conditions. These infections typically have the potential for rapid clinical progression. Due to their ability to spread to surrounding tissues, the mediastinum, and airways, they are associated with high morbidity and mortality rates.[1] The fascial spaces of the neck are potential spaces between aponeurotic layers that allow infections to spread easily. Because of the anatomical structure of these spaces, infections can readily extend into the lower respiratory tract, mediastinum, and thoracic cavity.[2]

Among the most common causes of neck infections are abscesses originating from teeth and gums (odontogenic) and peritonsillar abscesses.[3,4] Additionally, infections arising from the salivary glands, pharyngeal infections, and deep neck infections secondary to trauma are included in the etiology. In cases of acquired or primary immunodeficiency, fungal infections and atypical microorganisms can also be isolated as causative agents.[5] Neck infections often begin as cellulitis but can progress to abscess formation if left untreated. Differentiating between cellulitis and abscess is crucial for treatment planning.[1] While cellulitis cases can typically be treated with antibiotics, the presence of an abscess necessitates drainage. In the differential diagnosis of neck abscesses, masses should also be considered. These may include benign or malignant tumors, and thorough evaluation is necessary for accurate diagnosis.[6] Rare tumors can also form necrotic masses in the neck region, requiring careful assessment to distinguish them from infection-related abscesses.[7]

Neck infections can occur in all age groups but are most commonly seen in young adults, particularly those in the 20-30 age range. They are twice as common in males compared to females.[8,9] Patients typically present with complaints of neck pain, fever, dysphagia, trismus, and neck swelling. Some cases may present with life-threatening complications such as airway obstruction or sepsis. On physical examination, findings such as neck swelling, tenderness, skin erythema, and increased warmth may be observed; however, due to the nonspecific nature of these findings, imaging modalities play a crucial role in clarifying the diagnosis.[4,10] Radiological imaging is essential in the diagnosis and management of neck infections to determine the extent of infection, identify the presence of an abscess, and guide treatment planning. Contrast-enhanced computed tomography (CT) is considered the gold standard method.[11,12] CT is preferred due to its high-resolution imaging capability and its ability to clearly demonstrate how the infection has spread along fascial spaces. The ability to differentiate between cellulitis and abscess is critical for treatment planning.[8] The information provided by CT in cases requiring abscess drainage is used to plan surgical intervention. Additionally, CT can assess complications such as the spread of infection to the mediastinum, involvement of major vessels, and airway obstruction. Early detection of these complications facilitates the management of conditions requiring urgent treatment.[13]

KEY MESSAGES

- Deep neck infections most commonly involve peritonsillar and odontogenic abscesses, consistent with patterns reported in the literature.
- Contrast-enhanced computed tomography is the gold standard for diagnosis, providing critical information on abscess size, localization, and extension, and guiding treatment decisions.
- Although abscess size was not statistically associated with treatment choice, larger abscesses more often required drainage under general anesthesia, underscoring the importance of rapid imaging and timely intervention to reduce morbidity and mortality.

Among imaging modalities, CT is widely used in emergency departments due to its greater accessibility, lower cost, and rapid results. In cases of recurrent infections, anatomically complex presentations, or suspected intracranial extension, magnetic resonance imaging (MRI) may also be utilized.[11] However, MRI is generally not preferred as the first-line imaging method in emergency situations due to its time-consuming nature and limited availability.

This study aims to evaluate the clinical and radiological findings of neck abscesses detected by CT imaging in patients presenting to the emergency department with a preliminary diagnosis of neck infection. The study also seeks to analyze the treatment methods and investigate the impact of abscess localization on treatment and prognosis.

MATERIALS AND METHODS

Study Approval

Approval for the study was obtained from the Eskişehir Osmangazi University Non-Interventional Clinical Research Ethics Committee (approval number: 2024-107, date: 22.04.2024). The study was conducted in accordance with the principles of the Declaration of Helsinki. Since the study was retrospective in nature, the requirement for informed consent was waived by the ethics committee.

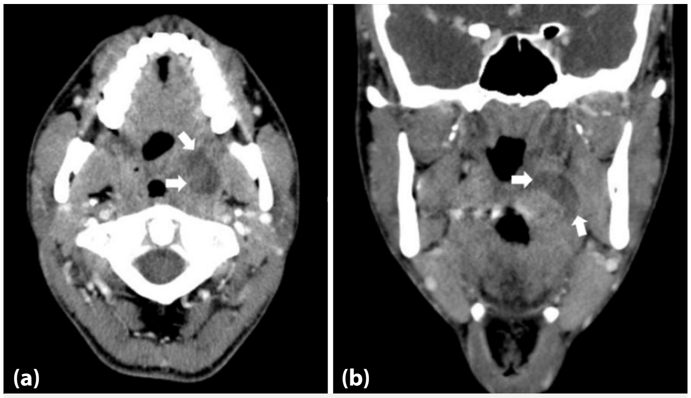

Figure 1. (a) Axial and **(b)** coronal computed tomography (CT) images showing a peritonsillar abscess.

Patient Population

Patients who presented to the emergency department between January 2018 and January 2024 and were preliminarily diagnosed with a neck abscess based on CT imaging were included in the study. Patients with a known history of abscess, a history of previous surgery, or those who had undergone CT scans for reasons other than an abscess were excluded from the study. All CT examinations were performed using a 128-slice CT scanner (GE Optima).

Demographic data (age, gender) of the patients with abscesses detected on neck CT were retrospectively obtained from the hospital information management system. In the neck CT examinations, the size of the abscess (anteroposterior [AP] × mediolateral [ML] dimensions), the side of the abscess (right, left, or midline), the location of the abscess, and any extension, if present, were recorded. The imaging findings were independently evaluated by two radiologists with three and four years of experience in radiology, respectively. In cases of disagreement, the opinion of a radiologist with eight years of experience in radiology was sought to reach a consensus.

Following CT imaging, the treatment methods for the patients (drainage under general anesthesia, local abscess drainage and intravenous [IV] antibiotics, local abscess drainage followed by surgery with IV antibiotics, local abscess drainage with oral antibiotics, IV antibiotics, oral antibiotics, treatment refusal/unauthorized discharge, unknown), as well as pathology results, microbiology findings, prognosis (discharged, deceased, unknown), and any complications that developed during follow-up were recorded.

The abscesses were categorized based on their location and etiology, and differences in age and abscess size between the groups were evaluated. Additionally, patients were grouped according to the treatment methods, and abscess sizes were compared across these groups. The relationship between abscess location and treatment method was also assessed. In this study, patients were primarily grouped according to clearly identifiable etiologies, namely tonsillar (peritonsillar) and odontogenic abscesses. For other deep neck abscesses, although the anatomical location was recorded (e.g., submandibular, submental, retropharyngeal spaces), the exact etiological origin could not always be confirmed due to the retrospective design. Therefore, these cases were classified based on anatomical localization rather than presumed etiology.

Statistics

Statistical analyses were performed using IBM SPSS Statistics for Windows, Version 23.0 (IBM Corp., Armonk, NY, USA). Normality was evaluated using the Shapiro–Wilk test, and homogeneity of variances using Levene's test. As these assumptions were not fully met, age and abscess size were analyzed using the Kruskal–Wallis test with Dunn–Bonferroni post-hoc comparisons. Categorical variables were analyzed using the Chi-square test under the assumption of independence; expected cell counts were checked, and Fisher's exact test was applied when any expected frequency was <5. A two-sided $p<0.05$ was considered statistically significant.

RESULTS

During the specified time period, abscesses were detected on neck CT in 95 patients. Two patients were later diagnosed with malignancy and were excluded from the study. The remaining 92 patients, consisting of 32 women and 60 men, were included in the analysis. The average age of the entire group was calculated to be 35 years (interquartile range, IQR: 19.25), with an average of 37 years (IQR: 27.25) for women and 34.5 years (IQR: 15.5) for men. Eight patients underwent pathological examination during follow-up. As a result, among the underlying conditions of patients diagnosed with an abscess on neck CT, two were found to have epidermoid cysts, two had dentigerous cysts, one had a branchial cleft cyst, and one had reactive lymphoid tissue. One case could not be definitively interpreted.

When the CT scans of the patients were evaluated in terms of location and etiology, the most common findings were peritonsillar and odontogenic abscesses (Figs. 1–5). The findings according to etiology and location in the CT scans are presented in Table 1. Of the abscesses, 47 were on the left side, 37 on the right side, and eight in the midline. The average abscess size, measured in two axes, was 30 mm (IQR: 18) × 18 mm (IQR: 11). The largest abscess had a diameter of 120 mm, while the smallest measured 9 mm

Figure 2. Abscess formation measuring 46×24 mm with peripheral contrast enhancement observed in the left periventricular area.

in diameter. In 12 patients, the abscess extended to other regions. Among these were three cases of retropharyngeal abscess (two extending into the thyroid lodge and one into the superior mediastinum), four cases in the masticator space (three extending into the submandibular lodge, one into the zygomatic-temporal area, and one into the buccal area), one case in the submandibular lodge (extending into the temporal lodge), two cases in the submental lodge (one extending into the peritonsillar lodge and one into the submandibular lodge), and one case in the peritonsillar lodge (extending into the submandibular lodge).

The most common treatment was local abscess drainage combined with IV antibiotic therapy. Among the patients who had microbiological samples taken, growth was detected in 18 cases. The findings related to treatment and microbial growth are presented in Table 2. In terms of prognosis, two patients died (exitus) during follow-up, seven patients refused treatment or left without authorization, and 79 patients were discharged in good health. Information on five patients was unavailable. The two patients who died were male, aged 58 and

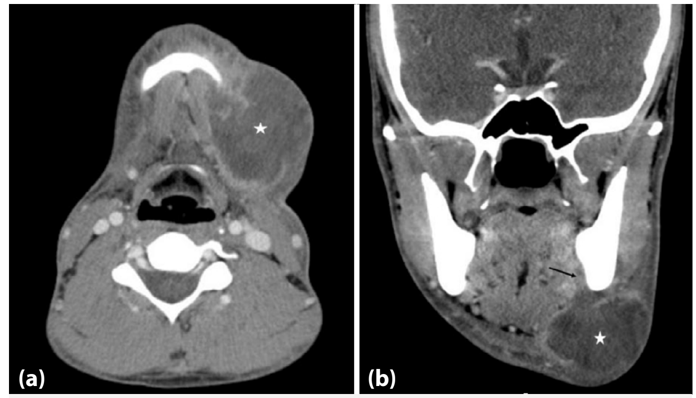

Figure 3. In a patient with a history of tooth extraction: **(a)** an odontogenic abscess (indicated by a star) extending into the left submandibular space, and **(b)** its relationship with the tooth root (indicated by a black arrow).

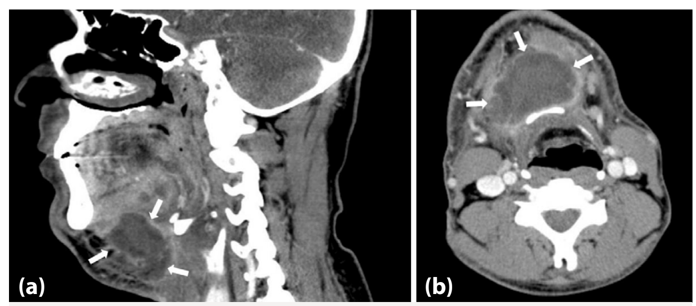

Figure 4. In the submental area: **(a)** axial and **(b)** sagittal images showing a collection consistent with an abscess (indicated by arrows).

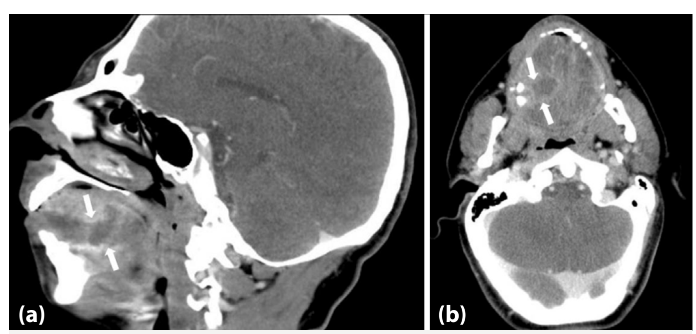

Figure 5. **(a)** Sagittal and **(b)** axial images showing an abscess with approximately 2 cm peripheral contrast enhancement in the right half of the tongue.

60. One had a peritonsillar abscess (*Streptococcus anginosus*), and the other had a retropharyngeal abscess (*Streptococcus constellatus*). Both were treated with abscess drainage under general anesthesia.

Table 1. Classification of abscesses by etiology and location

	n (%)
Peritonsillar	36 (39.13)
Odontogenic	33 (35.87)
Masticator space	9 (9.78)
Submental	7 (7.61)
Submandibular	17 (18.48)
Deep-neck compartment	5 (5.43)
Level 3	3 (3.26)
Level 5	2 (2.17)
Superficial-neck compartment	4 (4.35)
Retropharyngeal	4 (4.35)
Parotid space	4 (4.35)
Masticator space	2 (2.17)
Tongue	2 (2.17)
Parapharyngeal	1 (1.09)
Prevertebral	1 (1.09)

When patients were divided into three groups based on abscess etiology and location—peritonsillar, odontogenic, and others—no significant difference in age was found between the groups (p=0.998). The average ages were 35.5 years (IQR: 15.25) in the peritonsillar group, 33 years (IQR: 18) in the odontogenic group, and 35 years (IQR: 34.5) in the other group. However, when examining the relationship between etiology and abscess size, a statistically significant difference was observed among the three groups (p<0.001). The abscess size in the peritonsillar group was smaller compared to those in the odontogenic group and other locations (p=0.001 and p=0.009, respectively) (Table 3).

When patients were grouped according to treatment methods and abscess sizes were compared, no significant difference was found (p=0.192). The mean abscess size was 30 mm (IQR: 20) in the group treated with local abscess drainage and IV antibiotics, 41 mm (IQR: 20) in the group treated with abscess drainage under general anesthesia, and 28 mm (IQR: 11) in the group treated with IV antibiotics alone. Additionally, no significant difference was found when comparing treatment methods between the peritonsillar and odontogenic abscess groups ($\chi^2(3)=2.65$, p=0.580).

DISCUSSION

In this study, the most common abscess location was found to be the peritonsillar space, identified in 36 patients. Similarly, the number of patients with odontogenic abscesses was 33, with nine in the masticator space, seven in the submental space, and 17 in the submandibular space.

Table 2. Number of patients by treatment methods and isolated pathogens

	n (%)
Treatment method	
Abscess drainage with local anesthesia and IV antibiotics	55 (59.78)
IV antibiotics	11 (11.96)
Abscess drainage under general anesthesia	7 (7.61)
Treatment refusal/unauthorized discharge	7 (7.61)
Management unknown	5 (5.43)
Oral antibiotics	3 (3.26)
Abscess drainage with local anesthesia and oral antibiotics	2 (2.17)
Surgical excision after abscess drainage with local anesthesia and IV antibiotics	2 (2.17)
Microbiology	
Streptococcus constellatus	6 (6.52)
Streptococcus pyogenes	3 (3.26)
Streptococcus intermedius	1 (1.09)
Schaalia turicensis, Streptococcus intermedius	1 (1.09)
Streptococcus anginosus	1 (1.09)
Acinetobacter baumannii, Eikenella corrodens	1 (1.09)
Propioniferax innocua	1 (1.09)
Pasteurella spp.	1 (1.09)
Candida albicans	1 (1.09)
Enterococcus raffinosus	1 (1.09)
Streptococcus pneumoniae	1 (1.09)

The literature also supports these findings, with both causes frequently cited as the most common reasons for deep neck infections. Deep neck infections may also be classified according to etiology (odontogenic, tonsillar, salivary gland–related, congenital cysts, etc.). In our cohort, the etiological source could be clearly established for odontogenic and peritonsillar abscesses, and these groups were analyzed in detail. However, for abscesses in other anatomical locations, the exact etiological origin could not always be determined due to the retrospective nature of the study. For this reason, we chose to report these cases primarily according to their anatomical location rather than speculating on etiology. This approach was intended to maintain accuracy and avoid misclassification bias. In one study, the peritonsillar space was identified as the most common abscess location in 26.7% of patients, followed by odontogenic infections in 23.7%.[14] While some studies indicate that peritonsillar

Table 3. Comparison of patient age and abscess size according to etiology

Etiology group	n	Median size (IQR) (mm)	*Post-hoc* p	p	Median age (IQR) (years)	p
Peritonsillar	36	24 (10.5)	Other **(p=0.009)**		35.5 (15.25)	
Odontogenic	33	35 (15)	Other (p=0.589)	<**0.001**	33 (18)	0.998
Other locations	23	32 (19)	Odontogenic **(p=0.001)**		35 (34.5)	

p-values are from the Kruskal–Wallis test; pairwise comparisons were performed using the Dunn–Bonferroni post-hoc test. IQR: Interquartile range.

abscesses are the most common head and neck infection, especially in young adults,[15] other studies suggest that odontogenic infections are the most frequent cause in adults.[3,4,16] The variation in the most common cause reported across different studies may be due to the similar prevalence of these two causes in the population. Additionally, it may reflect the distinction between the peritonsillar space being the most frequent location and the odontogenic origin being the most common etiological factor.

Although different treatment options are available for neck abscesses, drainage remains the primary treatment method. Some studies have suggested that combining local drainage with antibiotics does not provide a significant advantage over antibiotic therapy alone.[17,18] In particular, studies conducted on children have indicated that high-dose antibiotic therapy can be curative for small abscesses and may prevent the need for surgical intervention.[19,20] However, even if antibiotic therapy is effective, abscesses larger than 25 mm in diameter require close monitoring, and if clinical improvement is not observed, surgical intervention should be promptly considered.[21] One study recommends that deep abscesses larger than 7 cm should definitely be treated surgically.[22] Furthermore, another study noted that as abscess size increases, the success rate of antibiotic therapy decreases.[23] In this study, the most common treatment approach was local drainage combined with IV antibiotic therapy. The second most common treatment was IV antibiotics alone. The relatively lower use of IV antibiotics alone might be attributed to our institution being a tertiary university hospital, where more complicated cases are referred. Although no statistically significant difference was found between abscess size and treatment method, there was a trend showing that as abscess size increased, treatment methods ranged from IV antibiotic therapy alone (27.63±8.82 mm) to local drainage with IV antibiotics (34.87±18.09 mm), and to drainage under general anesthesia (38.57±11.85 mm). In clinical practice, abscesses larger than approximately 25 mm are often considered more likely to require drainage, while smaller collections may respond to conservative management. This threshold has been suggested in previous studies as a practical guide rather than an absolute rule. In our study, peritonsillar abscesses were generally smaller, whereas odontogenic abscesses more frequently approached or exceeded this level. Although our retrospective design does not allow for a precise determination of clinical cut-off values, these findings may support the view that anatomical and etiological differences are reflected in size, which in turn can influence treatment decisions.

As expected in this study, the size of peritonsillar abscesses was smaller compared to abscesses in other locations. This is attributed to the anatomical structure of the tonsils and the specific location of peritonsillar abscesses. Peritonsillar abscesses usually develop secondary to acute tonsillitis and are located in the superior tonsillar pole, thereby confining the infection to a specific area.[24] Additionally, the involvement of Weber's glands in the pathogenesis is believed to play a role in the localization and smaller size of these abscesses.[24,25] Similar to deep neck abscesses, needle aspiration, incision, and drainage are the primary treatment methods, although there is no definitive evidence in the literature regarding the superiority of one method over another. It has been suggested that the recurrence rate is lower with incision and drainage treatment.[25]

This study has some limitations. Firstly, it was designed as a single-center, retrospective study, which might have led to incomplete patient data and could affect the comprehensiveness of the findings. Although the sample size is relatively large compared to the literature, the number of groups might be insufficient to allow certain generalizations. Additionally, as a tertiary hospital, more complicated cases are referred to our center, which could limit the generalizability of the data to the general population. The wide time range of the study and the possibility of different approaches being used during this period may also have affected the evaluation of the results due to the lack of a standardized treatment protocol. These limitations could be addressed in a prospective study. Furthermore, this study was not designed as an equivalence or non-inferiority trial; therefore, no equivalence margins were defined.

CONCLUSION

This study demonstrates that deep neck infections are most frequently associated with peritonsillar and odontogenic abscesses, and that contrast-enhanced CT plays a critical role in the diagnosis and management of these infections. CT significantly contributes to treatment planning by determining the extent of infection and assessing the presence and size of abscesses. Although no statistically significant difference was found between abscess size and treatment method in our study, it was observed that larger abscesses generally required drainage under general anesthesia. Rapid intervention and accurate imaging are of great importance in the diagnosis and treatment of deep neck infections. This study highlights the critical role of CT in managing these infections, and the findings are expected to be beneficial in both clinical practice and future research.

Ethics Committee Approval: The Eskişehir Osmangazi University Non-Interventional Clinical Research Ethics Committee granted approval for this study (date: 22.04.2024, number: 2024-107).

Informed Consent: Since the study was retrospective in nature, the requirement for informed consent was waived by the ethics committee.

Conflict of Interest: The authors have no conflict of interest to declare.

Financial Disclosure: The authors declared that this study has received no financial support.

Use of AI for Writing Assistance: Artificial intelligence was not used in the writing of the manuscript; however, it was used to assist with the translation of the text.

Author Contributions: Concept – E.E., M.S., H.A.; Design – E.E., M.S., H.A.; Supervision – E.E., M.S., H.A.; Resource – E.E.; Data Collection and/or Processing - M.S., H.A.; Analysis and/or Interpretation - E.E.; Literature Review – M.S., H.A.; Writing – E.E.; Critical Review – M.S., H.A.

Peer-review: Externally peer-reviewed.

REFERENCES

1. Vieira F, Allen SM, Stocks RM, Thompson JW. Deep neck infection. Otolaryngol Clin North Am 2008;41(3):459-83, vii. [CrossRef]
2. Saute M. Descending necrotizing mediastinitis: An old issue with a new approach. Eur J Cardiothorac Surg. 2012;42(2):e73. [CrossRef]
3. Kataria G, Saxena A, Bhagat S, Singh B, Kaur M, Kaur G. Deep neck space infections: A study of 76 cases. Iran J Otorhinolaryngol 2015;27(81):293-9.
4. Daramola OO, Flanagan CE, Maisel RH, Odland RM. Diagnosis and treatment of deep neck space abscesses. Otolaryngol Head Neck Surg 2009;141(1):123-30. [CrossRef]
5. Hasegawa J, Hidaka H, Tateda M, Kudo T, Sagai S, Miyazaki M, et al. An analysis of clinical risk factors of deep neck infection. Auris Nasus Larynx 2011;38(1):101-7. [CrossRef]
6. Long B, Gottlieb M. Diagnosis and Management of Cellulitis and Abscess in the Emergency Department Setting: An Evidence-Based Review. J Emerg Med 2022;62(1):16-27. [CrossRef]
7. Emekli E, Açıkalın MF, Gürbüz MK, Toprak U. Synovial sarcoma of the neck. Ortadogu Tip Derg 2020;12(1):84-8. [CrossRef]
8. Maroldi R, Farina D, Ravanelli M, Lombardi D, Nicolai P. Emergency imaging assessment of deep neck space infections. Semin Ultrasound CT MR 2012;33(5):432-42. [CrossRef]
9. Santos Gorjón P, Blanco Pérez P, Morales Martín AC, Del Pozo de Dios JC, Estévez Alonso S, Calle de la Cabanillas MI. Deep neck infection: Review of 286 cases. Acta Otorrinolaringol Esp 2012;63(1):31-41. [CrossRef]
10. Motahari SJ, Poormoosa R, Nikkhah M, Bahari M, Shirazy SM, Khavarinejad F. Treatment and prognosis of deep neck infections. Indian J Otolaryngol Head Neck Surg 2015;67(Suppl 1):134-7. [CrossRef]
11. Baba A, Kurokawa R, Kurokawa M, Reifeiss S, Policeni BA, Ota Y, et al. Advanced imaging of head and neck infections. J Neuroimaging 2023;33(4):477-92. [CrossRef]
12. Hagelberg J, Pape B, Heikkinen J, Nurminen J, Mattila K, Hirvonen J. Diagnostic accuracy of contrast-enhanced CT for neck abscesses: A systematic review and meta-analysis of positive predictive value. PLoS One 2022;17(10):e0276544. [CrossRef]
13. Arellano RS, Gervais DA, Mueller PR. Computed tomography-guided drainage of mediastinal abscesses: Clinical experience with 23 patients. J Vasc Interv Radiol 2011;22(5):673-7. [CrossRef]
14. Brito TP, Hazboun IM, Fernandes FL, Bento LR, Zappelini CEM, Chone CT, et al. Deep neck abscesses: study of 101 cases. Braz J Otorhinolaryngol 2017;83(3):341-8. [CrossRef]
15. Galioto NJ. Peritonsillar Abscess. Am Fam Physician 2017;95(8):501-6.
16. Suska A, Wiatr M, Lara M, Czepiel J, Składzień J, Sadowski P, et al. Aggressive abscesses in the head and neck region of probable odontogenic origin: Two case reports. Rev Res Med Microbiol 2023;34(4):185-9. [CrossRef]
17. Zhao S, Najdawi A, Laliotis A, Thomas R, Boghdady ME. Post-operative antibiotics for cutaneous abscess after incision and drainage: Variations in clinical practice or lack of guidelines. Br J Surg 2021;108(Supplement7):znab312.090. [CrossRef]

18. López J, Gómez G, Rodriguez K, Dávila J, Núñez J, Anaya L. Comparative Study of Drainage and Antibiotics versus Drainage Only in the Management of Primary Subcutaneous Abscesses. Surg Infect (Larchmt) 2018;19(3):345-51. [CrossRef]

19. Wong DK, Brown C, Mills N, Spielmann P, Neeff M. To drain or not to drain - management of pediatric deep neck abscesses: a case-control study. Int J Pediatr Otorhinolaryngol 2012;76(12):1810-3. [CrossRef]

20. Carbone PN, Capra GG, Brigger MT. Antibiotic therapy for pediatric deep neck abscesses: a systematic review. Int J Pediatr Otorhinolaryngol 2012;76(11):1647-53. [CrossRef]

21. Johnston D, Schmidt R, Barth P. Parapharyngeal and retropharyngeal infections in children: argument for a trial of medical therapy and intraoral drainage for medical treatment failures. Int J Pediatr Otorhinolaryngol 2009;73(5):761-5. [CrossRef]

22. Woo JH, Cha HE, Lee JH, Gang IG, Baek MK, Kim DY. Clinical analysis of factors affecting treatment of deep neck infection. Korean J Otolaryngol Head Neck Surg 2008;51(6):544-8.

23. Kosko J, Casey J. Retropharyngeal and parapharyngeal abscesses: Factors in medical management failure. Ear Nose Throat J 2017;96(1):E12-5.

24. Klug TE, Rusan M, Fuursted K, Ovesen T. Peritonsillar Abscess: Complication of Acute Tonsillitis or Weber's Glands Infection? Otolaryngol Head Neck Surg 2016;155(2):199-207. [CrossRef]

25. Chang BA, Thamboo A, Burton MJ, Diamond C, Nunez DA. Needle aspiration versus incision and drainage for the treatment of peritonsillar abscess. Cochrane Database Syst Rev 2016;12(12):CD006287. [CrossRef]