International Journal of Research in Medical Sciences
Dandala SR et al. Int J Res Med Sci. 2026 May;14(5):2124-2127
www.msjonline.org
pISSN 2320-6071 | eISSN 2320-6012

DOI: https://dx.doi.org/10.18203/2320-6012.ijrms20261362

Case Report

Deep neck space infection with airway edema and sepsis in a non-diabetic patient: a case report

Sridhar R. Dandala, Vinod K. Gonuru*, Nerella L. Sravani

Department of Otorhinolaryngology, Apollo Institute of Medical Sciences and Research, Hyderabad, Telangana, India

Received: 03 February 2026
Revised: 13 April 2026
Accepted: 20 April 2026

***Correspondence:**
Dr. Vinod K. Gonuru,
E-mail: drvinnu2004@yahoo.co.in

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

Deep neck space infections (DNSIs) are serious clinical entities with the potential for rapid deterioration due to their anatomical proximity to critical cervical structures, making complications such as airway obstruction and sepsis particularly concerning. We present the case of a 55-year-old female who developed rapidly progressive bilateral swelling involving the parotid and submandibular regions, with extension to the chest and back. She had no history of diabetes mellitus or other significant comorbid illnesses. Her clinical course was marked by worsening laryngeal edema, respiratory distress, and features of sepsis, necessitating urgent airway stabilization. Surgical management with incision and drainage was performed, resulting in subsequent clinical improvement. This case demonstrates that severe DNSIs may arise even in the absence of traditional risk factors, and while contrast-enhanced computed tomography (CT) plays an important diagnostic role, priority should be given to airway security and timely clinical intervention in unstable patients.

Keywords: Deep neck space, Airway edema, Sepsis

INTRODUCTION

Deep neck space infections (DNSIs) originate within the potential compartments defined by cervical fascial layers and are notable for their ability to extend across these anatomically connected spaces.[1] This structural arrangement facilitates the spread of infection beyond the initial focus, thereby increasing the likelihood of involvement of surrounding vital structures. Frequently identified causes include odontogenic sources, suboptimal oral hygiene, and infections of the upper respiratory tract.[2,8]

Despite the availability of modern antimicrobial agents, DNSIs remain clinically important because of their capacity to progress to serious complications, including airway compromise, descending mediastinitis, vascular involvement, and systemic sepsis.[1,7] Comorbid conditions, most notably diabetes mellitus have been consistently associated with more severe disease and less favorable outcomes. However, aggressive infections are not limited to such populations and may also occur in individuals without identifiable predisposing factors.[2,6]

Recent studies have pointed toward shifts in both clinical presentation and management strategies, emphasizing the need for early detection, careful risk evaluation, and appropriately timed therapeutic measures.[11] Timely and coordinated intervention continues to be central to reducing both morbidity and mortality in affected patients.[3]

CASE REPORT

A 55-year-old woman presented with a two-day history of painful swelling over the left parotid region, which rapidly extended to involve the submandibular area and contralateral parotid region, progressing inferiorly to the upper chest and posteriorly toward the upper back. The pain was persistent, throbbing in character, and associated

with localized warmth and tenderness. She also reported mild difficulty in swallowing and alteration in voice. There was no history of fever, dental pathology, recent upper respiratory infection, trauma, or similar prior complaints. She was not a known diabetic.

On examination, there was diffuse, tense swelling involving both parotid and submandibular regions, with overlying skin erythema and increased local temperature. The swelling was tender and extended into the supraclavicular area and upper chest. No clear intraoral source of infection was identified. Cervical lymphadenopathy was noted.

Laboratory findings showed leukocytosis with neutrophilic predominance along with elevated inflammatory markers, consistent with an acute infectious process. Neck ultrasonography demonstrated enlargement of the bilateral parotid and submandibular glands with increased vascularity, accompanied by diffuse subcutaneous edema. Multiple enlarged cervical lymph nodes with focal necrotic changes were observed, raising concern for deep neck space involvement.

On the second day of admission, her condition worsened with the onset of respiratory distress. Oxygen saturation declined and signs suggested impending airway compromise. Video laryngoscopy revealed significant edema of the left aryepiglottic fold with resultant airway narrowing. In view of the rapid deterioration, emergency endotracheal intubation was performed.

The patient subsequently developed features consistent with sepsis, including persistent fever, tachycardia, and hypotension. Broad-spectrum intravenous antibiotics were initiated empirically, along with supportive care such as fluid resuscitation, antipyretics, and close monitoring in a high-dependency setting.

Although contrast-enhanced computed tomography (CT) was considered to evaluate disease extent and guide management, it was deferred due to airway instability and clinical deterioration. Given the rapid progression and insufficient response to initial measures, urgent surgical intervention was undertaken.

Incision and drainage were performed via multiple cervical approaches under secured airway conditions. Purulent material was encountered within the affected fascial planes and was adequately evacuated, followed by thorough debridement.

Microbiological analysis of the pus did not yield any growth, possibly due to prior antibiotic administration. Postoperatively, the patient improved steadily, with reduction in swelling, better respiratory function, and stabilization of vital parameters.

During the hospital stay, she developed features suggestive of hypertensive cardiac dysfunction, which were managed medically. She responded favorably and was gradually weaned off ventilatory support.

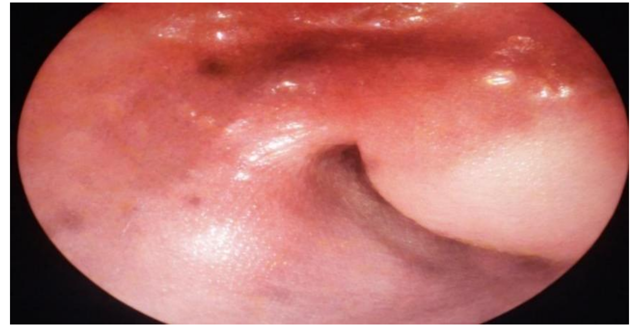

Figure 1: Video laryngoscopy showed significant edema of the left aryepiglottic fold.

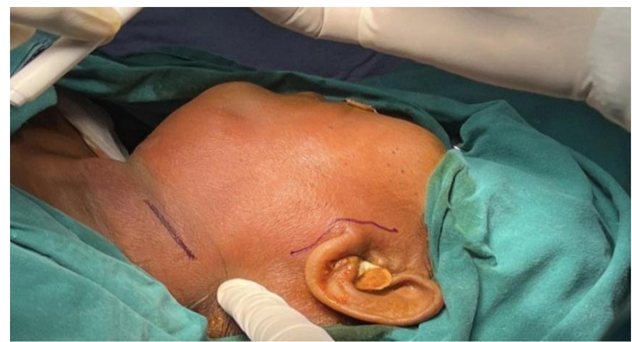

Figure 2: Pre-operative clinical photograph showing left parotid region swelling with incision marking.

Figure 3: Post-operative image demonstrating multiple incision and drainage sites.

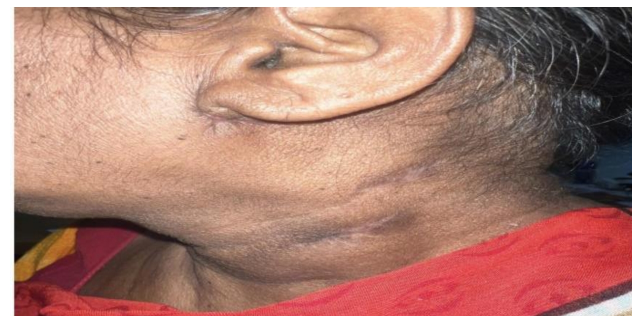

Figure 4: Post-operative follow-up photograph showing healed cervical incision scar.

At follow-up, the patient remained asymptomatic, with complete resolution of swelling and no residual functional or airway-related deficits. She was advised continued surveillance for early detection of recurrence.

DISCUSSION

Deep neck space infections may transition quickly from a localized inflammatory focus to a critical condition due to their tendency to track along cervical fascial planes.[1,7] This pattern of spread can involve multiple anatomical compartments and in severe instances, extend into the mediastinum or adjacent vital regions. While diabetes mellitus is frequently associated with increased disease severity, the present case highlights that similar aggressive progression can occur even in the absence of underlying comorbidities.[2,6]

Contrast-enhanced computed tomography (CECT) plays an important role in delineating the extent of infection, identifying abscess formation, and assisting in operative planning.[1,8,11] Nevertheless, in patients demonstrating signs of compromised airway, immediate airway control takes precedence over radiological evaluation.[1,12] Delayed intervention in such scenarios has been linked to poorer outcomes, including worsening hypoxia, systemic infection, and multi-organ involvement.[10] In this instance, the inability to obtain imaging underscores the need to prioritize life-saving clinical decisions over diagnostic procedures when instability is present.

Odontogenic infections are widely recognized as the most frequent source of DNSIs, typically spreading from dental or periodontal origins into adjacent fascial compartments.[8,9] However, some cases present without a clearly identifiable source, as seen here, which may be attributable to occult infection or transient bacteremia. Additional elements such as delayed presentation or subtle early symptoms may further complicate diagnosis and influence disease severity.

Management requires collaboration across multiple specialties, including otolaryngology, anesthesia, and critical care. Securing the airway remains the foremost priority and may necessitate endotracheal intubation or tracheostomy depending on clinical circumstances.[12] Empirical intravenous antibiotics with coverage for both aerobic and anaerobic organisms should be initiated promptly and later refined based on microbiological findings. Surgical drainage becomes necessary when abscess formation is evident or when conservative therapy fails, as postponement may increase complications and prolong recovery.[3-5]

Negative culture results, as encountered in this patient, are not uncommon, especially following prior antibiotic exposure. Such findings should not influence the continuation of appropriate therapy, which should primarily be guided by the patient's clinical response. Supportive management, including fluid therapy, hemodynamic stabilization, and appropriate sepsis care, remains essential in improving outcomes.

This case illustrates the variable and sometimes unpredictable behavior of DNSIs and underscores the importance of early airway control and timely surgical management in reducing the risk of serious complications.

CONCLUSION

DNSIs are serious clinical conditions that require prompt identification, close observation, and timely intervention to prevent unfavorable outcomes. Their propensity to extend through cervical fascial planes allows rapid involvement of adjacent regions, increasing the likelihood of complications such as airway compromise, mediastinitis, and systemic infection if not addressed appropriately.

The present case demonstrates that severe disease can develop even in patients without commonly recognized risk factors such as diabetes mellitus or immunocompromised states, highlighting the importance of maintaining clinical vigilance in individuals presenting with rapidly progressing neck swelling.

Successful management depends on a coordinated, multidisciplinary approach, with immediate attention to airway protection in patients showing signs of respiratory difficulty. In addition, timely surgical intervention, appropriate empirical antibiotic therapy, and comprehensive supportive care play key roles in limiting disease progression and improving patient outcomes.

Overall, this case emphasizes the importance of individualized and timely clinical decision-making in achieving recovery while minimizing the risk of life-threatening complications.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: Not required

REFERENCES

1. Sebastian GP, Ramalingam K. Deep neck space infections: Otolaryngologist perspectives in triage and challenges. Am J Otolaryngol Head Neck Surg. 2021;4(2):1125.
2. Maharjan S, Joshi RR, Rijal AS, Dhungana A, Shrestha KK. Pattern of deep neck space infections at a tertiary hospital in Nepal. Nepal Med Coll J. 2020;22(1-2):44-8.
3. Korivipati NK, Irvineti S, Mallikarjun Rao M. Deep neck space infections: Our experience. Int J Otorhinolaryngol Head Neck Surg. 2018;4(1):132-6.
4. Singhal A, Nayak P, Padiyar V, Sen K, Shrivastava SS. Evaluation of antibiotic sensitivity in deep neck space infections. Int J Recent Surg Med Sci. 2024;10(1):1-6.

5. Honnegowda T, Silvia WD, Babu SV. Clinical evaluation and management of deep neck space infections. Int J Head Neck Surg. 2017;8(3):102-6.
6. Eftekharian A, Roozbahany NA, Vaezeafshar R, Narimani N. Deep neck infections: a retrospective review of 112 cases. Eur Arch Otorhinolaryngol. 2009;266(2):273-7.
7. Boscolo-Rizzo P, Marchiori C, Montolli F, Vaglia A, Da Mosto MC. Deep neck infections: a study of 365 cases. Eur Arch Otorhinolaryngol. 2006;263(10):988-94.
8. Huang TT, Liu TC, Chen PR, Tseng FY, Yeh TH, Chen YS. Deep neck infection: analysis of 185 cases. Head Neck. 2004;26(10):854-60.
9. Desa C, Tiwari M, Pednekar S, Basuroy S, Rajadhyaksha A, Savoiverekar S. Etiology and complications of deep neck space infections: a retrospective analysis. Acta Otolaryngol. 2023;143(6):606-11.
10. Aljbawi H, Senjab A, Saif MAA, Hesso M, Darwish B. Thoracic extension of an odontogenic deep neck space infection: a case of carbapenem-resistant Acinetobacter baumannii empyema. Infect Drug Resist. 2026;19:1-9.
11. Sheikh Z, Yu B, Heywood E, Quraishi N, Quraishi S. The assessment and management of deep neck space infections in adults: a systematic review and qualitative evidence synthesis. Clin Otolaryngol. 2023;48(4):540-62.
12. Nandini MR, Hariprasad R, Vijayakumar M, Dharshana R, Safana A, Meyyappan H. Navigating the airway maze: challenges and strategies in deep neck space infections. Cureus. 2024;16(10):e72337.

Cite this article as: Dandala SR, Gonuru VK, Sravani NL. Deep neck space infection with airway edema and sepsis in a non-diabetic patient: a case report. Int J Res Med Sci 2026;14:2124-7.