

# Retrospective Analysis of Deep Neck Space Infections: A Hospital Based Study

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## ABSTRACT

**Background:** Deep Neck Space Infections (DNSI) implies infection in the potential spaces either with abscess formation or with cellulites. The present study was conducted to assess the deep neck space infections in study population.

**Materials & Methods:** The present study was conducted on 100 patients diagnosed with deep neck space infection of both genders. The possible etiology and effective treatment methods were also recorded.

**Results:** Out of 100 patients, males were 70 and females were 30. The difference was significant ( $P < 0.05$ ). The etiological factors were Odontogenic in males (35) and females (10), infected lymphadenopathy in males (25) and females (8), idiopathic in males (2) and females (7) and trauma in males (8) and females (5). The difference was significant ( $P < 0.05$ ). Common bacteria involved was streptococcus in males (10) and females (2), *S. aureus* in males (15) and females (5), klebsiella in males (35) and females (15) and enterococcus in males (10) and females (8).

**Conclusion:** Males had higher prevalence of deep neck space infection. Most commonly bacterial origin was seen. Klebsiella was the most common followed by Streptococcus.

**Key words:** Klebsiella, Neck Infection, Space.


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## INTRODUCTION

Deep Neck Space Infections (DNSI) implies infection in the potential spaces either with abscess formation or with cellulites. In the past the incidence of DNSI were more common, the advent of broad spectrum antibiotics has significantly brought down the incidence of these infections. Antibiotics usage at adequate strength and duration has brought a significant decrease in the occurrence and progression of the disease. These infections are severe and inadequate treatment may lead to progression and can be associated with high morbidity and mortality.<sup>1</sup>

The primary sources of DNSI are the dentition and tonsils, other sources may be from salivary glands, malignancies and foreign bodies. Commonly DNSI follows infections like dental caries, tonsillitis, and trauma to head and neck or in intravenous drug abusers. Odontogenic infection is one of the most common causes especially in developing countries.<sup>2</sup>

DNSI are potentially fatal and require an aggressive diagnostic and therapeutic management to avoid life-threatening complications, such as airway obstruction, cervical necrotizing fasciitis, jugular vein thrombosis, disseminated intravascular coagulation empyema, mediastinitis, aspiration pneumonia or thrombosis/aneurysm of the carotid artery. Usually polymicrobial, DCA occur from previous uncontrolled infections such as tonsillitis, dental infections, surgery, or trauma to the head and

neck lymphadenitis after upper airways infection.<sup>3</sup> It is necessary to investigate risk factors such as infections, foreign bodies, trauma, immunosuppression and addiction to intra-venous drugs. Concomitant diseases such as congenital cysts and fistulas, TB, diabetes mellitus, HIV, tumors, deficiency states and so on should also be taken into consideration. The clinical manifestations are diverse and depend on the affected cervical area. Moreover, an inappropriate use of antibiotics may change the clinical presentation of infections of this kind, making them elusive. Patients may be mildly symptomatic and present with symptoms of fever and pain, or experience more severe or life threatening symptoms such as dyspnea airway obstruction and septic shock.<sup>4</sup> The present study was conducted to assess the deep neck space infections in study population.

## MATERIALS & METHODS

The present study was planned in the department of Oto Rhino Laryngology, Govt. S.K. Hospital, Sikar, Rajasthan, India. The present study was conducted on 100 patients diagnosed with deep neck space infection of both genders.

Diagnosis was done with the help of clinical and radiological features. All were informed regarding the study and written consent was obtained.

General information such as name, age, gender etc. was noted. The possible etiology and effective treatment methods were also recorded. Results thus obtained were subjected to statistical analysis using chi- square test. P value less than 0.05 was considered significant.

**RESULTS**

Table I shows that out of 100 patients, males were 70 and females were 30. The difference was significant ( $P < 0.05$ ). Graph I shows that the etiological factors were Odontogenic in males (35) and females (10), infected lymphadenopathy in males (25) and females (8), idiopathic in males (2) and females (7) and trauma in males (8) and females (5). The difference was significant ( $P < 0.05$ ). Graph II shows that common bacteria involved was streptococcus in males (10) and females (2), S. aureus in males (15) and females (5), klebsiella in males (35) and females (15) and enterococcus in males (10) and females (8). The difference was significant ( $P < 0.05$ ).

**Table 1: Distribution of patients**

Total- 100		
Males	Females	P value
70	30	0.01

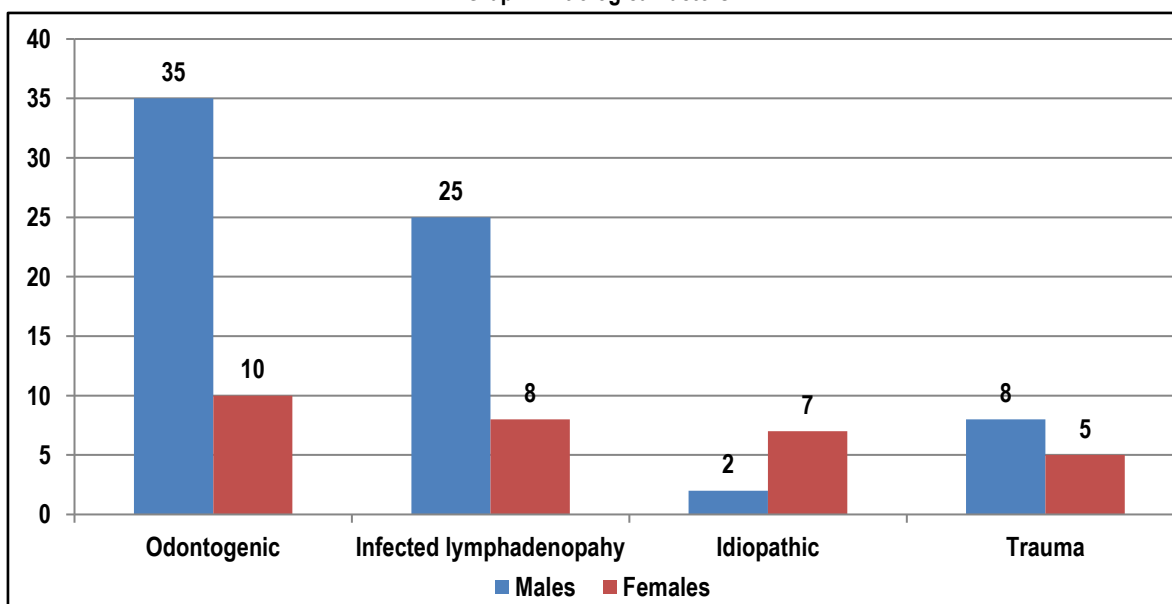
**Table 2: Etiological factors**

Factor	Males	Females
Odontogenic	35	10
Infected lymphadenopathy	25	8
Idiopathic	2	7
Trauma	8	5

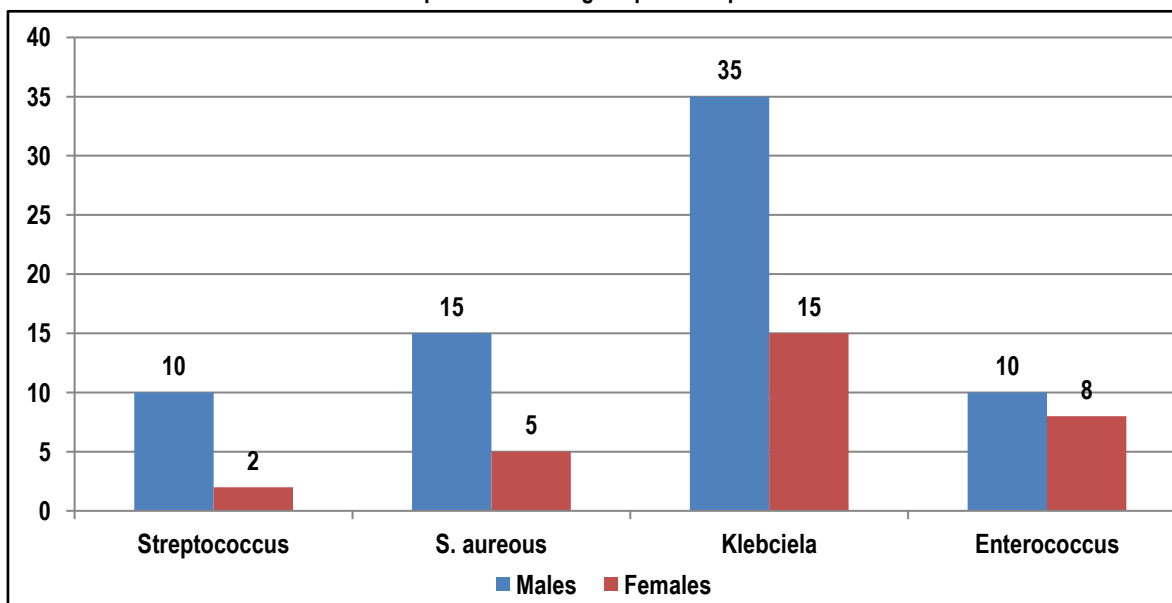
**Table 3: Bacteriological profile in patients**

Bacteria	Males	Females
Streptococcus	10	2
S. aureus	15	5
KlebsiellaD	35	15
Enterococcus	10	8

**Graph I: Etiological factors**



**Graph II: Bacteriological profile in patients**



## DISCUSSION

Before the antibiotic era, tonsil and peritonsillar region were the source of infection in almost 70% cases of DNSI, but now dental origin is considered the most common cause.<sup>4</sup> The Odontogenic infections like periapical lesions with pulp necrosis and bacterial invasion into periapical tissues and periodontal lesions associated with periodontal pockets cause DNSI. As to bacteriology of DNSI the common organisms implicated are Streptococci, Staphylococcus aureus, Peptostreptococcus species and anaerobes. Mostly they are polymicrobial. Clinical manifestations depend upon the spaces involved and include fever, pain, fatigue, swelling, malaise, odynophagia, dysphagia, dyspnea, otalgia, trismus.<sup>5</sup> In immunocompromised patients with diabetes mellitus, patients on steroid therapy, chemotherapy or those with HIV infection<sup>8</sup> the course of the disease may be more rapidly progressive with sometimes a fatal outcome. DNSI even with extensive and adequate antibiotic therapy still remains serious and can cause significant morbidity, 10-20% of cases go for life threatening complications.<sup>6</sup>

In present study, out of 100 cases, males were 70 and females were 30. Gerd<sup>7</sup> have reported in their study on DNSI that the most common site of infection was the parapharyngeal space and was seen in 71 (38.4%) and 138 (59%) cases respectively. In our patients submandibular space involvement was the most common and was seen in 11, parapharyngeal space involvement was demonstrated in 2 patients.

Parhiscar et al<sup>8</sup> in their study found that parapharyngeal space involvement was more common. Etiological factors were Odontogenic in males (35) and females (10), infected lymphadenopathy in males (25) and females (8), idiopathic in males (2) and females (7) and trauma in males (8) and females (5). This is in agreement with Mehar et al.<sup>9</sup> We found that common bacteria involved was streptococcus in males (10) and females (2), S. aureus in males (15) and females (5), klebsiella in males (35) and females (15) and enterococcus in males (10) and females (8). This is in agreement with Akshay et al.<sup>10</sup>

Sharma et al<sup>11</sup> in their study found that the most common source for Deep Neck Space infection was dental in origin. The most common symptoms were neck swelling and pain, followed by odynophagia. Submandibular space and parapharyngeal space involvement were more common in odontogenic DNSI. Bacteriology reveals Klebsiella species as the most common organism. Mean duration of hospital stay was 14 days with minimum of 8 days and maximum of 33 days.

## CONCLUSION

From the above results, the authors concluded that Males had higher prevalence of deep neck space infection. Most commonly bacterial origin was seen. Klebsiella was the most common followed by Streptococcus.

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