

FREQUENCY OF COMMON PRIMARY FASCIAL SPACE INFECTIONS OF ODONTOGENIC ORIGIN REPORTED TO TERTIARY CARE HOSPITAL

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ABSTRACT

Objectives: To determine the frequency of primary fascial space infections of odontogenic origin presented to tertiary referral center.

Methods and materials: The study design was descriptive cross sectional & was conducted in the department of Oral surgery/Maxillofacial surgery Hayatabad Medical Complex Peshawar. The duration of this study was 6 months i.e. from 3rd October 2018 till 3rd April 2019. Frequencies & percentages were calculated for categorical variable like fascial spaces and sex-gender were included. Numerical variable like age was presented as mean SD. Post stratification was put in through chi square test keeping P value < 0.05 was observed to be important.

Results: As per frequencies and percentages for fascial spaces involved out of 145 patient, 60(41.37%) were recorded with submandibular space, 44(30.34%) patients were recorded with buccal space, 31(21.37%) patients were recorded with canine space infections, 07(4.82%) patients were recorded with sub mental space, 03(2.06%) patients were recorded with sublingual space.

Conclusion: Fascial space infections are very common and if not treated on time can lead to worst consequences. This study will not only help us in early recognition and management of severe odontogenic infections but will also help to prevent morbidity and mortality.

Key words: Fascial space infections, odontogenic infections

INTRODUCTION

Odontogenic infections have troubled mankind since eons. Yet, even after centuries of exploration mankind hasn't flourished in exterminating the bacterial infections.¹ It arises from teeth and related structures and has characteristic flora.² It has two prime sources of origins; one is periapical route via root apex which occurs as result of pulpal necrosis and bacterial invasion into periapical tissues, while the other is via deep periodontal pockets that allows inoculation of bacteria into the underlying soft tis-

sues. The fascial spaces that result straight from tooth infection are called primary spaces; they include submandibular, canine, submental, sublingual and buccal space. Fail to halt the infection spread, may result in its spreading into secondary spaces which include, pterygomandibular, masseteric, temporal, retropharyngeal, lateral pharyngeal and pre vertebral spaces.³ Likelihood of infection spread relies on number of factors, which include person's immune status, pathogenicity of involved organism, or any anatomical or functional malformation. Not only the immune system of patient alone but the time and aptness of management which determine the outcome.⁴ Such infections can present as low grade well localized infection that need slightest therapy to extreme dreadful life terrifying form such as infections of superficial and deep spaces of maxillofacial area which could results in patients becoming fatal

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and eventually requires immediate hospital admission and can may result in mortalities.⁵

According to an international research most involved teeth were mandibular 3rd molars followed by mandibular 1st molars. Buccal space was on top and then there was submandibular space in single space involvement. In multiple spaces infection, submandibular space is more common followed by buccal space infection. Diabetes mellitus was most frequent systemic disease involved.⁶ Similarly in few other studies submandibular space involvement was more usual as compared to buccal space.⁷ According to a study done in Khyber College of Dentistry Peshawar in 2012 most frequent teeth involved were 2nd mandibular molars (37.42%) followed by 1st maxillary molars (19.35%). Submandibular space infection was most frequent primary space involved (46.45%) which was followed by buccal space infection (30.32%) then submental space infection (9.03%) then lingual space infection (7.09) and finally canine space infection (6.45%). It's more common in female gender (65%) as compared to males (34.84%).⁸

Odontogenic infections are commonly observed in our clinical practice. The rationale of study is to provide the local data regarding fascial spaces involvement due to odontogenic infections. This study will assist us in early identification and management of odontogenic infections and will also aid in prevention of morbidity and mortality. The sum of this study will impart us with local statistics which will be compared with other internationally published literature to identify the guidelines for prevention and control of fascial space infections. It will help us in establishing local protocols according to community needs.

MATERIALS AND METHODS

This cross sectional study was performed in Maxillofacial Surgery department, Hayatabad Medical Complex Peshawar from 3rd October 2018 till 3rd April 2019 by using connective sampling after acceptance obtained from Research and Ethics Committee of the hospital. All the patients who were fulfilling the inclusion criteria were included after informed consent. The idea behind this study was described to the patients and were assured that this data collection is performed solely for research purposes. A Performa was used for data collection.

The calculated sample size will be 145 by WHO calculator using frequency of canine space infection 6.45%⁸ at 95% confident level and 4% margin of error. Thorough history and clinic radiographic examination was carried out. Individual space infection was diagnosed on the bases of relation with offending tooth, clinical presentation and by radiographic confirmation by orthopantomogram. The distribution of spaces affected was further categorized according to their anatomical location: submandibular, buccal, canine, submental & sublingual. Statistics were analyzed by using SPSS [version 20]. Standard deviation & Mean were calculated for numerical variables such as age. Frequencies and percentages were calculated for categorical variables such as fascial spaces and sex-gender. Stratification was performed with respect to gender, age using post-stratification chi-square test to see effect modifiers. P value ≤ 0.05 was regarded noteworthy.

RESULT

Out of all 145 patients, as per gender distribution was 115(79.31%) patients were male, 30(20.68%) patients were female patients. (Table No.1) and (Table no.5) 53 (36.55%) patients were recorded in 12 to 40 age group, 46(31.72%) patients were recorded in 41 to 60 years age group and 46 (31.72%) patients were recorded in 61 to 80 years age group (Table No. 6). Mean and SDs for age was 56+14.74 (Table No. 2). As per frequencies and percentages for fascial spaces involved, 60 (41.37%) patients were recorded with submandibular space, 44 (30.34%) patients were recorded with buccal space, 31 (21.37%) patients were recorded with canine space, 07 (4.82%) patients were recorded with submental space, 03 (2.06%) patients were recorded with sublingual space. (Table No.4)

Table 1. Association of fascial spaces with gender (n=145)

Fascial spaces involved	Gender Groups		P Values
	Male	Female	
Submandibular Space	46	14	0.509
Buccal Space	35	09	0.963
Canine Space	25	06	0.836
Submental Space	06	01	0.668
Sub Lingual Space	03	0	0.584
Total	115	30	

Table 2. Descriptive statistics (n=145)

Mean SD for Age	56+14.74
Duration of illness	5+1.2

Table 3. Association of fascial spaces with age (n=145)

Fascial spaces involved	Age Groups			P Values
	12- 40 Years	41- 60 Years	61- 80 Years	
Submandibular Space	23	17	20	0.762
Buccal Space	13	13	18	0.269
Canine Space	10	13	08	0.380
Submental Space	06	01	0	0.294
Sub Lingual Space	01	02	0	0.993
Total	53	46	46	

DISCUSSION

The expression fascial space infection could be explain as an infection in the fascial spaces within the maxillofacial region, an area with a composite anatomy⁹. Infections in this region, which is usually the consequence of involvement of tooth and surrounding structures, should be dealt with immense care otherwise, it will result in threatening crisis immediately. As these spaces are anatomically linked which results in the rapid spread of inflammation in particular area.¹⁰

The frequency of fascial space infections has reduced remarkably following the use of antibiotics [broad spectrum] and because of improvement in dental health care. However such type of infections have potential to cause life threatening complications for instance necrotizing fasciitis, pericarditis, mediastinitis, brain abscess, artery rupture and sepsis.¹¹

According to an international study most involved teeth were mandibular 3rd molars followed by mandibular 1st molars. In multiple spaces infection, submandibular space is more common followed by buccal space infection. Diabetes mellitus was most frequent systemic disease.⁶

Similarly in few other studies submandibular space involvement was more common as compared to buccal space.⁷ According to a study done in Khyber College of Dentistry Peshawar in 2012 most frequent teeth involved were Permanent mandibular 2nd molars (37.42%) followed by maxillary 1st molars

Table 4. Frequencies and percentages for fascial spaces involved (n=145)

Fascial spaces involved	n	%
Submandibular Space	60	41.37%
Buccal Space	44	30.34%
Canine Space	31	21.37%
Submental Space	7	4.82%
Sub Lingual Space	3	2.06%
Total	145	100%

Table 5. Gender distribution (n=145)

Gender	n	%
Male	115	79.31%
Female	30	20.68%
Total	145	100%

Table 6. Age distribution (n=145)

Age	n	%
12-40 Years	53	36.55%
41-60 Years	46	31.72%
61-80 Years	46	31.72%
Total	145	100%

(19.35%). Submandibular space infection was most frequent primary space involved (46.45%) followed by buccal space infection (30.32%). Followed by submental space infection (9.03%). Followed by lingual space infection (7.09) and canine space infection (6.45%). Females get it more (65%) as compared to males (34.84%).⁸ In our study 115 (79.31%) patients were male patients, 30 (20.68%) patients were female patients (Table No.1 & 5) 53 (36.55%) patients were recorded in 12-40 age group, 46 (31.72%) patients were recorded in 41-60 years age group, 46 (31.72%) patients were recorded in 61-80 years age group. (Table No. 3). As per frequencies and percentages for fascial spaces involved, 60 (41.37%) patients were recorded with submandibular space, 44 (30.34%) patients were recorded with canine space, 31 (21.37%) patients were recorded with submental space, 07 (4.82%) patients were recorded with sublingual space. (Table No. 4)

Most of the previous studies showed that the most frequent source of fascial space infection was odontogenic. Zhang C stated that the submandibular space was the most frequently involved in both single space involvement and multiple spaces infections

(37.5% and 29.1%, respectively)⁹

CONCLUSION

Submandibular space was the frequent fascial space involved in odontogenic infections. Pain, trismus, swelling, pus discharge and dysphagia were the most frequent presentations of fascial space infections, early recognition and timely referral to concerned department can help to halt this infection from further spreading which can be fatal.

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