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RESEARCH ARTICLE

PREVALENCE OF CONGENITALLY MISSING PERMANENT TEETH IN BURAIDAH QASSIM KSA.

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Abstract

Objective: The aim of this study was to assess the prevalence and pattern of congenital missing teeth in the permanent dentition, excluding third molars, in Buraidah City of Qassim region in Saudi Arabia.
Materials and methods: This retrospective cross sectional study included patient records of 378 patients (Male 339, Female 39) aged from 6 to 20 years who attended to the Qassim University dental clinics in Buraidah. Panoramic Radiographs were examined and inspected for evidence of hypodontia.
Result: The prevalence of hypodontia in the present sample was 6.3%. Hypodontia was found more frequently in the maxilla than in the mandible. The distribution of missing teeth was noticed in the right side more than the left side. The maxillary lateral incisor was the most frequently missing tooth.
Conclusion: The prevalence of hypodontia in this sample of patients who attended dental Clinics in Qassim University, KSA was within the range reported in the literature for other populations. The management of hypodontia in the anterior segment requires multidisciplinary team approach to restore the esthetic and function and improve patient self-esteem.

Introduction:-

Congenital missing teeth (CMT) are the most commonly observed developmental dental anomaly and many dentists can frequently encounter to manage this condition in a routine clinical practice. These teeth fail to erupt clinically in the oral cavity and have no sign of appearance in radiographs. [1, 9]

Researchers have used a variety of terminology to describe this condition, such as a reduction in teeth number, teeth aplasia, congenitally missing teeth, the absence of teeth, agenesis of teeth, and lack of teeth. [3] The missing of one to six teeth except third molar is called hypodontia. [5, 6] Oligodontia referring to absence of more than six teeth excluding third molars. [7]

The prevalence of dental anomalies has been investigated in many studies. The differences in the prevalence of CMT among different ethnic populations were well-documented by numerous researches[2, 3] CMT varies in different populations from 1.1% to 15.88%. [2, 11, 16]

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Salem G . studied congenitally missing teeth in Jazan, KSA he found the prevalence to be 2.2%. [8]Hashim H and Al-Said S. studied the prevalence of hypodontia in the Qatari sample with prevalence 7.8%. [10] Shokri A et al investigated the prevalence of hypodontia in Hamadan, Iran with result of 15.88%. [11] In Germany; a retrospective study was performed in 1353 patients by Behr **et al**. Missing permanent teeth were found in 171 (12.6%).[12] Chung CJ et al. Studied the prevalence of hypodontia in the Korean population. The percentage of hypodontia was 11.2%. [13] Guan G et al studied the prevalence of congenitally missing permanent teeth in orthodontic patients with resultant 11.1% in Western New York. [14] Hassan DA et al. investigated the prevalence of hypodontia in Sudanese sample with the result of 5.1% .[15]

CMT is the most common dental anomaly and might cause problems in chewing, speech and aesthetics.[10] Knowledge and awareness of the prevalence of the condition may help to emphasize and develop more effective treatments. However studies regarding the prevalence of CMT in KSA are few. [4, 5] The aim of this study was to assess the prevalence and pattern of congenital missing teeth in the permanent dentition, excluding third molars,in Buraidah Qassim KSA .

Materials and Methods:-

Study design and sample: This Descriptive retrospective cross sectional study examined the records of 378 patients (339 male and 39 female) age range from 6 to 20 years who attended to the Faculty of Dentistry Dental clinics Qassim University. All available patient records filed during the period from September 2013 to May 2017.

A tooth was diagnosed as congenitally missing when there was no mineralization of its crown on panoramic images and no evidence of its extraction**.** Reported that no tooth, excluding third molars was found to mineralize in patients after age 12 years [19]**.** All radiographs were taken by one device (sordex, kvp 70, ma 12, time 12s, Finland) and were processed by one digitizer and were evaluated under proper light with Acer monitor [Acer Inc., Hsichih, Taiwan] . The radiographic findings were checked with patient's record to assure that they met the selected criteria.

Inclusion criteria: Patients attended to dental clinics in faculty of dentistry Qassim University, Age range from 6 to 20 years. Presence of digital panorama radiograph with good quality. Exclusion Criteria: Third molars (any congenital missing third molars will be excluded). History of tooth extraction or tooth loss due to trauma, caries, periodontal disease or orthodontic extraction as indicated in patient's record & Patients with syndromes and systemic diseases.

Statistical Analysis:-

All descriptive and comparative analyses were performed using the Statistical Package for the Social Sciences (Version 21.0, SPSS Inc., and Chicago, IL, USA). To test the difference between tooth types, male and female patients, maxillary versus mandibular agenesis, right versus left side, anterior versus posterior and unilateral versus bilateral, Chi-square test was employed. The level of significance was set at $P < 0.05$.

Results:-

A total of 378 patient's records that fulfilled the criteria of selection where included. Patient age range from 6 to 20 years .The mean age at final presentation for treatment was 14.48 years (standard deviation = 4.272).

Out of 378 patient's records reviewed, 24 exhibited congenital absences of one or more teeth (19 male and 5 female).The prevalence of hypodontia in our sample were 6.3% in which 5.6% male and 12.8% female. The number of missing teeth and their distribution is provided in [Table1].

Table 1:- No. of patients with hypodontia and their distribution according to gender (n=24)

			NUMBER of MISSING TEETH				Total
			0	1	2	4	
Sex	Female	Count	34	5	0	0	39
		% within Sex	87.2%	12.8%	0.0%	0.0%	100.0%
		% of Total	9.0%	1.3%	0.0%	0.0%	10.3%
	Male	Count	320	11	7	1	339
		% within Sex	94.4%	3.2%	2.1%	0.3%	100.0%
		% of Total	84.7%	2.9%	1.9%	0.3%	89.7%

Total	Count	354	16	7	1	378
	% within Sex	93.7%	4.2%	1.9%	0.3%	100.0%
	% of Total	93.7%	4.2%	1.9%	0.3%	100.0%

Table2:- show the most commonly missing teeth

Table2:- Most common affected teeth by hypodontia

Tooth type	Upper laterals	Upper first premolars	Upper second premolars	Lower second premolars	Lower laterals	upper canines	Lower centrals	Upper centrals	Lower first premolars
No. of missing	10	6	5	4	3	2	2	1	1

Tables 3 and 4: demonstrate the distribution of hypodontia in upper and lower jaws. On the other hand, **Tables 5 and 6 show** the right side in both jaws higher percentage of missing teeth compared to the left side , but no significant difference was noted (P>0.05).

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	358	94.7	94.7	94.7
	1.00	16	4.2	4.2	98.9
	2.00	4	1.1	1.1	100.0
	Total	378	100,0	100,0	

Table**3] upper jaw**

[Table4] Lower jaw

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	370	97.9	97.9	97.9
	1.00	6	1.6	1.6	99.5
	2.00	2	.5	.5	100.0
	Total	378	100.0	100.0	

[Table5] Right

		Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Valid	**.00**	**361**	**95.5**	**95.5**	**95.5**
	1.00	**14**	**3.7**	**3.7**	**99.2**
	2.00	**3**	**.8**	**.8**	**100.0**
	Total	**378**	**100.0**	**100.0**	

[Table6] Left

		Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Valid	**.00**	**366**	**96.8**	**96.8**	**96.8**
	1.00	**10**	**2.6**	**2.6**	**99.5**
	2.00	**2**	**.5**	**.5**	**100.0**
	Total	**378**	**100.0**	**100.0**	

Tables 7 and 8 demonstrate the distribution of hypodontia in anterior and posterior teeth respectively

[Table8]		**Posterior teeth**			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	365	96.6	96.6	96.6
	1.00	10	2.6	2.6	99.2
	2.00	3	.8	.8	100.0
	Total	378	100.0	100.0	

[Table7]		**Anterior teeth**			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	366	96.8	96.8	96.8
	1.00	8	2.1	2.1	98.9
	2.00	3	.8	.8	99.7
	4.00	1	.3	.3	100.0
	Total	378	100.0	100.0	

Discussion:-

This is a descriptive cross -sectional study to determine the prevalence and pattern of congenital missing teeth in the permanent dentition, excluding third molars, among patients attended to Faculty of Dentistry, Dental Clinics in Qassim University, KSA.

CMT are described as those teeth fail to erupt clinically in the oral cavity and have no sign of appearance in radiographs. Congenitally missing teeth varies in different populations from 1.1% to 15.88%. [2, 9, 11, 16]

The result of our study showed prevalence of 6.3% of hypodontia in permanent dentition excluding third molar. Which is considered moderate compared to worldwide prevalence. Sajjad A, et al showed that the prevalence of hypodontia was 6.1% in Al-jouf province, Saudi Arabia and this is in consistent with our study.[17]On the other hand, *Salem G* . studied congenitally missing teeth in Jazan, Saudi Arabia with prevalence resulted to be 2.2%.[8] Slightly higher prevalence showed in Qatari sample with prevalence 7.8%. [10] In contrast, a higher prevalence was found *in* Germany; a retrospective study was performed in 1353 patients missing permanent teeth were found in 171 (12.6%).[12] Nearly the same high prevalence was found by Guan G *et al* were they studied the prevalence of congenitally missing permanent teeth in orthodontic patients (11.1%) in Western New York. [14]

The most common congenital missing tooth types were the maxillary lateral incisors. There is some variation in the literature concerning the description of the most frequently missing tooth, excluding third molars. studies have shown the permanent maxillary lateral incisor to be the most affected tooth.[1,10,15] In contrast, some studies have also shown The mandibular second premolar is the most frequently missing tooth.[7,16,17]

In our study females showed slightly higher prevalence of hypodontia compared to males, however no statistically significant difference was observed and this is in accordance with most of the studies.[20, 21, 22] It could be estimated that with increase in females sample size the significance could be mostly achieved.

Many studies have demonstrated that there is no difference between maxilla and mandible to which jaw has more missing teeth.[7, 10, 15, 16] We found more missing teeth in the maxilla than in the mandible and the difference was not significant. This result was in agreement with Hashim *HA, Al-Said S.*[10] However, other studies found more missing teeth in the mandible than in the maxilla.[15]

When comparing between right and left sides, this study showed that hypodontia exist more in the right side. This finding was in agreement with the finding of *Fekonja* who reported that the congenital missing teeth were more commonly on the right side than on the left side.[18]

CMT in the anterior or posterior region represents a clinical problem and the clinicians should be alert to the possibility of these associated anomalies and their accompanying clinical implications that requires a

multidisciplinary approach to cover the needs of his patients. Early detection of missing teeth will ensure proper diagnosis and treatment with improved esthetics and function for the patient.

Conclusion:-

1. The prevalence of hypodontia in this study (6.3%) was within the range reported in the literature.
2. The maxillary lateral incisor was the most frequently missing tooth, and the maxillary upper premolar was in the second rank followed by the maxillary second premolar and mandibular second premolar.
3. Hypodontia was found more frequently in the maxilla than in the mandible, and the distribution of missing teeth was noticed in the right side more than in the left side.

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