

## Prevalence and Distribution of Gingival Pyogenic Granuloma in Sulaimani population- Kurdistan Region -Iraq

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### ABSTRACT

Pyogenic granuloma is an inflammatory hyperplastic lesion seen in the oral cavity. It is commonly appear in the gingiva. The objectives of the research was to determine the percent of gingival pyogenic granuloma in the population of Sulaimani city -Iraq in relation to gender, age, pregnancy ,systemic diseases ,oral hygiene and site of occurrence of pyogenic granuloma. Materials and Methods: In this study the total stratified sample [1136 (568 male +568 female)] and the randomly selected sample [248 (124 male and 124 female their age range (from 10 to 70 year) .They were examined orally for inspection of gingival pyogenic granuloma and determination of oral hygiene. The percent of the total sample with gingival pyogenic granuloma was (11.3%). Most of patients with gingival pyogenic granuloma was in females in their Second decade. The highest percent of gingival pyogenic granuloma was found in buccal gingiva in upper jaw. Highly significant relationship was found between gingival pyogenic granuloma and its' history. There was significant correlation between gingival pyogenic granuloma and oral hygiene status and systemic condition.

**Keywords:** Gingival, Pyogenic granuloma, Prevalence, Tumor, Granuloma pyogenicum, Pregnancy tumor.

### INTRODUCTION

Pyogenic granuloma (“Granuloma gravidarum”, “ pregnancy tumor”) is nonmalignant lesion that affect skin and mucosa ,which may occur inside or outside the oral cavity<sup>1</sup> .The accurate etiology and pathogenesis of pyogenic granuloma(PG) is still not obvious although, many researchers mentioned that pyogenic granuloma

occurred due to an intensive reaction of localized connective tissue to a little irritating factor<sup>2</sup>. Many etiological factors for pyogenic granuloma have been reported for instance, primary teeth exfoliation, eruption of adult teeth ,traumatic factors, hormonal change , gingival inflammation ,chronic irritant factor, medications, vascular lesions, defective restoration, food accumulation or strange object and calculus in the gingiva and poor oral hygiene status.<sup>3,4,5</sup>



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Sometime pyogenic granuloma (PG) inside the oral cavity is associated with pregnancy<sup>5</sup>. gingival pyogenic granuloma (GPG) occurs up to 5 percent of pregnancies<sup>6</sup>, however, bacterial plaque and infection of gingiva are essential for hormonal alteration which result in gingivitis<sup>7</sup>.

Oral pyogenic granulomas shows tendency for the gingiva, 75 percent of the cases of pyogenic granulomas may occur in the gingiva<sup>8</sup>, but it may be also located in the oral mucosa, lips, palate and tongue<sup>5</sup>. It is painful "pedunculated", "sessile", "resilient", "exophytic", "nodule or papule" with more than one lobe or smooth surface that bleed easily, it has more tendency to females<sup>5</sup>. Pyogenic granuloma may be found in any age, though it is commonly seen in young females (20-30 years), this may be due to the hormonal alterations in this period<sup>9</sup>. The color of pyogenic granuloma may vary from pink to red or purple.<sup>10</sup>

Diagnosis of pyogenic granuloma (PG) depend on clinical, Histopathological and Radiographical examinations. "peripheral giant cell granuloma", "hyperplastic gingival inflammation", "Kaposi's sarcoma" "peripheral odontogenic fibroma", "peripheral ossifying fibroma", "angiosarcoma" and "hemangioma" should be consider in differential diagnosis of pyogenic granuloma<sup>11</sup>. Surgical excision which combined with removal of irritant local factors is the treatment of pyogenic granuloma<sup>5</sup>. Pyogenic granuloma is associated with recurrence rates which ranged (from 0- to 16) percent.<sup>5,12</sup>.

This study was performed in order to determine the prevalence of gingival pyogenic granuloma (GPG) in Sulaimani city population -Kurdistan region-Iraq; to find its percent in maxilla and mandibula and to detect if there is any correlation between gingival pyogenic granuloma (GPG) and (systemic diseases and oral hygiene status).

## MATERIALS AND METHODS

The total stratified sample of the studied population was comprised of [1136 (568 male +568 female)] and the randomly selected sample include [248 (124 male and 124 Female), aged (from 10 to 70 year). The subjects were recruited

from patients attending to college of Dentistry - Sulaimani university. Disposable dental mirrors and "Williams" graduated periodontal probes (Marking at 1,2,3,5,7,8,9,10 mm) were used for oral inspection of gingival pyogenic granuloma and determination of oral hygiene condition (poor, fair, good). The pregnant sample was divided according to the trimesters into 3 subgroups: Subgroup 1: includes women at First trimester; Subgroup 2: includes women at Second trimester; Subgroup 3 includes women at Third trimester.

A questionnaire was taken from all sample including their names, ages, sex, marital status, medical history and history of presence and duration of gingival pyogenic granuloma, pregnancy trimester and number of deliveries. This research was approved by the ethical committee from medical Factuality-Sulaimani University. However, these patients were not included in the study: Edentulous patients and those taking immunosuppressives, anticonvulsants or calcium channel blockers.

The Histopathological test was done in Oral Pathology branch - College of Dentistry – Medical Factuality –Sulaimani University. SPSS version 19 was used to analyzed data. Associations between gingival pyogenic granuloma (GPG) and different variables was tested by using Chi-square test. Non-significant  $P > 0.05$ , Significant  $0.05 \geq P > 0.01$ , highly significant  $P \leq 0.0$ .

## RESULTS

The percent of females group was (49.2%), male group was (50.2%); male and female (10-20 years) and (40-50 years) was (17.4%); (21-30 years) and (31-40 years) age groups were (24.3%) and (23.1%) respectively. (51-60 years) and (61-70 years) the percent were (9.7%) and (8.1%) respectively as shown in table (1).

The percent of the total sample with gingival pyogenic granuloma was (11.3%). The percent of patients with history of gingival pyogenic granuloma (GPG) was (2.8%). Most of patients with (GPG) was in female age group (21-30 year). Regarding the oral hygiene status the percent of poor oral hygiene was (45.3%), fair (49.4%) and good (5.3%) as shown in table (2).

In terms of systemic condition the percent of patients with systemic diseases was (22.7%);hypertension was (7.3%); Type II diabetes mellitus ( 4.5 % ) ; renal stone ( 1.6 % ) ; cardiac disease ,stomach ulcer ,backache ,and migraine were ( 1.2% ) ;Thyrotoxicosis, irritable colon and stone in gallbladder ( 0.8%);Type I diabetes mellitus, hypoglycemia, rheumatism, hypotension and psychological disorder was (0.4 %) as shown in table (3). The percent of married patients was ( 66%). The percentage of patients with first trimester of pregnancy was (1.2 %), third trimester was (0.8%) as shown in table (4).

The percent of gingival pyogenic granuloma in buccal gingiva between right upper central and lateral incisors ,buccal gingiva between maxillary

right lateral incisor and canine ,buccal gingiva between right lower canine and lateral incisor were (1.2%). The percent of gingival pyogenic granuloma in buccal gingiva between left central ,lateral incisors and canine in mandible, buccal gingiva between mandibular left and right central incisors were (0.8%). The percent of gingival pyogenic granuloma in buccal gingiva between lower left lateral incisor and canine was (0.6%). The percentage of gingival pyogenic granuloma in buccal gingiva between lower right First and Second molars ;buccal gingiva between upper right and left central incisors; buccal gingiva between upper left central and lateral incisors; buccal gingiva of upper right lateral incisor ;buccal gingiva between upper right First and Second premolars; palatal gingiva between upper left lateral incisor and canine ;buccal gingiva between lower right central , lateral incisor and canine; buccal gingiva between upper left canine and First premolar; palatal gingiva between upper right lateral incisor and canine; palatal gingiva between upper left central and lateral incisors was (0.4%) as shown in table (5).

The percent of duration of gingival pyogenic granuloma of one month was (1.6%); two month (2.8%);three months (1.6%),four and six and 12 months (1.2%), 24 months (0.8%), eight and 36 months ( 0.4%) as shown in table (6).

A highly significant correlation was found between gingival pyogenic granuloma (GPG) and

**Table 1: Frequency and percent of gingival pyogenic granuloma according to age group**

Variable		Frequency	Percent
Gender	Total males	124	50.2
	Total Females	123	49.2
Male and female in each age group (Years)	10-20	43	17.4
	21-30	60	24.3
	31-40	57	23.1
	41-50	43	17.4
	51-60	24	9.7
	61-70	20	8.1

**Table 2: Frequency and percent of gingival pyogenic granuloma in total sample ,pregnancy complication ,history of gingival pyogenic granuloma and oral hygiene status**

Variable		Frequency	Percent
Gingival pyogenic granuloma(GPG)	No GPG	219	88.7
	GPG	28	11.3
Pregnancy complications(PC)	NO PC	228	92.3
	Abortion	15	6.1
	Low term birth	3	1.2
	Preterm birth	1	0.4
History of Gingival pyogenic granuloma(GPG)	No history of(GPG)	240	97.2
	History of (GPG)	7	2.8
Oral hygiene status	Poor	112	45.3
	Fair	122	49.4
	Good	13	5.3

history of (GPG). There was significant relationship between gingival pyogenic granuloma and (oral hygiene status; and systemic condition). While there were no significant correlation between gingival pyogenic granuloma (GPG) and (age groups; Pregnancy complications; type of systemic disease ;marital status ;pregnancy trimester ;number of boys; number of girls) as shown in table (7).

### DISCUSSION

In this study the percent of patients with gingival pyogenic granuloma (GPG) was (11.3%) , while other studies found it (35%)<sup>13</sup>, (49.2%)<sup>14</sup> and (57%)<sup>15</sup>. These variations between researches may be due to the differences in design and performance of the studies.

The result of this study showed that gingival pyogenic granuloma could be develop in all age but , the most of patients with (GPG) were females in age group (21-30 year), this because of rising in estrogen” and “progesterone”. This result was in agreement with<sup>10,12,16</sup> ,they found that although (GPG) may develops in all ages, but they were more commonly appeared in females age group (21-30 year). Hormonal change lead to physiological alteration in gingival tissue, which contain “steroid hormones” receptors, that could increase the reaction of tissue to irritating factors and alter the “microbiota” and lead to more predominance of pathogenic bacteria. However, other study demonstrated that there was no effect of female hormones on oral pyogenic granulomas, because

**Table 3: Frequency and percent of systemic diseases**

Variable		Frequency	Percent
Systemic condition	No systemic diseases	190	77.3
	With systemic diseases	57	22.7
Type of systemic diseases	Type I diabetes mellitus	1	0.4
	Type II diabetes mellitus	11	4.5
	Hypoglycemia, psychology	1	0.4
	Hypertension	18	7.3
	cardiac disease	3	1.2
	Thyrotoxicosis	2	0.8
	Irritable colon	2	0.8
	Stomach ulcer	3	1.2
	Migraine	3	1.2
	Renal stone	10	1.6
	Stone in gallbladder	2	0.8
	Rheumatism	1	0.4
	Backache	3	1.2

**Table 4: Frequency and percent of material status ,pregnancy trimester**

Variable	Frequency	Percent
Material status Unmarried	84	34.0
Married	163	66.0
non-pregnant	242	98.0
pregnant first trimester	3	1.2
pregnant third trimester	2	0.8

they found that pyogenic granuloma occurred in both males and females without gender preference.

While the result of this study was in disagreement with<sup>16</sup> who found that Pyogenic granulomas occur in all age groups, but they were common in age group (10-20 year). This study was inconsistent with<sup>15</sup>; they mentioned that pyogenic granuloma was periodomently found in second decade of males , this because of the impact of elevation of sex hormones to the maximum level with

obvious poor oral hygiene in male in this age. This lead to initiate excessive increase in size of gingiva in presence of irritating factor for example, plaque and calculus.

Pyogenic granuloma develops up to 5 percent in pregnancy. The presence of this lesion in pregnancy suggests the possible correlation between gingival lesions and the hormonal status during this period <sup>18</sup>. There were some changes occur in women during pregnancy such as, food habits and frequency of meal take, oral hygiene is

affected due to nausea and sleepless<sup>9</sup>. The raise in prevalence of PG in the third trimester and the tendency to reduction in size after delivery indicate a clear hormonal association in the etiology of pyogenic granuloma<sup>14</sup>.

This study was agreed with the findings of<sup>13, 14</sup>, they showed that pyogenic granuloma had maxillary predominance. In addition this study was in agreement with<sup>19</sup> who found that the gingiva was the most common affected site and the maxilla more affected than mandible. While this study was

**Table 5: Frequency and percent of the sites of distribution of gingival pyogenic granuloma**

Variable	Frequency	Percent
Sites of pyogenic granuloma		
Buccal gingiva between lower right First and Second molars	1	0.4
Buccal gingiva between lower left lateral incisor and canine	4	0.6
Buccal gingiva between upper right & left central incisors	1	0.4
Buccal gingiva between maxillary left lateral & central incisors	1	0.4
Buccal gingiva between left mandibular central & lateral incisors & canine	2	0.8
Buccal gingiva between maxillary right central & lateral incisors	3	1.2
Buccal gingiva of right maxillary lateral incisor	1	0.4
Buccal gingiva between upper right First and Second premolars	1	0.4
Palatal gingiva between upper left lateral incisor and canine	1	0.4
Buccal gingiva between lower right and left central incisors	2	0.8
Buccal gingiva between upper right lateral incisor and canine	3	1.2
Buccal gingiva between lower right central and lateral incisors and canine	1	0.4
Buccal gingiva between upper left canine and First premolar	1	0.4
Buccal gingiva between lower right lateral incisors and canine	3	1.2
Palatal gingiva between upper right lateral incisors and canine	1	0.4
Palatal gingiva between upper left central and lateral incisors	1	0.4

**Table 6: Duration of gingival pyogenic granuloma**

Variable	Frequency	Percent
Duration of Gingival pyogenic granuloma		
1 month	4	1.6
2 month	7	2.8
3Months	4	1.6
4 months	3	1.2
6 months	3	1.2
8 months	1	0.4
12months	3	1.2
36 months	1	0.4

**Table 7: (Chi-square) correlation between  
Gingival pyogenic granuloma and variables**

Gingival pyogenic granuloma(GPG)	Variables	Chi-square
	Age groups	0.47
GPG	Pregnancy complications	0.452
GPG	History of GPG	0.000
GPG	Oral hygiene status	0.006
GPG	Systemic condition	0.037
GPG	Type of systemic disease	0.898
GPG	marital status	0.058
GPG	pregnant trimester	0.722
GPG	Number of boys	0.733
GPG	Number of girls	0.277

in disagreement with<sup>20</sup> who revealed that GPG were slightly more commonly found on the buccal mandibular gingival region of .

This study demonstrated that frontal regions of maxillary and mandibular gingiva are more frequently affected than posterior areas and most of GPG were showed on the gingival margin, this result was in agreement with<sup>21</sup>, they noticed similar findings.

### CONCLUSIONS

This study showed that the percentage of the total sample with gingival pyogenic granuloma was (11.3%). Although pyogenic granuloma (GPG) may occurs at any age , the most of patients with GPG was in females age group (21-30 year). In addition, the high percentage of gingival pyogenic

granuloma was found in maxillary buccal gingiva . Moreover, there was highly significant correlation between gingival pyogenic granuloma (GPG) and history of (GPG) .Furthermore, there was significant correlation between gingival pyogenic granuloma and( oral hygiene status and systemic condition). While there were no significant correlation between gingival pyogenic granuloma (GPG) and (age groups, pregnancy complications, type of systemic disease ,marital status ,pregnancy trimester and number of kids).

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