Outcome of Surgical Excision for Managing the Oral Pyogenic Granuloma

Ameer Gul¹*, Muhammad Shahzad¹, Ali Raza Abbasi¹, Tariq Hussain Shaikh¹, Taimoor Ali Khan¹ and Bashir Jalbani¹

¹Department of Oral Maxillofacial Surgery of LUMHS, Pakistan

Authors’ contributions

This work was carried out in collaboration among all authors. Author AGZ and ARA designed the study, wrote the protocol, and wrote the first draft of the manuscript. Authors THS, TAK and BJ managed the analyses of the study and design the manuscript. Author MS managed the literature searches and guidelines. All authors read and approved the final manuscript.

Article Information

DOI: 10.9734/JPRI/2021/v33i32A31724

Editor(s):
(1) Dr. Win Myint Oo, SEGi University, Malaysia.
(2) Dr. Mohamed Salem Nasr Allah, Weill Cornell Medical College, Qatar.
(3) Dr. Syed A. A. Rizvi, Nova Southeastern University, USA.

Reviewers:
(1) Arbaz Sajjad, Universiti Sains Malaysia, Malaysia.
(2) Vibha Singh, KGMU, India.

Complete Peer review History: http://www.sdiarticle4.com/review-history/67696

Received 15 March 2021
Accepted 19 May 2021
Published 18 June 2021

ABSTRACT

Objective: To determine the outcome of surgical removal of oral pyogenic granuloma in terms of post-operative pain (POP), post-operative healing and post-operative infection.

Materials and methods: This observational study was conducted at Oral and Maxillofacial Surgery department, Liaquat University of Medical and Health Sciences Jamshoro/Hyderabad, from October 2018 to March 2019. Patients of oral pyogenic granuloma, 18-45 years old and either of gender were included. Surgical process of oral pyogenic granuloma were done under local anesthetic by giving infiltration surrounding deep oral pyogenic granuloma by 2% Xylocaine along with adrenaline. Patients were followed for three weeks on weekly basis to access post-operative complications including post-operative healing. Data was collected via study proforma.

Results: Total 37 patients took part in the study; their mean age was 47.86±7.61 years. On 1st week assessment all patients were noted with history of mild pain, moderate pain and severe pain (19, 10 and 8 cases respectively), while healing was achieved in 19 patients. On second week assessment 25 patients exhibited mild pain and 6 exhibited moderate pain and healing was
achieved by 16 patients. On 3rd week assessment, only 09 patients exhibited mild pain and mostly were healed few cases showed minor infection. **Conclusion:** It was concluded that surgical removal is valuable procedure for the management of pyogenic granuloma of oral cavity with lower rates of post-operative infection and pain, and highest rates of post-operative healing.

**Keywords:** Pyogenic granuloma; incision; outcome.

1. **INTRODUCTION**

Pyogenic granuloma (PG) is an inflammatory hyperplasia, denoting a wide range of oral mucosal nodular growths, which histologically represent granulation tissues and inflamed fibrous [1,2]. Oral PGs are most usually associated with lobular mass of granulation hyperplastic tissues, as well as inflammatory infiltrates and endothelial proliferation. The surface is usually smooth, pedunculated, lobulated, or soft, and sessile. It erodes easily, resulting in bleeding and pain, which have been reported to be the most common symptoms linked with oral PG. [3] It is more common among women and is related with etiological factors within 16 percent of cases [4], while non-LCH PG was linked to etiological factors more commonly (86 percent). Oral PG is a most prevalent gingival tumor [5], with a notable preference for the gingiva, comprising 75% of all patients, where it is thought to be the result of foreign debris or calculus in gingival crevice. The next most prevalent sites are buccal mucosa, tongue, and lips.[1,6] On maxillary gingival tissues, lesions are somewhat more common than on mandibular gingival tissue; anterior regions are more commonly afflicted than posterior sites. Furthermore, these abnormalities are far more frequent on facial side of the gingiva as compared to lingual side; a few spread between teeth and affect both the lingual and facial gingiva [6]. Oral PG's surface color ranges between pink and red to purple, and their size rarely exceeds 2.5 cm.[7] Oral PG is caused by traumatic injury, local irritants, low-level chronic trauma, and as well as persistent calculus irritation, medicines like Cyclosporine, and hormone factors [8]. Differential diagnosis formulation becomes essential to aid in further examination of the patient's health and treatment, if there is any mass in oral cavity [9]. The findings of biopsies are conclusive and important in confirming the diagnosis. Sclerotherapy, surgical removal, CO2 laser therapy, and curettage are among options for treating oral PG. Early detection of PG as well as surgical treatment with adequate resection is safe, minimizes the risk of relapse, and benefits patients by allowing them to avoid repeated visits. [10] As per published studied outcome is still controversial as in a study it was reported that surgical removal results in little bleeding and cosmetic problems [11]. PG management depends on the extent of symptoms. Clinical monitoring and follow-up are recommended when the lesion is minor, painless, and bleeding-free. Though conservative surgical removal and the removal of causative irritants (calculus, plaque, trauma source, foreign materials) are the most common treatments in the cases of gingival lesions [1,6,12]. The resection must extend down towards periosteum, and the surrounding teeth must be deeply scaled to eliminate the source of persisting irritation. [6]. However this study aimed at determining the outcome of surgical removal for managing the oral pyogenic granuloma in terms of post-operative pain, post-operative infection and post-operative healing.

2. **MATERIALS AND METHODS**

This observational study was conducted at Oral & Maxillofacial Surgery department, Institute of Dentistry, Liaquat University of Medical & Health Sciences Jamshoro/Hyderabad, from October 2018 to March 2019. All the patients were >18 years old with oral pyogenic granuloma and either of gender were included. Patients who were in the middle of an emergency procedure, had any systemic disease that hampered surgical intervention based on clinical records and previous history, patients with any oral cavity pathological lesion, pregnant women, and those who refused to take part in the study were all excluded. The diagnosis of oral pyogenic granuloma was based on history, clinical examination and periapical x-ray. Patients underwent surgery of oral PG were done under local anesthesia by giving deep infiltration to the surrounding oral PG with Xylocaine 2% and adrenaline. Patients were prescribed Acetaminophen 500 mg for each 8 hour after resection to alleviate any discomfort. Patients were advised to eat soft diets after surgery, avoid eating hot foods, and use.
mouthwash to ensure healthy dental hygiene. All the information regarding post-operative measures such as pain, healing, and infection were documented after week 1, week 2, and week 3 was collected via study proforma. Data was analyzed by SPSS version 20.

3. RESULTS

Total 37 patients were studied; their mean age was 47.86±7.61 years, minimum 19 years and maximum 44 years. Out of all 28 were males and 09 were females Table: No. 1.

On 1st week assessment all patients were noted with history of pain as 19 had mild pain, 10 patients had moderate pain and 8 patients were with severe pain. On 1st week assessment healing was achieved in 19 patients.

On second week assessment 25 patients exhibited mild pain and 6 exhibited moderate pain. On 2nd week assessment healing was achieved by 16 patients.

On 3rd week assessment 09 patients exhibited mild pain, while no moderate or severe pain found in any case. On 3rd week assessment infection and fever were occurred among few cases.

4. DISCUSSION

An inflammatory, benign hyperplasia of the mucous membrane and skin is referred to as a pyogenic granuloma (PG) [7]. The gingiva is thought to be the most prevalent intraoral location for PGs. They do, however, frequently affect young adults and children at the sites involving lips, tongues, and buccal mucosa [13]. Surgical removal is the most usual method of therapy for PG. The average age in this research was 47.86 years. Kiran R et al. [14] reported 28 years of mean age in their study. Other studies have revealed similar results to ours, such in a Brazilian study on 293 patients, average age was reported to be 27 years [15]. Though PG can affect people of any age, the majority of cases (50%) have been documented to occur in 10-40 years of age group, with a highest prevalence at the age of 30 years [16]. This discrepancy in mean age might be due to the fact that our research was older than the reported studies. Males made up the majority of the participants in this study. Likewise, in the study of Kiran R et al [14] males and females were 42.9% and 57.1% respectively. While other studies documented predominance of female gender. Mohamed Zaghlool Amer et al also reported comparable findings. [17] Females, on the other hand, were more prevalent than males, according to Khaitan T et al. [18]. Females are more commonly afflicted, according to Samatha Y et al. [19], with predisposition of females over males (ratio 3:2). This discrepancy might be due to the fact that in our research only female patients of oral PG were studied. Other studies reported that treatment of PGs comprise conservative

| Table 1. Descriptive statistics of age and gender n=37 |
|------------------------------------------------------|
| **Variables** | **Statistics** |
| Age | Mean 47.86 years |
|      | Standard deviation 7.61 years |
|      | Minimum 20 years |
|      | Maximum 44 years |
| Gender | Male 28(75.7%) |
|      | Female 09(24.3%) |
|      | Total 37(100.0%) |
| Occupational Status | Worker 9(24.3%) |
|                     | Farmer 17(45.95) |
|                     | Housewife 4(10.8%) |
|                     | Shopkeeper 02(5.4%) |
|                     | Police man 02(5.4%) |
|                     | Malhi 02(5.4%) |
|                     | Student 01(2.7%) |
|                     | Total 37(100.0%) |
Table 2. 1st week outcome of patients n=37

| Variables | Frequency | Percentage |
|-----------|-----------|------------|
| Pain      |           |            |
| No        | 00        | 00         |
| Mild      | 19        | 51.4       |
| Moderate  | 10        | 27.0       |
| Severe    | 18        | 21.6       |
| Healing   |           |            |
| Yes       | 19        | 51.4       |
| No        | 18        | 48.6       |
| Infection |           |            |
| Yes       | 22        | 59.5       |
| No        | 15        | 40.5       |
| Fever     |           |            |
| Yes       | 19        | 51.4       |
| No        | 18        | 48.6       |

Table 3. Second week outcome of patients n=37

| Variables | Frequency | Percentage |
|-----------|-----------|------------|
| Pain      |           |            |
| No        | 6         | 16.2       |
| Mild      | 25        | 67.6       |
| Moderate  | 6         | 16.2       |
| Severe    | 00        | 00         |
| Healing   |           |            |
| Yes       | 21        | 56.8       |
| No        | 16        | 43.2       |
| Infection |           |            |
| Yes       | 10        | 27.0       |
| No        | 27        | 73.0       |
| Fever     |           |            |
| Yes       | 8         | 21.6       |
| No        | 29        | 78.4       |

Table 4. Third week outcome of patients n=37

| Variables | Frequency | Percentage |
|-----------|-----------|------------|
| Pain      |           |            |
| No        | 28        | 75.7       |
| Mild      | 9         | 24.3       |
| Moderate  | 00        | 00         |
| Severe    | 00        | 00         |
| Healing   |           |            |
| Yes       | 36        | 97.3       |
| No        | 01        | 02.7       |
| Infection |           |            |
| Yes       | 01        | 02.7       |
| No        | 36        | 97.3       |
| Fever     |           |            |
| Yes       | 01        | 02.7       |
| No        | 36        | 97.3       |

Laser surgery, cryosurgery, or surgical excision which is generally acceptable however often causes recurrence and scars, and also needs skilled expertise [18,20].

Resection of PG was proven to be a successful option of treatment in this study. On other hand in a case series study of Rosa CG et al. [21] also observed that the accurate excisional removal considerably reduces the possibilities of recurrences, while they determined the pyogenic granuloma among pregnant females. In another study it is stated that the surgical excision is the considerable and simple treatment option, there might be developed some complications like intra-operative bleeding and postoperative infections that can cause of delayed healing the wound.[22]. On other it is demonstrated that the simply done surgical excision can be reduce the high recurrences rate, but often leaves the visualized scar.[23] In another study of the Leung AKC et al [24] observed that, by the surgical excision with linear closure histologic examination can done of the removal tissue and it also associated to the lower recurrences rate, the technique is the choice of the treatment.
Fig. 1. Oral pyogenic granuloma in upper anterior teeth before surgery

Fig. 2. Oral pyogenic granuloma in upper anterior teeth after surgery

Fig. 3. Oral pyogenic granuloma on the posterior surface of tongue before surgery
5. CONCLUSION

It was concluded that surgical removal is the valuable managing procedure of the oral pyogenic granuloma with lower rate of pain, best achievement of post-operative healing and lower rate of post-operative infection. This was a small sample size and single center study. However further large scale studies are recommended on this subject.

CONSENT

Informed and written consent was taken from the patients.

ETHICAL APPROVAL

As per international standard or university standard written ethical approval has been collected and preserved by the author(s).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Eversole LR. Clinical outline of oral pathology: Diagnosis and treatment 3rd ed. BC Decker, Hamilton. 2002;113-114.
2. Burket LW, Greenberg MS, Glick M. Burket's oral medicine: Diagnosis and treatment. Pmph Bc Decker. 2003;141-142.
3. Al-shiayt RA, Ottoman BA. Recurrent pyogenic granuloma: An update. Int J Sci Rep. 2015;1(1):22-31.
4. Epivatianos A, Antoniades D, Zaraboukas T, Zairi E, Poulapoulos A, Kiziridou A, Iordanidis S. Pyogenic granuloma of the buccal cavity: Comparative study of its clinicopathological and immunohistochemical features. Pathol Int. 2005;55:391-397.
5. Sternberg SS, Antonioli DA, Carter D, Mills SE, Oberman H. Diagnostic surgical pathology. 3rd ed, Lippincott Williams and Wilkins, Philadelphia. 1999;69:174.
6. Neville BW, Damm DD, Allen CM, Bouquot JE. Oral and maxillofacial pathology. 2nd ed, WB Saunders, Philadelphia. 2002;437-495.
7. Jafarzadeh H, Sanatkhani M, Mohtasham N. Oral pyogenic granuloma: a review. J Oral Sci. 2006;48(4):167-75.
8. Chandrashekar B. Minimally invasive approach to eliminate pyogenic granuloma: A case report. Case reports in dentistry. 2012;26:2012;1-3.
9. Willies-Jacobo L, Isaacs H Jr, Stein MT. Pyogenic granuloma presenting as a congenital epulis. Arch Pediatr Adolesc Med. 2000;154:603-605.
10. Narendra S, Bose C, Rout N. Oral pyogenic granuloma: One reactive hyperplastic lesion of the gingiva. Int J Res Med Sci. 2015;3:3863-8.
11. Joda T. Esthetic management of mucogingival defects following total
excision in a case of pyogenic granuloma. Eur J Esthet Dent. 2012;1(7):110-119.

12. Esmeili T, Lozada-Nur F, Epstein J. Common benign oral soft tissue masses. Dent Clin North Am. 2005;49:223-240.

13. Pagliai KA, Cohen BA. Pyogenic granuloma in children. Pediatr Dermatol. 2004;21:10–13.

14. Kiran R, Asad F, Haider S, Bashir B, Rani Z, Khurshid K, Pal SS. Efficacy of sclerotherapy with sodium tetradecyl sulphate in the treatment of pyogenic granuloma. Journal of Pakistan Association of Dermatology. 2018;27(2):110-3.

15. Gordón-Núñez MA, de Vasconcelos Carvalho M, Benevenuto TG, Lopes MFF, Silva LMM, Galvão HC. Oral pyogenic granuloma: a retrospective analysis of 293 cases in a Brazilian population. J Oral Maxillofac Surg. 2010;68:2185-8.

16. Rai S, Kaur M, Bhatnagar P. Laser: A powerful tool for treatment of pyogenic granuloma. J Cutan Aesthet Surg. 2011;4:144-7.

17. Zaghlool Amer M, Marzouk HA, Elsharabasy IM. Impact of diode laser versus sclerotherapy in treatment of oral pyogenic granuloma. J Am Sci. 2016;12(8):1-8.

18. Khaitan T, Sinha R, Sarkar S, Kabiraj A, Ramani D, Sharma M. Conservative approach in the management of oral pyogenic granuloma by sclerotherapy. Journal of Indian Academy of Oral Medicine and Radiology. 2018;30(1):46.

19. Samatha Y, Reddy TH, Jyothirmai, Ravikiran A, Sankar AJ. Management of oral pyogenic granuloma with sodium tetra decyl sulphate. A case series. N Y State Dent J. 2013;79:55-7.

20. Sacchidanand S, Purohit V. Sclerotherapy for the treatment of pyogenic granuloma. Indian J Dermatol 2013;58:77-8

21. Rosa CG, Lay AC, La Torre AC. Oral pyogenic granuloma diagnosis and treatment: A series of cases. Revista Odontológica Mexicana. 2017 Oct 1;21(4):e244-52.

22. Al-Mohaya MA, Al-Malik AM. Excision of oral pyogenic granuloma in a diabetic patient with 940nm diode laser. Saudi medical journal. 2016 Dec;37(12):1395.

23. Gilmore A, Kelsberg G, Safranek S. What's the best treatment for pyogenic granuloma?. The Journal Of Family Practice 2010;59;1;40-42

24. Leung AKC, Barankin B, Hon KL. Pyogenic Granuloma. Clinics Mother Child Health 2014;11: e106.

© 2021 Zardari et al.; This is an Open Access article distributed under the terms of the Creative Commons Attribution License (http://creativecommons.org/licenses/by/4.0), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Peer-review history:
The peer review history for this paper can be accessed here:
http://www.sdiarticle4.com/review-history/67696