

Surgical Excision vs Minimally Invasive (Scaling & Curettage) Treatment for Oral Pyogenic Granuloma

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ABSTRACT

Background: Pyogenic granuloma (PG), also known as granuloma pyogenicum, is a unique clinical entity that develops as a tissue's heightened reaction to an unspecific infection. It can also be described as a tumor-like development that is thought to be an excessive conditioning reaction to a slight trauma, low-grade or persistent irritation, hormonal variables, or medicines. **Objective:** To determine the comparison of effectiveness between surgical excision and minimally invasive (scaling & curettage) treatment for oral pyogenic granuloma. **Study Design:** Prospective cross-sectional study. **Settings:** The study was conducted CMH Dental College, Multan Pakistan. **Duration:** February 2021 to October 2021. **Methods:** Total 32 patients of both genders were presented. Patients were visited to hospital for the treatment of oral pyogenic granuloma. Informed written consent was taken from patients for detailed demographics. 16 patients received surgical excision in group I and 16 patients received minimal invasive (scaling & curettage) treatment in group II. Post treatment outcomes among both groups were compared. We used SPSS 23.0 to analyze all data. **Results:** Among all, females 21 (65.6%) were higher in numbers than males 11 (34.4%). Patients mean age was 34.3±17.82 years. Majority of the cases were from urban areas 19 (59.4%). 14 (43.8%) patients were smokers. Most common cause of the oral PG was use of pills in pregnancy, staph infection and poor hygienic conditions. We found that minimal invasive treatment was effective to remove lesion in 14 (87.5%) as compared to surgical excision in 10 (62.5%) with p value <0.05. Recurrence rate of lesion in group I was 7 (43.8%) and in group II was 2 (12.5%). Post treatment bleeding in group I was found in 5 (31.3%) and only in 1 patients of group II. Pain intensity in surgical excision was recorded higher 3.2±2.14 as compared to group II 1.7±3.11 with p value <0.03. **Conclusion:** In this study, we found that minimally invasive (scaling and curettage) was more effective and beneficial than surgical excision in terms of being less painful, less expensive, and straightforward to carry out in addition to being less likely to cause recurrence problems, particularly when the lesion is large or surgically inaccessible under local anesthesia.

Keywords: Oral pyogenic granuloma, Recurrence, pain, Minimally invasive (scaling and curettage), Surgical Excision.

INTRODUCTION

Pyogenic granuloma (PG), also known as granuloma pyogenicum, is a unique clinical entity that develops as a tissue's heightened reaction to an unspecific infection. It can also be described as a tumor-like development that is thought to be an excessive conditioning reaction to a slight trauma, low-grade or persistent irritation, hormonal variables, or medicines.

The earliest instance of pyogenic granuloma in English literature was described by Hullihen in 1844. Poncet and Dor, two French surgeons, first characterized the pyrogenic granuloma in 1897 and gave it the term otomycosis hominis. The phrase "pyogenic granuloma" wasn't originally used until Hartzell did so in 1904. Due to the absence of pus and the fact that the disease does not histologically resemble a granuloma, the term "pyogenic

granuloma" is misleading. The lesions commonly bleed spontaneously because, in reality, it is a capillary hemangioma of the lobular subtype.

High levels of steroid hormones on females' mucosal surfaces make them more susceptible to oral (PG) infection. It is well accepted that the critical roles performed by female sex hormones are part of the pathophysiology of this illness.¹ Usually seen in the oral cavity, it is a tumor-like growth that appears close to the mucosa or the front teeth. Common triggers include low-grade local irritancy, trauma, hormonal factors, or particular types of medications,² in addition to hormonal variables and hormonal factors.^{3,4}

A PG presents clinically as a smooth mass or a lesion with lobular architecture, typically pedunculated, however some lesions are sessile. The degree of vascularity affects both the age and surface color of the lesion. Older lesions are more fibrotic and pink in color, as opposed to newly formed lesions, which tend to be more bluish or purple in color, extremely vascular, and prone to bleed and ulcerate even with moderate stress. Small growths that are a few millimeters in size to bigger lesions that might be several centimeters in diameter are among the range of sizes that they come in. The tumor often has little discomfort, yet its great vascularity makes it prone to bleeding.⁵⁻⁷

Oral PG has a startling preference towards the gingiva. The next frequent locations are the buccal mucosa, lip, and tongue. It is more prevalent in kids and young people who clearly lean feminine (2:1 female to male ratio), probably as a result of the vascular consequences of female hormones. Due to the common development of pyrogenic gingival granulomas in pregnant women, the labels "pregnancy tumor" or "granuloma gravidarum" are widely used. Distal giant cell granuloma, periphery ossifying fibroma, and hemorrhage are among the possible differential diagnoses for PG. Histopathological analysis and biopsy results are the primary diagnostic factors.^{5,6}

Conservative excision is one method of treating oral PG. To reduce the chance of recurrence, local irritants or the trauma's origin must be removed. Although surgical excision is thought to be a straightforward process, it can be complicated by a number of issues, such as intraoperative bleeding and postoperative infection, which could slow the wound's recovery.^{7,8} Scaling and curettage, cryosurgery, injections of sclerosing drugs (corticosteroid or ethanol, and sodium tetradecyl sulfate), and other minimally invasive therapy techniques have all been employed in the past.⁴ In this study we used minimally invasive (scaling and curettage) and Surgical Excision for the treatment of oral PG.

METHODS

This clinical trial was conducted at CMH Dental College, Multan Pakistan and comprised of 32 patients. After taking informed written consent details demographics of enrolled cases were recorded. Patients <18 years of age, cancerous patients and those did not provide any written consent were excluded.

Patients were between the ages of 18-75 years. Patients were divided equally in two groups. 16 patients received surgical excision in group I and 16 patients received minimal invasive (scaling & curettage) treatment in group II. The excisional biopsy was completed under local anesthesia and forwarded for histological analysis with the prognosis being determined to be pyogenic granuloma. Finally, pyogenic granuloma was identified based on the histology findings. After administering local anesthetic, the lesion was removed from group I using surgical excision protocol comprising the excision including base of the lesion with extension down to the periosteum. Removal of the soft tissue down till periosteum helped to guarantee that the lesion was entirely removed and helped to stop it from coming back. In group II, full scaling and curettage were employed, particularly in the premolar region where soft tissue development was seen. Scaling and curettage procedures caused significant bleeding. But by applying pressure with gauze, the bleeding was halted in a matter of minutes. The patients were instructed to clean their teeth twice daily, use 0.12% chlorhexidine mouthwash twice daily, and practice and maintain good oral hygiene.

RESULTS

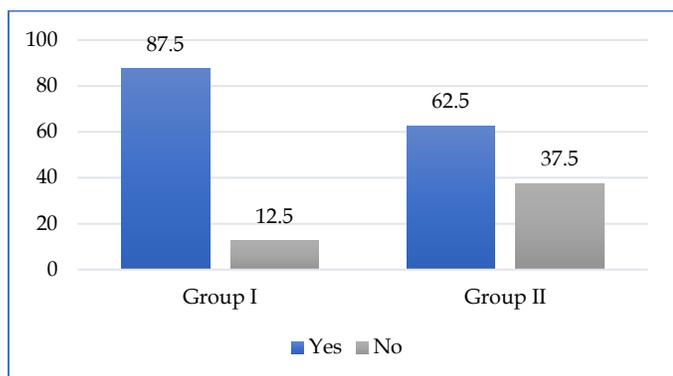
Among all females 21 (65.6%) were higher in numbers than males 11 (34.4%). Patients mean age was 34.3±17.82 years. Majority of the cases were from urban areas 19 (59.4%). 14 (43.8%) patients were smokers. Most common cause of the oral PG was use of pills in pregnancy, staph infection and poor hygienic. (table 1)

Table 1: Demographics data of the enrolled cases

Variables		Frequency	Percentage
Gender	Male	21	65.6
	Female	11	34.4
Mean age (years)		34.3±17.82	
Residence	Rural	19	59.4
	Urban	13	40.6
Smokers	Yes	14	43.8
	No	18	56.2
Cause of Oral PG	Use of pills in pregnancy	15	46.7
	staph infection	8	25
	poor hygienic	9	28.1

We found that minimal invasive treatment was effective to remove lesion in 14 (87.5%) as compared to surgical excision in 10 (62.5%) with p value <0.05.(Figure 1)

Figure 1: Efficacy of both procedures



Post treatment bleeding in group I was found in 5 (31.3%) and only in 1 patients of group II. Recurrence rate of lesion in group I was 7 (43.8%) and in group II was 2 (12.5%). (Table -2)

Table 2: Comparison of complications

Variables		Group I (16)	Group II (16)
Complications	Bleeding	5 (31.3%)	1 (6.3%)
	Recurrence	7 (43.8%)	2 (12.5%)

Pain intensity in surgical excision was recorded higher 3.2 ± 2.14 as compared to group II 1.7 ± 3.11 with p value <0.03.(table 3)

Table 3: Pain intensity among both groups

Variables		Group I (16)	Group II (16)
Pain Intensity	10 minutes after procedure	7.8 ± 4.20	6.7 ± 5.17
	After 12 hours	3.2 ± 2.14	1.7 ± 3.11

DISCUSSION

A non-specific conditioned growth known as a pyrogenic granuloma is thought to be an excessive reaction to modest trauma. It is often observed as a single, sessile, or pedunculated mass that is frequently ulcerated and has a propensity to bleed on its own. Satellitosis is a generalized pyogenic granuloma with many lesions present.⁹

There is no evidence to suggest satellite toxoid lesions in the oral cavity, despite reports of satellite skin lesions. In its second decade of life, Pyogenic Granuloma shows a strong preference for young girls. It arises more frequently in the maxillary arch than the mandibular (maxillary arch accounts for 75% of cancers), with just 15% of tumors occurring in the alveolar region. Lips, tongue, and buccal mucosa are other frequent locations.

Due to its great vascularity, the lesion's size can range from a few millimeters to several centimeters, and because it bleeds freely, it typically has a brilliant red color.¹⁰ Due to a decline in vascularity over time, the lesion may become pinkish and more collagenous as it ages. Numerous researchers have suggested that local irritants including calculus, any foreign material, poor oral hygiene, persistent low-grade trauma, physical trauma, hormonal variables, germs, viruses, and certain medicines are the cause of pyogenic granulomas. Both the pyogenic granuloma and its satellite lesions may result from excessive local synthesis of tumor angiogenic factor as a result of a tissue damage brought on by trauma⁸. Due to its clinical characteristics, pyrogenic granuloma can be diagnosed as fibroma, peripheral giant cell granuloma, peripheral ossifying fibroma, or hemangioma. Therefore, the results of the biopsy are crucial for making a diagnosis.¹¹

The current investigation made clear the importance of dental hygiene and socioeconomic position (measured by patient income) in the development of pyogenic granuloma, as more rural inhabitants than urban residents had this disease. To assess the geographic distribution of the lesion between the rural and urban populations, the sample size in the current study might not be sufficient.¹² Most pyogenic granulomas show clinically as a painless red mass with a smooth surface connected at a sessile base that bleeds freely when prodded. Jafarzadeh *et al*¹³ noticed a similar characteristic, which contrasts with that noted by Al-Khateeb and Ababneh,¹⁴ who observed an ulcerated lesion with a pedunculated base in one area of the lesion. A short-lived pyrogenic granuloma tends to bleed readily due to its high vascularity and low collagen content, whereas a mature lesion has more collagen and less vascularity.¹³ It is important to note that the clinical characteristics of pyogenic granulomas in pregnant women were the same as those in non-pregnant women.

In this study, two methods were employed to treat pyogenic granuloma. The first group had surgical excision. In the second group, a thorough curettage procedure was used to remove the irritants and a lesion with 2 mm of the surrounding normal tissue. This is done to determine how the surgical method affects the lesion's propensity to return. Following up on the treated individuals revealed that those who underwent surgical excision had a greater rate of recurrence. In contrast, the minimally invasive group did not see a recurrence of the lesion. The recurrence occurred at intervals varying from 10 months to 1 year. Although there were no significant differences between the two groups, this suggests that deep curettage and removal of 2 mm from the normal tissue may have an impact on the lesion's ability to recur. Recurrence has been hypothesized to be caused by partial

eradication of the lesion and persisting causal factors.¹⁵ To ensure the lesion was completely removed, 2 mm of the surrounding healthy tissue was excised. Due to the idea that healing occurs by secondary intention, the visible bone was covered with iodoform gauze that had been painted with white head lacquer and stitched to the surrounding tissue.^{16,17}

CONCLUSION

In this study, we found that minimally invasive (scaling and curettage) was more effective and beneficial than surgical excision in terms of being less painful, less expensive, and straightforward to carry out in addition to being less likely to cause recurrence problems, particularly when the lesion is large or surgically inaccessible under Local Anesthesia.

LIMITATIONS

The limitation of the study was that this study only focus on the surgical outcomes only.

SUGGESTIONS / RECOMMENDATIONS

It was recommended that further investigation with more outcome variables should be included

CONFLICT OF INTEREST / DISCLOSURE

There was no conflict of interest

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