

MANAGEMENT OF GINGIVAL ENLARGEMENT IN PCOS PATIENT: 1 YEAR FOLLOW UP CASE REPORT

Dentistry

Aparna Kaushik*	MDS, Department of Periodontology, Post Graduate Institute of Dental Sciences, Rohtak, Haryana, India. *Corresponding Author
Sakshi Malhotra	MDS, Department of Periodontology, Post Graduate Institute of Dental Sciences, Rohtak, Haryana, India.

ABSTRACT

Introduction: Polycystic ovary syndrome (PCOS) is a well known hormonal imbalance condition in females, leading to low grade chronic inflammation in the body. Periodontal tissues having receptors for steroid hormones, are susceptible to such inflammation due to hormonal changes in PCOS. Current case report presents management of gingival enlargement in PCOS patient. **Case Presentation:-** A 29 year, PCOS diagnosed female patient reported with chief complaint of swollen gums from past 6 months. Clinical examination revealed inflammatory type of gingival enlargement in the mandibular anterior sextant. After performing phase I therapy, undisplaced flap was performed. **Conclusion:** Clinically healthy gingival tissue with no sign of recurrence till 1 year was achieved after treatment. PCOS is not curable, symptomatic treatment is being provided, therefore, patient is at lifelong risk for hormonal imbalance and so for the periodontal diseases. Every patient and treating doctor should be educated properly to maintain oral hygiene and case should be followed up to report any recurrence.

KEYWORDS

Polycystic ovary syndrome, Oral hygiene, Gingival overgrowth, Inflammation.

INTRODUCTION

Polycystic ovary syndrome (PCOS) is a metabolic disorder in premenopausal women. It is characterized by androgen excess in conjunction with insulin resistance and ovarian dysfunction. An association has been reported between PCOS and periodontal diseases in particular, chronic periodontitis.¹ Periodontal diseases are chronic inflammatory diseases affecting the periodontium. Although, the primary etiological factor for periodontal disease is dental plaque, its progression depends on host susceptibility. PCOS might influence host susceptibility to various chronic inflammatory diseases including periodontitis,² as it is associated with increased oxidative stress and systemic inflammation.³ Furthermore, excess estrogen in PCOS induces fibroblast⁴ and keratinocytes proliferation⁵ and enhances fibrous collagen synthesis.⁶ The prevalence of periodontal diseases in PCOS women reported to be higher than those without this syndrome.⁷ So, the management of periodontal disease in women with PCOS is pivotal. This case report presents the management of a case of periodontitis with gingival hyperplasia interfering with routine plaque control in relation to mandibular anteriors in PCOS diagnosed female patient.

Case Report:

A 29 year female patient reported to the department of periodontics, PGIDS Rohtak with the chief complaint of swollen gums from past 6 months. She was having complaint of pain and bleeding from gums while brushing and eating. Medical history revealed diagnosed case of Polycystic ovary syndrome with infertility 7-8 months back. Patient was on tablet Metformin 500 mg TDS and Myoinositol OD. Clinical examination revealed inflammatory type of gingival enlargement in the mandibular anterior sextant involving marginal and papillary gingiva, more pronounced on labial side (Figure 1A, 1B). Gingiva was soft, friable, edematous, slightly erythematous and bleeding on slight provocation was also present. Mean probing pocket depth and clinical attachment loss in the mandibular anterior sextant were 6.79 mm and 3.2 mm respectively. Intraoral periapical radiograph revealed alveolar bone loss (Figure 1C). Diagnosis of localized periodontitis, stage 2, grade B with gingival enlargement was made.

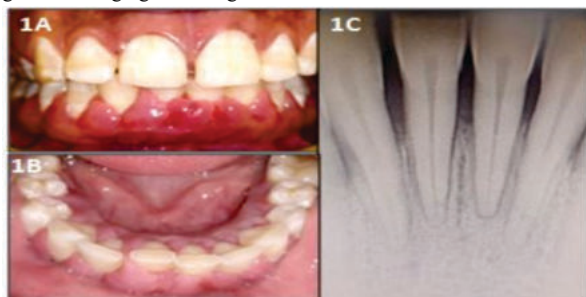


Figure 1: Initial visit pictures and radiograph

Figure 1A: Clinical picture revealing gingival enlargement on labial side of mandibular anterior sextant.

Figure 1B: Clinical picture revealing mild gingival enlargement on lingual side of mandibular anterior sextant.

Figure 1C: Intra oral peri-apical radiograph revealing alveolar bone loss with respect to mandibular anterior teeth.

Scaling and root planing was performed and patient was motivated to maintain plaque control. Patient was recalled after 2 weeks (Figure 2A).

She reported with no relief. Flap surgery was planned with the informed consent of the patient. After administering local anesthesia, undisplaced flap (internal bevel gingivectomy) was performed on labial side only. Full thickness flap was raised. After completing the debridement, continuous sling sutures were given using 3-0 silk suture (figure 2B). Post operative care adopted 0.12% Hexidine mouthwash twice daily for 2 weeks and medicines (tablet Brufen 400 mg SOS). Patient was recalled after 1 week for suture removal. After suture removal (Figure 2C), recall visits were scheduled. At every visit, patient was motivated to maintain the oral hygiene. No recurrence is noted till now. Patient is still on follow up.



Figure 2: Clinical pictures depicting case management

Figure 2A: Pre-operative clinical picture (after phase I therapy)

Figure 2B: Post-operative clinical picture after suturing

Figure 2C: Clinical picture after suture removal at 7 days

One month after surgery, clinical examination revealed well contoured healthy gingiva. At 3 months follow-up visit, probing pocket depth was reduced to healthy gingival sulcus and no bleeding on probing was there. Further follow up at one year (Figure 3A, 3B) revealed satisfactory oral hygiene with no signs of recurrence. Patient was well educated and motivated to maintain plaque control at each follow-up visit.



Figure 3: 1 year follow up pictures

Figure 3A: Picture revealing clinically healthy gingiva with no enlargement on labial side

Figure 3B: Picture revealing clinically healthy gingiva with no enlargement on lingual side

DISCUSSION

A consensus workshop in Rotterdam indicated PCOS to be present if any 2 out of 3 following criteria are met, in the absence of other entities that may cause these findings: 1) Oligo-ovulation and/or anovulation, 2) Excess androgen activity, 3) Polycystic ovaries. PCOS is characterized by hormonal imbalances. Various pathways, hypothesized to understand the effect that PCOS may have on the periodontal tissue already affected by dental plaque, are systemic hormonal levels, reactive oxygen species (ROS), insulin resistance and advanced glycation end products (AGE).⁸

Changes in the female sex steroid hormones namely estrogen, progesterone and androgens alter quality of the associated dental plaque⁹ and immunobiology of the tissue¹⁰ as periodontal tissues express receptors for various steroid hormones including androgens (testosterone). Also, it is reported by Murakami et al. 2018, during puberty and pregnancy, hormonal changes exacerbate inflammatory response of gingiva even in the presence of minimal plaque level.¹¹

Inflammation is a common key factor in the pathogenesis of PCOS and periodontitis. C-reactive proteins (CRPs) are important markers of inflammation. High CRP levels and other pro-inflammatory cytokines such as IL-6, TNF- α have been reported in PCOS.¹² Also, in periodontitis, pro-inflammatory cytokines and CRP levels in GCF or serum are associated with progressive periodontal tissue destruction.¹³

Further, oxidative stress markers have been found in peripheral blood of chronic periodontitis and PCOS patients. Systemic oxidative stress in PCOS patients induce development of insulin resistance and AGE production.¹⁴ AGE interacts through Receptor-AGE (RAGE). RAGE expression in periodontal tissues leads to oxidative tissue damage.

There is a paucity of evidences reporting the management of periodontitis with gingival hyperplasia in PCOS patients. A thorough search of literature revealed only one case series by Ramya et al. In their case series, no follow up was reported.¹⁵ As PCOS is not curable and only symptomatic treatment is provided, patient is at lifelong risk for hormonal imbalances, so for the periodontal diseases. Therefore, it is of utmost importance to schedule regular follow ups for periodontal maintenance. In present case report, patient was followed up 1 year and still on follow-up.

CONCLUSION

The current case report suggested that regular periodontal maintenance is required to prevent and manage the periodontal manifestations of PCOS at the earliest. It is on the part of periodontist to educate the patient as well as gynecologist about the importance of dental plaque control.

Summary

Why is this case new information?	Gingival enlargement is an unusual presentation in PCOS patients.
What are the keys to successful management of this case?	Regular follow up visits, patient motivation, good plaque control.
What are the primary limitations to success in this case?	Hormonal imbalance

Acknowledgment

We acknowledge our respected teaching staff of department of Periodontology, PGIDS, Rohtak for all the clinical help.

No funding was obtained for this case.

Conflict Of Interest

The authors declare that there were no conflicts of interest related to this case report.

REFERENCES:

- Márquez-Arrico CF, Silvestre-Rangil J, Gutiérrez-Castillo L, Martínez-Herrera M, Silvestre FJ, Rocha M: Association between periodontal diseases and polycystic ovary syndrome: a systematic review. *Journal of Clinical Medicine*. 2020, 23:1586. 10.3390/jcm9051586
- Greenhill C: Reproductive endocrinology: PCOS raises risk of periodontitis. *Nat Rev Endocrinol*. 2010, 6:656. 10.1038/nrendo.2010.184
- Gonzalez F, Rote NS, Minium J, Kirwan JP: Reactive oxygen species-induced oxidative stress in the development of insulin resistance and hyperandrogenism in polycystic ovary syndrome. *J Clin Endocrinol Metab*. 2006, 91:336-340.
- Mariotti A: Oestrogen and extracellular matrix influence human gingival fibroblast proliferation and protein production. *J Periodontol*. 2005, 76:1391-1397. 10.1902/jop.2005.76.8.1391
- Amar S, Ching KM: Influence of hormonal variation on periodontium in women. *Periodontol*. 2000:79-87.
- Jonsson D: The biological role of the female sex hormone estrogen in the periodontium-studies on human periodontal ligament cells. *Swed Dent J Suppl*. 2007, 187:11-54.
- Nair SD, Varma S, Suragimath G, Zope S, Kale V, Abbaya K: Prevalence of periodontal disease in women with polycystic ovary syndrome-a comparative descriptive study. *J Evol Med Dent Sci*. 2017, 6:4733-6. 10.14260/Jemds/2017/1025
- Asnani KP, Hingorani D, Kheir S, Deshmukh VL, Romanos GE: Expression of nuclear receptors of gingiva in polycystic ovarian syndrome: a preliminary case study. *Australian dental journal*. 2014, 59:252-7.
- Kornman, K.S. & Loesche, W.J. (1980): The subgingival micro-bial flora during pregnancy. *Journal of Periodontal Research*. 15:111-122.
- Yarkac, F.U., Gokturk, O. & Demir, O. (2018): Interaction between stress, cytokines, and salivary cortisol in pregnant and non-pregnant women with gingivitis. *Clinical Oral Investigations*. doi.org/10.1007/s00784.018.2569.9.
- Murakami, S., Mealey, B.L., Mariotti, A. & Chapple, I.L.C. (2018): Dental plaque-induced gingival conditions. *Journal of Clinical Periodontology*. 45:20.
- S, Cascella T: The increase of leukocytes as a new putative marker of low-grade chronic inflammation and early cardiovascular risk in polycystic ovary syndrome. *J Clin Endocrinol Metab*. 2005, 90:2-5.
- D'Aiuto F, Nibali L, Parkar M, Patel K, Suvan J, Donos N: Oxidative stress, systemic inflammation, and severe periodontitis. *J Dent Res*. 2010, 89:1241-1246.
- Diamanti-Kandarakis E, Katsikis I, Piperi C, et al.: Increased serum advanced glycation end-products is a distinct finding in lean women with polycystic ovary syndrome (PCOS). *Clin Endocrinol*. 2008, 69:634-641.
- Ramya V, Bhuvaneswarri J, Paddmanabhan P, Rekha V, Hussain S: Inflammatory gingival enlargement and polycystic ovary syndrome (PCOS): a case series. *Int J*. 2019