

## **Pregnancy Induced Gingival Enlargement Treated With Propolis Gel: A Case Report**

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### **Abstract:**

**Introduction:** Hormonal changes occurring during pregnancy and puberty, however, have long been known to be associated with varying types of gingival enlargement. Hormonal changes can significantly potentiate the effects of local irritants on gingival connective tissue.

**Case Report:** The case presented is here of a 26-year-old pregnant patient with pregnancy induced gingival enlargement. She was in 2<sup>nd</sup> trimester of her pregnancy and was treated with propolis gel after phase I therapy. Clinical follow up period lasted for 3 months.

**Conclusion:** After doing phase I therapy propolis gel was applied subgingivally and patient was told not use any other gel or mouthwash to maintain oral hygiene. The enlargement subsided with no side effects of the gel.

**Keywords:** Pregnancy induced gingival enlargement, Propolis Gel

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### **I. Introduction**

During pregnancy, many changes take place in both systemic and local environments leading to a significant increase in the severity of gingivitis. In recent years, many studies have assessed the changes that occur within the gingival tissue during pregnancy and their potential impact on the foetus. Pregnancy is defined as a state that includes fertilization, implantation and embryonic and

fetal growth that ends with the birth of a baby after 280 days or 40 weeks. Pregnancy gingivitis presents as gingival erythema, enlargement and bleeding.<sup>1</sup>

Epidemiological studies have shown that the prevalence of gingivitis increases during pregnancy when compared to control groups. The evidence indicates that hormonal changes affect the rate of cell turnover of the gingival tissues, inducing several microbiological changes in the subgingival flora and immunosuppression of the immune system. New evidence supports an association between the periodontal status and complications during pregnancy. Some countries have developed policies and practice guidelines that recommend oral care and the control of inflammation of the periodontal tissues throughout pregnancy.<sup>2</sup>

Pregnancy is accompanied by an increase in the production of estrogen and progesterone. Initially, the ratio of estrogen and progesterone is 100:1 but during the final months this changes to 1:1. Following birth the hormones reach their normal levels within 2 to 3 days. Two theories have been proposed for the actions of the hormones on the cells of the periodontal tissues: 1) a change in the effectiveness of the epithelial barrier to bacterial insult and 2) an effect on collagen turnover. There are several receptors for estrogen and progesterone within the gingival tissue. The estrogen receptors (ERs) exist as two subtypes: ERalpha and ERbeta. ERbeta is widely expressed at high levels in oral tissues. ERbeta is involved in important physiological processes, such as cell differentiation, extracellular matrix organization and stromal-epithelial communication.

In all forms of enlargements, good oral hygiene is necessary to minimize the effects of systemic factors, Gingivoplasty or Gingivectomy may be required, but should be done in combination with prophylaxis and oral hygiene instructions. Lesions that do not cause significant functional or esthetic problems should not be excised during pregnancy because, first, they may reoccur and, secondly they may resolve spontaneously post-partum.

With the advent of nanobiotechnology which is the brain of propolis gel, the fear of treating pregnancy induced gingival enlargement has vanished. Propolis was used at the time of Egyptian and Greek civilizations which recognized its healing qualities. Hippocrates, the founder of modern medicine, used it for healing sores and ulcers internally and externally. The word propolis (Russian Penicillin) is derived from the Greek word "pro" before, polis "city" or defender of the city. This non-toxic resinous substance was classified into 12 types according to physicochemical properties and related to geographic locations; however, the botanical origin of only three types were identified. A new type of propolis, named Brazilian red Propolis (BRP) because of its color, it has attracted the attention of international business.<sup>3</sup>

Propolis has been used for treating different diseases and inflammatory conditions as both local and systemic applications. In nature, or when in room temperature, it is a sticky substance, but becomes hard and brittle at low temperature. It is composed of resin and balsams (50 - 70%), essential oils and wax (30 - 50%), pollen (5 - 10%) and other constituents which are amino acids, minerals, vitamins A, B

complex, E and the highly active bio-chemical substance known as bioflavonoid (Vitamin P), phenols and aromatic compounds .<sup>4</sup>

## **II. Case Report**

A 26-year-old female patient who was in her 2<sup>nd</sup> trimester of pregnancy reported at department of periodontics KD Dental College & Hospital , Mathura with chief complaint of swollen gums in upper and lower teeth region of mouth since 20 days. Patient had noticed bleeding and enlargement of the gums which progressed to involve the entire length of arch. Patient's periodontal condition was fair with no bone loss was present. Grade I mobility was present in the lower front teeth. Medical history revealed patient was not any medications and was not suffering from any systemic disease. Intraoral examination revealed generalized pseudopockets and generalized bleeding on probing. The treatment of the patient was started with phase I therapy which was completed in two sittings after an interval on 7 days. On the 3<sup>rd</sup> visit which was planned after 7 days, propolis gel was placed subgingivally. Patient was given demonstration on brushing of teeth and was instructed not to use any other mouthwash or gel.

Follow up lasted for 3 months and results showed marked reduction in bleeding on probing and the gingival enlargement also subsided.



**Fig 1: At Baseline ( front view )**



**Fig 2: At Baseline ( palatal view )**



**Fig 3: At Baseline ( lingual view )**



**Fig 4: After 2 weeks ( front view )**



**Fig 5 : After 2 weeks ( palatal view )**



**Fig 5 : After 2 weeks ( lingual view )**



**Fig 6: After 8 weeks ( front view )**



**Fig 7: After 8 weeks ( palatal view )**



**Fig 8: After 8 weeks ( lingual view )**



Fig 9: Armamentarium used



Fig 10: Propolis delievery needle

### III. Discussion

Gingival changes in pregnancy were described as early as 1898, even before knowledge about hormonal changes was available. Incidence of gingivitis in pregnancy varies from around 50% to 100%. The primary role of microbial plaque in initiating gingivitis and periodontal destruction is well established. While examining other contributory factors such as the effects of hormonal flux in pregnancy on periodontal disease status, it is mandatory to isolate the effects of plaque.<sup>5</sup>

Gingivitis in pregnancy is caused by bacterial plaque, like in non-pregnant individuals. Pregnancy accentuates the gingival response to plaque. The correlation between gingivitis and the quantity of plaque was greater after parturition than during pregnancy, which suggests that pregnancy induces other factors that aggravate gingival response to local irritants. The patient's recent pregnancy makes pregnancy gingivitis an attractive explanation for the hyperplastic gingiva.<sup>6</sup>

High hormone levels during puberty and pregnancy lead to more pronounced gingivitis and possible marginal enlargement, depending on the level of plaque control prior to puberty or pregnancy. An overgrowth of *Prevotella intermedia*, together with vascular change and oedema associated with high levels of oestrogen/progesterone, is the primary explanation for the gingival inflammation and gingival enlargement. There is an increase in gingival inflammation between the 14<sup>th</sup> and 30<sup>th</sup> weeks of pregnancy and that this will occur despite a fall in the amount of plaque at the dentogingival junction. This implicates other factors in addition to plaque accumulation to explain the increased inflammation. It was confirmed that there are marked increase in the plasma levels of oestradiol and progesterone between the 14<sup>th</sup> and 30<sup>th</sup> weeks of pregnancy but it was not possible to demonstrate a direct association between these increases and the increase in gingival inflammation.<sup>7</sup>

The local factors i.e. plaque and calculus are known to be responsible for gingival enlargement during pregnancy. The hormonal factors also play a role in aggravating the enlargement. Therefore, the importance of regular check-up and oral prophylaxis cannot be overlooked. Propolis proved to be a great help by reducing the bulk of gingival by its properties. No data has been documented so far regarding the use of propolis in pregnancy induced gingivitis. But the underlying data tells about the reasons why propolis was a breakthrough in this case.

## **Health enhancing properties of propolis as tested in cell cultures and animal experiments**

### **Main functional effects**

Antibacterial  
Antiviral  
Antifungal  
Against parasites  
Antiulcer (stomach, skin, buccal)  
Antioxidant  
Radiation protective  
Hepatoprotective  
Antitumor, antimutagenic  
Anti-angiogenic  
Cyto- and chemopreventive  
Antiinflammatory  
Wound healing  
Immunostimulating  
Immunomodulating (immunosuppressive in autoimmune diseases)  
Muscle contracting at small concentration  
Muscle relaxant at higher concentration  
Anti-diabetes  
Cardioprotective: antimyocard, antithrombogenic, antihypertensive, antiarrhythmic  
Local anaesthetic  
Improves regeneration of cartilagenous and bone tissue, dental pulp  
Improves corneal wound healing and inflammation in rats  
Food preservative

### **Secondary effects**

Anti-osteoporose  
Against scratching behaviour in mice  
Against experimental rhinitis in mice  
Against experimental colitis in rats  
Against rat colon anastomosis in rats  
Angiostatic in human umbilical vein endothelial cells  
Anti-allergenic  
No effect on basic blood parameters, protects erythrocytes against radiation, anti-aggregation effect  
Neurotrophic effects in PC12m3 cells  
Inhibits cell growth of higher plants and animals inhibits germination of wheat seedlings  
Water-soluble propolis derivative relieves scopolamine-induced amnesia in mice  
Enhancement of the hyperthermal tolerance in immune mononuclear cells of competitive cyclists  
Antiaging, increases life span of mice

Propolis gel also helps to decrease the microbes.

## **Effects of propolis against pathogenic and harmful bacteria fungi, viruses, molds and parasites**

### **Gram-positive bacteria**

Bacillus cereus, Bacillus mesentericus, Corynebacterium spp., Corynebacterium diphtheriae, Diplococcus pneumoniae, Enterococcus spp., Mycobacteria sp., Mycobacterium tuberculosis, Staphylococcus aureus, Streptococcus: critecus epidermis faecalis mutans, pyogenes, viridans, sobrinus,

### **Gram negative bacteria**

Branhamella catarrhalis, E. coli, Helicobacter pylori, Klebsiella ozaemae, Proteus vulgaris, Pseudomonas aeruginosa, Salmonella: choleraesuis, dublin, enteritidis, exneri, gallinarum, pullorum, , paratyphi-A, paratyphi-B, typh;i Shigella: dysinteriae, sonnei

### **Fungi**

Aspergillus sp., Candida: albicans, guiliermondi, parapsilosis, tropicalis; Cryptococcus sp., Cryptococcus neoformans, Histoplasma encapsulatum, Madurella mycetomi, Microsporium: audoinini, canis,

cepleo, distortum, ferrugineum, gypseum; Piedra hortae, Phialophora jeanselmei, Saccharomyces sp. , Trichophyton: sp., mentagrophytes, rubrum, Trichosporon cutaneum

#### **Viruses**

Adenovirus, Coronavirus, Herpes symplex, Influenza A and B virus, Newcastle disease virus, Polio virus, Vaccinia, Rotavirus; Vesicular Stomatitis Virus, Coronar virus

#### **Parasites**

Cholomonas paramecium, Eimeria: magna, media, perforans; Giardia lambia, Giardia duodenalis, Trichomonas vaginalis, Trypanosoma cruzi, Trypanosoma evansi

#### **Propolis can be regarded as food supplement for counteracting body and nerve inflammation**

### **IV. Conclusion**

After doing phase I therapy propolis gel was applied subgingivally and patient was told not use any other gel or mouthwash to maintain oral hygiene. The enlargement subsided with no side effects of the gel.

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