

Influence of Oral Contraceptive Pills on Periodontal Disease

Dear Editor,

Oral contraceptives (OCs) are common and convenient forms of contraception and have been determined to be safe and efficacious. OCs utilize synthetic gestational hormones (estrogen and progestin) to block follicle-stimulating hormone and luteinizing hormone and prevent ovulation. Basic and clinical studies have dramatically increased our knowledge regarding the role of sex steroid hormones in reproductive endocrinology as well as their role in the induction of gingival disease.^[1] The advent of contraceptives created interest in their effect on oral and periodontal tissues in the late 1960s and early 1970s. The association between OC use and gingival disease was first described in relation to high concentrations of sex steroids by Lindhe and Björn in 1967.^[2] Similar investigations linked the use of OCs to increased gingival inflammation, and some studies suggested that periodontal attachment loss is likely to occur in women taking contraceptives. The mechanism of OC-induced gingivitis was deemed to be an altered local immune response, decreased the capacity of gingival tissues for repair, and alteration in the gingival vasculature. OC users also were shown to have an increased prevalence of specific bacterial species in dental plaque.^[3]

The role of steroid hormones in the pathogenesis of periodontal diseases is well established. OCs may enhance periodontal breakdown by reducing the resistance to dental plaque and may induce gingival enlargement (GE) in otherwise healthy females.^[4] OCs accentuate the gingival response to local irritants similar to that seen in pregnancy. The incidence and severity of gingival diseases are positively correlated with plasma sex hormone concentrations and duration of use.^[5] The long-term use of OC may cause increased gingival inflammation, clinical attachment loss, and GE.

The oral cavity is the mirror of general health and the target organ for number of adverse reactions that arise due to side effects of medications. Many studies had linked the use of OC to increased gingival inflammation, and some suggested that periodontal attachment loss is likely to occur in contraceptive users. The aim of this study was to investigate the effect of OC pills on periodontal health.

In this study, 60 women were included from the period March to July 2018, aged between 20 and 40 years old. To be included in the test group ($n = 30$), systemically healthy women should report the continuous use of combined OC pills, called Microgynon. (Each tablet contains 0.03 mg Ethinylestradiol and 0.150 mg Levonorgestrel for at least 6 months.) Women included in the control group ($n = 30$) should report no use of OC. All patients were examined using good illumination and standardized conditions. Periodontal diseases were determined

as gingivitis by the presence or absence of plaque in addition to occurrence of bleeding.

Exclusion criteria included current pregnancy or delivery within 12 months prior to data collection, smoking or former smokers, mouth breathing, history of radiotherapy or chemotherapy in the past 5 years, early or premature menopause, breastfeeding, presence of any systemic condition that could influence host response to plaque accumulation (e.g., diabetes mellitus), use of antibiotics, nonsteroidal or steroidal anti-inflammatory drugs for the previous 6 months, and periodontal treatment. A detailed questionnaire was completed by all patients included in the study.

The study was conducted in accordance with the ethical principles that have their origin in the Declaration of Helsinki. The study protocol and the subject information and consent form were reviewed and approved by a local Ethics Committee.

Our findings suggest that periodontal disease was highest in women with OCs therapy than women without taking OCs, the percentage of infection of periodontitis was (21%) in women taking OCs while it was (9%) in women without OCs. Gingival changes are related to the stimulation of specific populations of fibroblasts by estrogen, increased vascular permeability, and proliferation,^[6] both the sex hormones decrease the gingival immune response to plaque bacteria. Inflamed gingival tissues are capable of metabolizing sex hormones to active metabolites at higher rate,^[7] thus local irritants may exaggerate OC-induced gingival changes.

Figure 1 depicts the association of periodontal disease and duration of intake of OC pills. It was observed highest (30%) in women taking OCs for 15 months, while the lowest was observed (3.3 and 6.6%) in women taking OCs for 3 and 9 months, respectively.

The two possible factors influencing the effects of OC pills (OCP's) on periodontal conditions include dosage and the

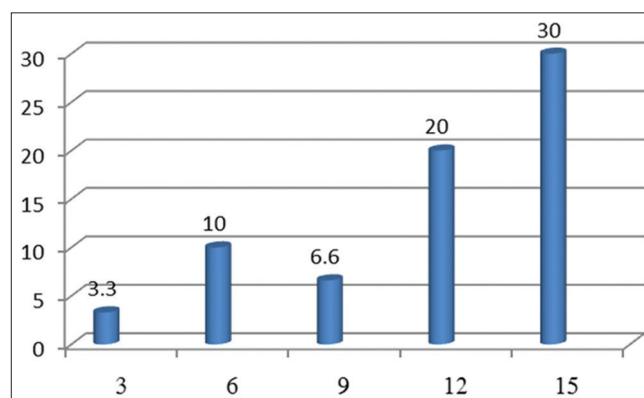


Figure 1: Duration of taking oral contraceptives (months)

Table 1: Distribution of oral contraceptives women according to age groups

Age	With OCs, n (%)	Without OCs, n (%)
20-25	3 (10)	2 (6.6)
26-30	9 (30)	11 (36.6)
31-35	6 (20)	3 (10)
36-40	12 (40)	14 (46.6)
Total	30 (100)	30 (100)

OCs: Oral contraceptives

duration of intake of the pills. Continued exposure of OCP use results in a higher risk of periodontal disease, it can be due to increased production of pro-inflammatory cytokines and prostaglandins from elevated levels of these hormones.^[8] Other studies have shown that females who use OCs have higher prevalence of gingival inflammation, loss of attachment, and periodontal disease progression.

From the results of our study, Table 1 shows that the women with age ranging between (36 and 40 years) appear highest infection with periodontitis (40%) in compare with other age groups.

It is known that the periodontal disease severity increases with age due to prolonged exposure to numerous risk factors throughout life. This study obtains a positive correlation between OCs intake and age; other authors have reported a positive correlation between age and OCs women.^[9] Therefore, the response of the periodontium in OCs is probably multifactorial in nature where dose, duration of pill usage, dental plaque, and sex hormone-sensitive cells are the key modifying factors.

From this study, it can be concluded that currently available OCs might influence the periodontal condition of women taking these medications for at least 15 months continuously, regardless of age and intake duration.

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Conflicts of interest

There are no conflicts of interest.

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