



# Oral and vulvovaginal changes in pregnancy <sup>☆, ☆☆</sup>



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**Abstract** Physiologic alterations of the oral and vulvovaginal mucosal surfaces result from the profound hormonal and immunologic changes of gestation. High estrogen levels are responsible for the vascular changes noted on mucosal surfaces. Gingival hyperemia and edema, gingivitis and pyogenic granuloma are the most common alterations of the oral mucosa during gestation. Physiologic changes of the vulvovaginal area are mainly of vascular nature, and include among others varicose veins. The oral and vulvovaginal mucosal surfaces can be affected by diseases that can worsen or develop in pregnancy. Oral lesions are encountered in a large spectrum of diseases including aphthosis, pemphigus vulgaris, systemic lupus, and Behçet disease. Pregnancy dermatoses such as impetigo herpetiformis and gestational pemphigoid can exceptionally affect the oral mucosa. Infections of the vulvovaginal region by *Candida* species, *Trichomonas vaginalis*, human papilloma virus, and herpes simplex virus have been associated with fetal risks. The dermatologist, obstetric medicine physician, and neonatologist should be familiar with the above physiologic changes as well as maternal/fetal risks relevant to disease affecting these mucosal surfaces during gestation.

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## Introduction

Pregnancy is a distinctive period during a woman's life characterized by complex physiologic changes which may affect the oral and genital mucosal surfaces.<sup>1,2</sup> These alterations may arise as the result of the unique hormonal milieu of pregnancy that is formed by the activity of the pituitary, thyroid, and adrenal glands, and the placental unit.<sup>3</sup> Endogenous sex hormones play an important role in the modulation of nervous,

skeletal, and cardiovascular systems, oral cavity, and vulvovaginal region. The hormonal changes of gestation are also associated with impaired cellular responses that increase the risk of certain infections.

## Oral changes

The increased sex steroid hormone levels account for the oral alterations during gestation. Manifestations of periodontal tissues during this period include increased of gingival probing depths, inflammation, bleeding upon probing, tooth mobility, and an increased incidence of pyogenic granulomas and periodontopathogens, especially *Porphyromonas gingivalis* and *Prevotella intermedia*.<sup>4</sup>

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Fig. 1 Pregnancy gingivitis.

### Physiologic Changes

**Gingival hyperemia and edema** occur in up to 75% of pregnant patients.<sup>5</sup> **Pregnancy gingivitis** (Figure 1) is relatively common.<sup>6</sup> It appears to be more common in patients with preexisting gingivitis which indicates that pregnancy is an exacerbating factor. The elevated sex steroid levels during gestation result in increased vascular permeability and decreased immune resistance, factors that aggravate preexisting gingivitis.<sup>5</sup> Pregnancy gingivitis can vary from mild inflammation to severe hyperplasia, pain, and bleeding. The inflammatory changes usually begin during the 2nd month and severity increases through the 8th month. After this period, there is a sudden decrease related to a concomitant reduction in sex steroid hormone levels; nonetheless, the 2nd trimester is considered the safest period for providing routine dental care.<sup>1,5</sup> Patients should be counseled about the importance of good oral hygiene.

**Pyogenic granuloma** of pregnancy, also called granuloma gravidarum, epulis of pregnancy or pregnancy tumor, is benign hyperplasia of capillaries and fibroblasts. The oral cavity is most commonly affected. It is twice as frequent in women, and during pregnancy, and its prevalence is 0.2 to 9.6%.<sup>7</sup> The lesions are usually painless, although they can bleed easily. This type of pregnancy tumor develops between the 2nd and 5th months of pregnancy, as a result of an exaggerated inflammatory response to local irritations, then enlarges rapidly and bleeds easily and becomes hyperplastic and nodular. The exact pathophysiology is not well understood, but it is thought to have hormonal influence. After delivery, when hormone levels decrease, which leads to increased apoptosis and spontaneous regression, as its usual course, intervention should be avoided, and the patient should be informed that recurrence is common.<sup>8,9</sup>

### Skin Disease Affecting The Oral Mucosa

**Aphthous ulcers** may show hormonal fluctuation and can develop or persist in pregnancy.<sup>5</sup> One should evaluate for deficiencies of iron, vitamin B12, folate, and zinc. Mildly symptomatic aphthous ulcers can be managed with observation.

Significant symptomatic lesions can be treated with topical corticosteroids. A topical application of a potent corticosteroid four to six times a day can reduce pain and hasten recovery, if used early during the course of the ulcer.<sup>5</sup>

Most bullous disorders can affect the oral mucosa, especially pemphigus vulgaris, systemic lupus, and Behçet disease; however, this is infrequently reported during gestation for most of them. In **systemic lupus**, although frequently aggravated during pregnancy, oral alterations are not commonly reported.<sup>10</sup> Topical corticosteroids and courses of hydroxychloroquine (FDA Category C) can be used for symptomatic oral lesions of systemic lupus during pregnancy. Most authors concur that hydroxychloroquine should not be withheld during gestation. **Erythema multiforme** has been exceptionally reported in pregnancy.<sup>11</sup>

**Behçet disease** (Figure 2) is a rare, multisystem disorder of unknown etiology. It is characterized by mucocutaneous lesions, such as recurrent oral/genital ulcerations, as well as ocular, vascular, and central nervous system manifestations, and thrombogenicity.<sup>12</sup> The oral mucosal aphthous ulcerations are typically the first sign of the disease. Recent reports have concluded that pregnancy does not adversely affect disease activity, and the disease may regress in gestation.<sup>12–14</sup> The resolution of symptoms during pregnancy has been attributed to elevated estrogen and progesterone levels, and the majority of exacerbations occur as recurrent oral and/or genital ulcers. The hypercoagulability status during pregnancy can increase the obstetric complications in patients with predominantly vasculitic manifestations.<sup>14</sup> Behçet disease does not appear to adversely affect the maternal/fetal outcome.<sup>13</sup> The treatment of oral manifestations during pregnancy is similar to that of aphthosis.

**Pemphigus vulgaris** is an intraepidermal, immunobullous disease, affecting the mucous membranes and skin. It has been associated with increased fetal morbidity and mortality. Pemphigus vulgaris can present or worsen during pregnancy. Changes in disease activity are more prevalent in the 1st and 2nd trimesters.<sup>15</sup> The relative improvement or stabilization of disease during the 3rd trimester may be related to placental corticosteroid production in the later stages of pregnancy.



Fig. 2 Aphthous ulcers in Behçet disease.

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