Wolters Kluwer

Maternal adaptations to pregnancy: Skin and related structures

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INTRODUCTION

The maternal skin and related structures, including glands, hair, nails, and mucosa, undergo numerous changes during pregnancy and the puerperium. The normal physiological alterations in skin during pregnancy are reviewed here (table 1). Pathologic cutaneous changes and their management are discussed separately. (See "Dermatoses of pregnancy".)

SKIN

The overall clinical appearance of skin is related to pigmentation, glands, vasculature, and connective tissue. Cutaneous changes during pregnancy are best understood by examining each of these different aspects of skin structure.

Hyperpigmentation

- **Changes in pregnancy** – Almost all pregnant people develop increased skin pigmentation.
  - The increased pigmentation usually occurs in discrete, localized areas, possibly because of regional differences in melanocyte density within the epidermis [1,2].
  - Generalized hyperpigmentation may occur [3-5], but is rarely caused by pregnancy alone, so other causes, such as Addison's disease, should be considered. (See "Clinical manifestations of adrenal insufficiency in adults", section on 'Hyperpigmentation'.)

- **Pathogenesis –** The pathogenesis of the increased pigmentation related to pregnancy is not completely understood. One possibility is that estrogens and progesterone cause melanocytic stimulation [6-8]. However, the pigmentary changes occur early in pregnancy and before a rise in alpha-melanocyte stimulating hormone plasma levels, which occurs in late gestation [9].

- **Clinical findings –** Increased pigmentation is common and occurs in the following areas:

  - Facial skin (ie, melasma). (See 'Melasma' below.)

  - Midline skin, which becomes the linea nigra [10]. The increased pigmentation may span from the pubic symphysis to the xiphoid process.

  - Periareolar skin, extending outward in a net-like array, referred to as the secondary areola [6].

  - Nipples, axillae, genitalia, perineum, anus, inner thighs, and neck [11].

  - Recent scars, freckles, and lentigines [3,6].

  In addition, pigmentary demarcation lines may become visible during pregnancy. These areas of sharp delineation between naturally more pigmented and less pigmented skin are reported most commonly on the legs of pregnant Japanese and Black patients [12].

- **Postpartum course –** Hyperpigmented areas become less pigmented over a period of several months.

- **Treatment –** Postpartum patients who are bothered by persistent hyperpigmentation may desire treatment. (See "Acquired hyperpigmentation disorders", section on 'General principles of treatment'.)

Melasma

- **Course in pregnancy –** Melasma (ie, chloasma or mask of pregnancy) is the most cosmetically disturbing pigmentary change in pregnancy and occurs in up to 75 percent of pregnant people [8]. The characteristic hyperpigmentation of the face may also occur in individuals taking oral contraceptive pills.

- **Risk factors –** Risk factors and trigger factors include: genetic predisposition, exposure to sunlight (including ultraviolet and, possibly, visible light), skin phototype, and hormonal factors (including pregnancy, hormonal therapies, and use of oral contraceptives) [7]. Solar irradiation is important in maintaining the hyperpigmentation [6,7], thus, protection from the sun (including use of broad-spectrum sunscreens with

sun protection factor [SPF] of 50 or higher) is an essential part of a preventive treatment regimen [7,13]. (See "Melasma: Epidemiology, pathogenesis, clinical presentation, and diagnosis", section on 'Risk and trigger factors'.)

- **Clinical findings** – The three clinical melasma patterns are [7]:
  - Centrofacial – Involving the cheeks (picture 1), forehead (picture 2), upper lip (picture 3), nose and chin
  - Malar – Involving the cheeks and nose (picture 4)
  - Mandibular – Involving the ramus of the mandible (picture 5)

  There is conflicting information about the frequency of each type [6,14]. It is possible that differences in skin pigmentation, as well as different climates, play a role in which pattern is more common. (See "Melasma: Epidemiology, pathogenesis, clinical presentation, and diagnosis", section on 'Clinical presentation' and "Melasma: Epidemiology, pathogenesis, clinical presentation, and diagnosis", section on 'Diagnosis'.)

- **Postpartum course** – Melasma related to pregnancy usually regresses within one year [3]. However, some areas of hyperpigmentation may never completely resolve [13].

- **Treatment** – Postpartum patients who are bothered by persistent melasma may desire treatment. Options include topical skin-lightening agents, oral tranexamic acid, chemical peels, and laser and light therapies. (See "Melasma: Management".)

Nevi

- **Course in pregnancy** – Although nevi may change during pregnancy, changes are not significantly different than in nonpregnant individuals, except perhaps in patients with dysplastic nevus syndrome [15]. In one study, 75 percent of patients with dysplastic nevus syndrome had a change in nevi during pregnancy, and this rate of clinical change was nearly fourfold greater than that in these same patients when not pregnant [16].

  In patients without dysplastic nevus syndrome, increases in size during pregnancy occur on expanding skin (such as abdomen and breasts) but not at other sites [17]. Color changes during pregnancy are similar to color changes in the nonpregnant state [18]. Dermatoscopic features of nevi may change during pregnancy, but not in a way that suggests melanoma [15,19]. Similarly, although some studies have shown histologic changes in nevi that were attributed to pregnancy, these changes were not suggestive of melanoma and did not lead to diagnostic confusion [15,20-22].

- **Evaluation and treatment** – All nevi that change in a manner that would raise concern in the nonpregnant patient should be examined histologically in the pregnant patient

[15]. (See "Acquired melanocytic nevi (moles)" and "Atypical (dysplastic) nevi".)

Vascular changes — Estrogen and other pregnancy-related factors cause vascular distention, vascular instability, and proliferation of blood vessels during pregnancy. These vascular alterations result in the numerous changes in skin, which are described in the following sections and usually regress postpartum [1,23,24].

Vascular spiders

- **Course in pregnancy –** Vascular spiders (eg, spider angiomas, nevi aranei, spider nevi, arterial spiders, spider telangiectasia) (picture 6) develop in approximately 66 percent of light-skinned and 11 percent of dark-skinned pregnant people, typically appearing in the second to fifth month of pregnancy [13].

- **Clinical findings –** The lesions are red with branches extending out from a central puncta. They are most common around the eyes and occur almost exclusively in areas drained by the superior vena cava: neck, face, upper chest, arms, and hands [6,10]. Lesions in a dermatomal distribution, termed unilateral nevoid telangiectasia or unilateral dermatomal superficial telangiectasia, may appear during pregnancy, as well [25].

- **Postpartum course –** Most lesions (90 percent) regress by three months postpartum [6,13].

- **Treatment –** Persistent spider veins/telangiectasias of the lower extremity can be cosmetically disturbing to patients and can be treated with sclerotherapy or with lasers [26,27]. (See "Laser and light therapy for cutaneous vascular lesions".)

Palmar erythema — Palmar erythema occurs in two distributions [3,4,6]:

- Limited to the hypothenar and/or thenar eminence; or
- Diffuse and mottled

Palmar erythema is observed in approximately 66 percent of light-skinned and 33 percent of dark-skinned pregnant people.

Varicosities

- **Clinical findings and course in pregnancy –** Lower extremity, anorectal, and vulvar varicosities all occur at increased frequency during pregnancy and cannot be prevented.

    - **Varicose veins of the lower extremity –** Up to 50 percent of pregnant people experience abnormal dilation of the superficial veins of the lower extremities. The

varicosities can become visible anytime during pregnancy but are most common in the third trimester. In addition to pregnancy, risk factors associated with the development of varicose veins include other high estrogen/progesterone states, advancing age, family history of venous disease, prolonged standing, increased body mass index, physical inactivity, leg trauma, and smoking.

- **Anorectal varicosities (hemorrhoids) –** Anorectal symptoms are common in pregnancy, affecting up to 70 percent of pregnant people, and these symptoms are often related to hemorrhoids [28-30]. Pain and bleeding appear to be more common in the third trimester, whereas perianal itching seems to be distributed equally amongst the trimesters.

- **Vulvar varicosities –** Jacquemier's sign refers to venous distention in the vestibule and vagina and is associated with vulvar varicosities, which are particularly difficult to treat [3]. The varicosities may appear like a "bag of worms" in the enlarged labia (picture 7). Vulvar varicosities may be associated with pelvic congestion syndrome. They can be misdiagnosed as cysts or masses, including disorders of the Bartholin glands [31].

- **Pathogenesis –** The etiology is partly hemodynamic, due to increased blood volume and increased venous pressure in femoral and pelvic vessels from the enlarging uterus. Hormonal changes related to pregnancy contribute by causing relaxation of the muscular walls of the blood vessels. Genetic predisposition also plays a role. Because the perineal veins do not have valves, they are susceptible to developing varices: Up to one-half of vulvar varicosities arise from an incompetent great saphenous vein, which drains the superficial and deep external pudendal veins and posteromedial tributaries.

- **Postpartum course –** Varicosities usually regress, at least partially, postpartum.

- **Treatment**

  - **Leg varicosities –** Supportive therapy of leg varicosities includes leg elevation, compression hosiery, sleeping on the left side, exercise, and avoidance of long periods of standing or sitting. Medical or surgical intervention can be considered three to six months after giving birth and depends on the clinical severity and nature of underlying venous reflux, as well as the patient's future childbearing plans. (See "Overview of lower extremity chronic venous disease", section on 'Management'.)

  - **Hemorrhoids –** Adequate hydration and a diet replete with fiber may reduce constipation, which aggravates discomfort of hemorrhoids. Treatment for relief of symptoms consists of local application of antiinflammatory, antipruritic, and local

anesthetic preparations. Recurrent and severe hemorrhoids usually require surgical treatment, typically hemorrhoidectomy, which can be performed safely during pregnancy if necessary. (See "Home and office treatment of symptomatic hemorrhoids" and "Surgical treatment of hemorrhoidal disease".)

- **Vulvar varicosities** – During pregnancy, they are managed conservatively by vulvar support and compression and by avoiding prolonged standing. Symptomatic varicosities that do not resolve postpartum have been treated by sclerotherapy, excision, embolization, and ligation [31-35]. The treatment depends on the size and source of the varicosities. (See "Vulvovaginal varicosities and pelvic congestion syndrome".)

Vascular tumors — Vascular tumor-like structures may develop or enlarge during pregnancy.

- **Pyogenic granulomas**

  - **Clinical findings** – Pyogenic granulomas (also known as lobular capillary hemangioma, pregnancy tumor or epulis, and granuloma gravidarum) are benign, vascular tumors with friable surfaces that develop over a few days to weeks. The small, soft, exophytic, pink or reddish purple, smooth or lobulated papules are made up of granulation tissue.

    They can occur on the oral mucous membranes or skin [36]. While the gingiva (picture 8) is the most common location, tumors of the tongue and extragingival sites (eg, lip (picture 9), fingers) have also been reported [37]. It has been estimated that approximately 2 to 5 percent of pregnant people develop intraoral pyogenic granuloma within the first five months of pregnancy [38].

  - **Pathogenesis** – The lesion is thought to arise in response to local irritation/trauma and/or hormonal factors [39].

  - **Course and treatment** – Pyogenic granulomas do not need to be excised during pregnancy as spontaneous resolution often occurs after giving birth [6,13]. The time to regression is unclear but can take weeks to months [40,41].

    Persistent, bothersome lesions can be excised and should be biopsied if there is uncertainty about the diagnosis. (See "Pyogenic granuloma (lobular capillary hemangioma)".)

- **Hemangiomas, angiolipomas, and angiolymphoid hyperplasia with eosinophilia** – Hemangiomas, angiolipomas (picture 10), and angiolymphoid hyperplasia with eosinophilia (picture 11) have been reported to develop or enlarge during pregnancy

and may regress postpartum [24,42]. (See "Venous malformations", section on 'Glomuvenous malformations' and "Overview of vascular intervention and surgery for vascular anomalies" and "Vascular lesions in the newborn".)

Other vascular changes — Other vascular changes and their effects during pregnancy include:

- **Vasomotor instability**, which can cause facial flushing, pallor, hot/cold sensations, and cutis marmorata (a bluish reticulated patch on the leg exaggerated by exposure to cold) [6].
- **Capillary permeability**, increased hydrostatic pressure, and increased sodium and water retention, which can result in peripheral or facial edema in more than 50 percent of pregnancies [3,6]. Edema is often nonpitting.
- **Capillary fragility** leading to purpura and pigmented purpura from extravasation of red blood cells. The lesions are purple nonblanchable, nonpalpable macules on the legs [43].

Striae gravidarum

- **Clinical findings and risk factors –** Striae gravidarum (eg, "stretch marks" or striae distensae) begin as pink/violaceous linear patches in the sixth to seventh month of gestation. They are most prominent on the abdomen, breasts, and thighs but also arise on the lower back, buttocks, hips, and upper arms [3,44]. (See "Striae distensae (stretch marks)", section on 'Clinical manifestations' and "Striae distensae (stretch marks)", section on 'Diagnosis'.)

  Risk factors include a family history of striae gravidarum, higher prepregnancy body mass index and weight gain during pregnancy, and increased uterine distention from multiple gestation or polyhydramnios. (See "Striae distensae (stretch marks)", section on 'Epidemiology and risk factors'.)

- **Pathogenesis –** The pathogenesis of striae distensae is not well understood and is likely multifactorial. Physical factors resulting in increased tension on the skin, intrinsic alterations in skin structure or function, and hormonal factors (including estrogens, androgens, and glucocorticoids) may be involved. (See "Striae distensae (stretch marks)", section on 'Pathogenesis'.)

- **Prevention –** Striae gravidarum are a common source of cosmetic concerns among pregnant people. Although a wide variety of creams, lotions, and ointments have been marketed to prevent or mitigate striae development, no high-quality evidence supports

the efficacy of any of these interventions. (See "Striae distensae (stretch marks)", section on 'Prevention'.)

- **Postpartum course** – Striae can evolve into linear depressions, with fine wrinkles and hypopigmentation over a period of months to one or two years postpartum, but do not disappear (picture 12 and picture 13) [3].

- **Treatment** – Treatment may be desired postpartum to improve the appearance of affected skin through reducing color or texture differences between striae and adjacent normal skin. (See "Striae distensae (stretch marks)", section on 'Treatment'.)

Skin tags — Skin tags (molluscum fibrosum gravidarum, acrochordon (picture 14)) develop on the face, neck, axillae, chest, groin, and inframammary area during the second half of pregnancy; they may regress postpartum [6,13]. (See "Overview of benign lesions of the skin" and "Molluscum contagiosum".)

Keloids, leiomyomas, dermatofibromas, and neurofibromas — These lesions (picture 15 and picture 16 and picture 17 and picture 18) may enlarge during pregnancy and new neurofibromas may form [6,25,45]. (See "Keloids and hypertrophic scars" and "Overview of benign lesions of the skin" and "Intradural nerve sheath tumors".)

Pruritus — Pruritus in pregnant people may be physiologic, related to a flare of a disorder present prior to conception, or related to pregnancy-specific dermatoses.

- Pruritus is common, affecting up to 40 percent of pregnant people. Of these, over 60 percent have pruritus without any skin eruption or underlying cause other than pregnancy (ie, idiopathic pruritus).

  Itching localized to the abdomen is most common, though itching may also be localized elsewhere, with 5.1 percent localized to the anogenital region in one study [46,47].

  Treatment with oatmeal baths, topical steroids, antihistamines, and/or ultraviolet light helps to relieve symptoms.

- Intrahepatic cholestasis if pregnancy (ICP) – Pruritus related to ICP is often generalized, but generally starts and predominates on the palms and soles and is worse at night. Right upper quadrant pain, nausea, poor appetite, sleep deprivation, or steatorrhea may occur. ICP is the only pregnancy-related dermatosis without primary skin changes. Diagnosis and treatment of ICP are discussed separately. (See "Intrahepatic cholestasis of pregnancy".)

- Dermatoses – Pruritus is a common symptom of several dermatoses of pregnancy (eg, polymorphic eruption of pregnancy, atopic eruption of pregnancy, and pemphigoid

gestationis). Diagnosis and treatment are reviewed separately. (See "Dermatoses of pregnancy".)

Tattoos and piercing

- **Potential risks of getting a new tattoo in pregnancy –** Pregnant people should avoid getting a tattoo during pregnancy but can be reassured of the absence of proven pregnancy risks if the procedure is performed before they are aware of their pregnancy. Tattoo ink contains inorganic and synthetic organic pigments and is considered a cosmetic by the United States Food and Drug Administration. Cosmetics cannot contain poisonous or deleterious substances or unapproved color additives, and they should be manufactured in sanitary conditions.

  Although there are no reports of adverse pregnancy outcomes, including congenital anomalies, associated with tattooing during pregnancy, safety cannot be inferred given the range of pigments used, dermal injection rather than topical application, and lack of close oversight. Infection is the major concern and has been caused by contamination of the product as well as nonsterile performance of the tattoo [48]. (See "Tattooing in adolescents and young adults", section on 'Health risks'.)

- **Pregnancy course and complications of preexisting tattoos –** Preexisting tattoos are generally unaffected by pregnancy [49]. Tattoos on the abdomen or breast can become distorted by enlargement of these areas or by surgical incisions.

  Some anesthesiologists avoid placing epidural anesthesia through a tattoo on the lower back because of theoretical risks (eg, epidermal tissue coring and carrying pigment into the epidural space, which theoretically might increase the risk of epidermal tumors or arachnoiditis [50]).

- **Pregnancy course and complications of piercing –** Piercing of the oral-nasal airway, nipple, navel, and genitalia are the most problematic areas in pregnant people. Piercings in these areas are generally removed if they are likely to interfere with a procedure (eg, intubation, cesarean or vaginal birth, breastfeeding) or become uncomfortable due to pregnancy-related changes. Metal body jewelry can conduct electric current if electrosurgery is performed [51]. (See "Body piercing in adolescents and young adults" and "Tattooing in adolescents and young adults", section on 'Health risks'.)

SKIN APPENDAGES (ECCRINE, APOCRINE, AND SEBACEOUS GLANDS)

Eccrine, apocrine, and sebaceous glands are all affected by pregnancy.

- Eccrine gland activity increases (except on the palms) primarily toward the end of pregnancy. This may lead to miliaria or generalized hyperhidrosis [3,6]. (See "Miliaria" and "Evaluation of the patient with night sweats or generalized hyperhidrosis".)

- Apocrine gland activity decreases. This may lead to improvement in hidradenitis suppurativa and Fox-Fordyce disease [3,6,52,53]. (See "Hidradenitis suppurativa: Pathogenesis, clinical features, and diagnosis" and "Fox-Fordyce disease (apocrine miliaria)".)

- Sebaceous gland activity may increase in the third trimester [6,13]. Montgomery tubercles (ie, small, brown papules on the areolae consisting, in part, of hypertrophied sebaceous glands) develop in 30 to 50 percent of pregnant people and regress postpartum [3]. Increased sebaceous gland activity during pregnancy has variable effects on acne. (See "Postadolescent acne in women".)

HAIR

Pregnancy hormonal effects cause both an increase and a decrease in hair growth.

- **Clinical findings**

  - Face, trunk, extremities – Hirsutism in pregnancy results from increased levels of ovarian and placental androgens on the pilosebaceous unit. It is noted most frequently on the face but may also be seen on the arms, legs, back, and suprapubic region [6]. (See "Pathophysiology and causes of hirsutism".)

  - Scalp – Scalp hair appears thicker or denser during gestation due to slowing of the normal progression of hairs from anagen (the "growing" stage) to telogen (the "resting" stage), thereby creating a relative increase in anagen hair [13].

    Rarely, late in pregnancy, hair in the frontoparietal area recedes in a mild form of androgenic alopecia [6,13].

- **Postpartum course**

  - Face, trunk, extremities – For increased hair growth on the face, trunk, and extremities, the terminal hairs tend to be permanent, whereas the lanugo hairs are likely to regress by six months postpartum [6].

  - Scalp – For the scalp, the percentage of telogen hairs in the scalp increases one to five months postpartum, thus hair loss (telogen effluvium) is common at this time and scalp hair may become thin [6]. Telogen effluvium resolves within 15 months

postpartum [6], but the scalp hair may never be as dense as it was prior to pregnancy. (See "Telogen effluvium".)

Androgenic alopecia generally resolves postpartum but may persist. (See "Overview of androgen deficiency and therapy in women".)

NAILS

Nails may grow faster during gestation and might become dystrophic with transverse grooves, subungual keratosis, and distal onycholysis (ie, painless separation of the nail from the nail bed). The nail plate may become soft or brittle [13]; an increase of melanonychia (ie, pigmented streaks in the nail bed) has also been reported. However, in a 2023 survey study, only onychocryptosis (distal-lateral ingrowing of the nail) and leukonychia (opaque, white patches or striae on nail) were reported as more common in pregnant than in nonpregnant patients [54]. (See "Longitudinal melanonychia" and "Ingrown nails" and "Overview of nail disorders", section on 'Leukonychia'.)

MUCOSA AND NONKERATINIZED EPITHELIUM

- **Vagina** – Bluish/purplish coloration of the vagina (Chadwick sign) and cervix (Goodell sign) are early anatomic changes historically important in the diagnosis of pregnancy. The blue appearance is related to increased blood flow.

- **Mouth** – Pregnancy-related changes to the oral mucosa are caused by increased levels of sex steroids [55].

  - Enlargement and blunting of the interdental papillae is common and gingivitis (picture 19) may occur or worsen. Prevalence rates of 40 to 100 percent have been reported [56]. The cause of pregnancy-induced gingivitis is likely multifactorial and includes pregnancy hormone-related vascular and inflammatory changes [57-61]. Optimal oral hygiene can reduce gingival swelling, erythema, and bleeding tendencies; therefore, brushing twice daily, flossing daily, and rinsing with an antimicrobial/antiseptic mouthrinse once or twice a day are important. Patients with moderate to severe symptoms should consult with a dental professional. (See "Overview of gingivitis and periodontitis in adults".)

  - Other pregnancy-related changes to the oral mucosa include increased gingival probing depths, tooth mobility, and an increased incidence of periodontopathogens, especially *Porphyromonas gingivalis* and *Prevotella intermedia* [62].

Pyogenic granulomas are also more common in pregnancy. (See 'Vascular tumors' above.)

- **Nasopharynx –** Many pregnant people experience hyperemia of the membranes of the nasal mucosa and sinuses, which is thought to be related to the hormonal changes of pregnancy. Hyperemia can cause significant, and sometimes uncomfortable, nasal and sinus congestion, but its presence does not necessarily represent pathology. Patients who are particularly bothered by their symptoms may desire treatment, which is reviewed separately. (See "Recognition and management of allergic disease during pregnancy", section on 'Rhinitis'.)

INFORMATION FOR PATIENTS

UpToDate offers two types of patient education materials, "The Basics" and "Beyond the Basics." The Basics patient education pieces are written in plain language, at the 5th to 6th grade reading level, and they answer the four or five key questions a patient might have about a given condition. These articles are best for patients who want a general overview and who prefer short, easy-to-read materials. Beyond the Basics patient education pieces are longer, more sophisticated, and more detailed. These articles are written at the 10th to 12th grade reading level and are best for patients who want in-depth information and are comfortable with some medical jargon.

Here are the patient education articles that are relevant to this topic. We encourage you to print or e-mail these topics to your patients. (You can also locate patient education articles on a variety of subjects by searching on "patient info" and the keyword(s) of interest.)

- Basics topics (see "Patient education: Melasma (The Basics)")

SUMMARY AND RECOMMENDATIONS

- **Overview of normal changes in pregnancy –** The normal physiological alterations in skin during pregnancy are listed in the table (table 1). (See 'Introduction' above.)

- **Changes in pigmentation –** Almost all pregnant women develop some degree of increased skin pigmentation. Melasma (ie, chloasma or mask of pregnancy) is the most cosmetically disturbing pigmentary change and occurs in up to 75 percent of pregnant women (picture 1 and picture 2 and picture 3). (See 'Hyperpigmentation' above and 'Melasma' above.)

  Melasma due to pregnancy usually regresses within one year. Treatment options for postpartum patients who are bothered by persistent melasma include topical skin-

lightening agents, oral tranexamic acid, chemical peels, and laser and light therapies. (See "Melasma: Management".)

- **Vascular changes –** Estrogen and other factors cause vascular distention, vascular instability, and proliferation of blood vessels during pregnancy. These vascular alterations result in numerous changes in skin that usually regress postpartum. The changes include vascular spiders (picture 6), palmar erythema, varicosities (eg, lower limb, anorectum, vulva), and vascular tumors. (See 'Vascular changes' above.)

- **Striae gravidarum –** Striae gravidarum (stretch marks) are due to connective tissue changes and are most prominent on the abdomen, breasts, and thighs, but also arise on the lower back, buttocks, and upper arms. There is a genetic predisposition to their development. Although striae fade postpartum, they do not disappear. There is no effective method of prevention or treatment. (See 'Striae gravidarum' above.)

- **Pruritus –** Pruritus in pregnant women may be physiologic, related to a flare of a disorder present prior to conception, or related to pregnancy-specific dermatoses. Treatment with oatmeal baths, topical steroids, antihistamines, and/or ultraviolet light helps to relieve symptoms. (See 'Pruritus' above.)

- **Nevi –** All nevi that change in a manner that would raise concern in the nonpregnant patient should be examined histologically in the pregnant patient. (See 'Nevi' above.)

- **Glands –** Eccrine activity increases (except on the palms), apocrine activity is decreased, and sebaceous gland activity may increase during pregnancy. (See 'Skin appendages (eccrine, apocrine, and sebaceous glands)' above.)

- **Hair –** Hirsutism increases during pregnancy. Scalp hair becomes thicker, but the hair line may recede. Postpartum, a temporary period of hair loss is common (ie, telogen effluvium). (See 'Hair' above.)

- **Nails –** Nails have historically been reported to grow faster during pregnancy, and sometimes develop transverse grooves, subungual keratosis, distal onycholysis, and melanonychia. The nail plate may become soft or brittle. However, some researchers report only onychocryptosis and leukonychia as increased in pregnancy. (See 'Nails' above.)

- **Mouth and nose –** Most pregnant people note gingival changes and/or gingivitis (picture 19). Many experience hyperemia of the mucous membranes of the nasal mucosa and sinuses, which can cause significant, and sometimes uncomfortable, nasal and sinus congestion. (See 'Mucosa and nonkeratinized epithelium' above.)

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Topic 456 Version 34.0

GRAPHICS

Pregnancy-related changes to skin and related structures

Skin
Hyperpigmentation
Melasma
Striae gravidarum
Vascular changes (eg, spider angiomas, varicosities, pyogenic granuloma, hemangioma)
Palmar erythema
Nonpitting edema
Changes in keloids, leiomyomas, dermatofibromas, neurofibromas
Pruritus
Skin tags
Hair
Hirsutism
Postpartum hair loss
Frontal thinning
Nails
Subungual hyperkeratosis
Distal onycholysis
Transverse grooves
Brittleness
Rapid growth
Sweat and sebaceous glands
Increased eccrine and sebaceous function
Decreased apocrine function
Mucous membranes
Gingival hyperemia
Gingivitis
Bluish discoloration of the cervix
Erythema of the vagina

Adapted from: Wong RC, Ellis CN. Physiologic skin changes in pregnancy. J Am Acad Dermatol 1984; 10:929.

Graphic 78973 Version 3.0

Melasma

A mottled hyperpigmented patch is present on the cheek.

Graphic 64109 Version 7.0

Melasma

Mottled hyperpigmented patches are present on the forehead.

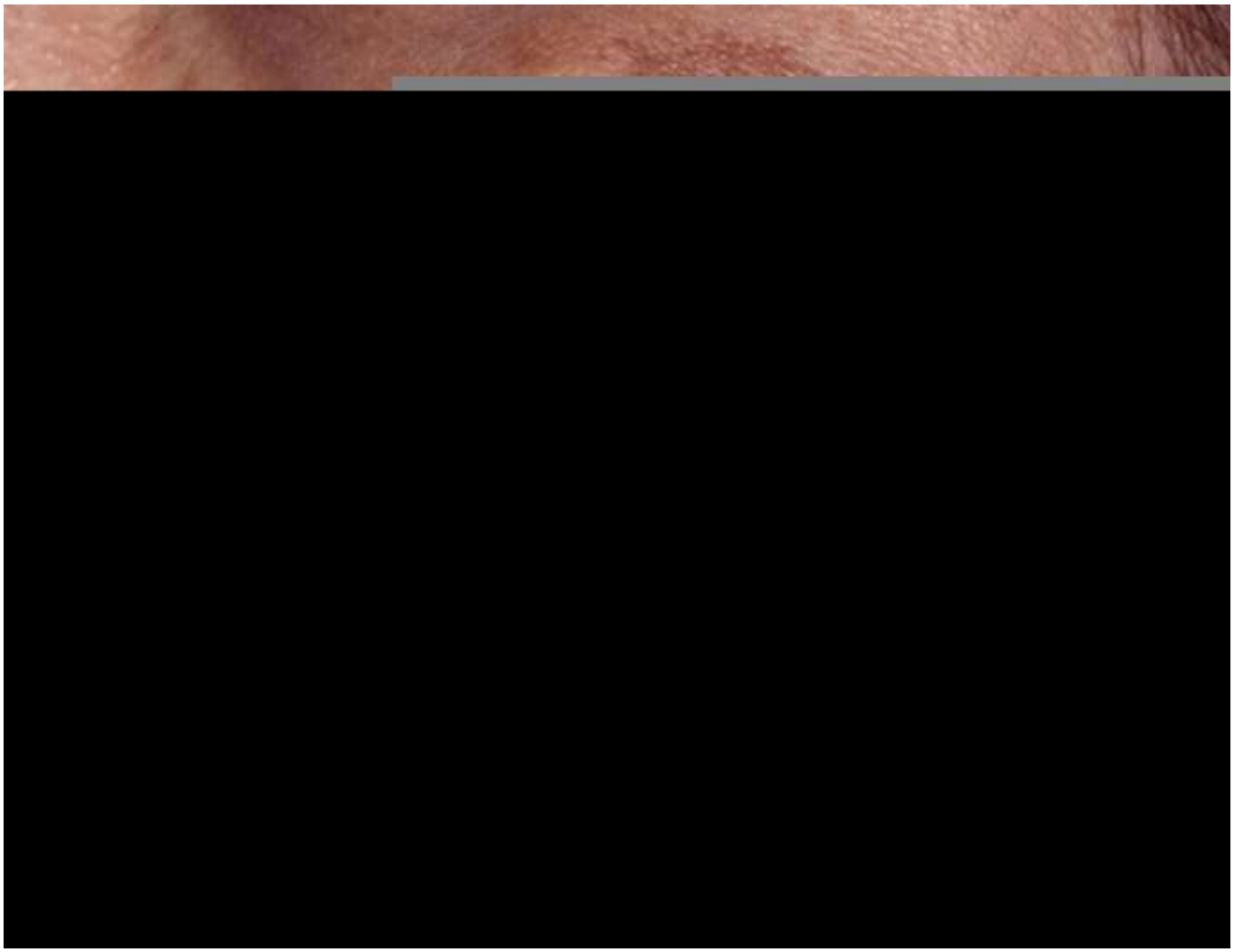
Graphic 75884 Version 6.0

Melasma lip

A hyperpigmented patch is present on the upper lip in this patient with melasma.

Graphic 52220 Version 5.0

Melasma



A broad, evenly pigmented, tan patch with feathered borders on the cheek.

Graphic 122095 Version 1.0

Melasma

A large, evenly pigmented patch with feathered borders involving the cheek and the mandibular area.

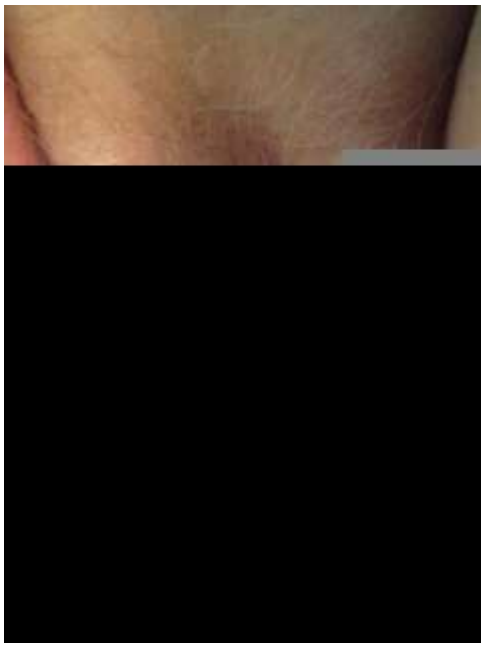
Graphic 122097 Version 1.0

Spider angiomas

This photograph shows two spider angiomas (spider telangiectasias) on the arm of a pregnant person. A central feeding vessel, most easily seen in the lesion on the right, leads to other telangiectatic vessels, arranged in the shape of a spider, best appreciated in the lesion on the left. Pressure over the central vessel with the end of a paper clip or a glass slide causes the entire lesion to blanch. Similar lesions can be seen in patients with cirrhosis and are most commonly seen on the upper chest, face, and back.

Graphic 74047 Version 3.0

Vulvar varicosity



Courtesy of Natasha R Johnson, MD.

Graphic 86312 Version 1.0

Pyogenic granuloma of the gingival mucosa

Mucosal pyogenic granuloma in a 26-year-old female in the fourth month of pregnancy. Excessive tissue growth is impeding proper teeth contact and chewing.

Graphic 66965 Version 7.0

Pyogenic granuloma of the lip

Graphic 60189 Version 5.0

Angiolipoma of the forearm

Graphic 67098 Version 4.0

Angiolymphoid hyperplasia with eosinophilia

Multiple red-brown papules on the scalp.

Graphic 99608 Version 4.0

Striae distensae (stretch marks)

Postpregnancy striae distensae on the abdomen.

Graphic 101446 Version 3.0

Striae distensae (stretch marks)

Striae distensae on the abdomen after pregnancy.

Graphic 101445 Version 3.0

Typical acrochordon (skin tag)

Courtesy of Beth G Goldstein, MD, and Adam O Goldstein, MD.

Graphic 70871 Version 4.0

Hypertrophic scar

Hypertrophic scar at the site of a surgical wound. Multiple telangiectasias are visible on the scar surface.

Graphic 97014 Version 3.0

Cutaneous leiomyomatosis

Typical ovoid, pink, banal appearance of a single cutaneous leiomyomatosis lesion.

Courtesy of Edward W Cowen, MD, MHSc.

Graphic 100292 Version 2.0

Dermatofibroma

This firm, hyperpigmented papule on the shin is a dermatofibroma.

Graphic 80587 Version 5.0

Dermatofibroma

This oval, hyperpigmented, firm papule is a dermatofibroma.

Graphic 68729 Version 6.0

Gingivitis during pregnancy

Hormonal changes that occur with pregnancy significantly influence the bacterial flora, causing significant gingival inflammation and hypertrophy.

Courtesy of Mark S Obernesser, DDS, MMSc.

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