

# Skin and Hair Problems

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## INTRODUCTION

A woman carries certain perspectives towards aging gracefully. Each day we grow and look forward to advancement and maturity, but menopause is a sharp turn in a woman's life. Menopause may be physiological, surgical or therapy induced and brings with it many insecurities. Generally, it occurs during that period of life when a woman plays an important role in society.<sup>1</sup>

We know with increase in longevity, the span of menopausal years have considerably increased so the attention towards skin and hair health has gained much importance and now a vital part to be understood in HER holistic health.<sup>2</sup>

Reducing ovarian function and drop in estrogen levels take a toll on skin and hair engineering, showcasing many changes like drying, wrinkling and poor wound healing.

Through this chapter, the aim is to provide an insight on these physiological changes during menopause and understanding the importance of its dealings today, through topical, systemic and aesthetic medicine.

## ROLE OF ESTROGEN IN SKIN

Estrogen plays a vital role in skin. It stimulates the sebum secretion which increases insulin-

like growth factor receptors. These multiply the expression of insulin-like growth factor from fibroblast and in turn stimulates their mitotic activities in epidermal basal layers. It promotes lipogenesis in sebocytes, thereby increasing moisture retention and skin suppleness.

Two estrogen receptors have been predominantly identified on skin—ER alpha and ER beta. Their relative expression starts to decline in premenopausal years. ER beta is more widely distributed within skin and hair bulb region and ER alpha is a main drive of reproductive cause.<sup>3</sup>

Estrogen also increases mucopolysaccharides and hyaluronic acid in dermis, yielding skin hydration. Moisture retention and skin hydration improve barrier function of stratum corneum (SC) and optimize surface area of corneocytes leaving a conditioned even toned effect.

Decline in this vital hormone of youthfulness would lead to decrease in dermal collagen level, of which type I is 80% that accounts for strength of dermis and type III is 15% which accounts for elasticity. Decrease in elasticity, dermal thickness and sebum production leads to dullness, dryness, atrophy, wrinkling, thinner skin and poor wound

healing. This also leads to decrease in polymerization of 25-hydroxy cholecalciferol (vitamin D<sub>3</sub>) level, less than 20 mg/mL in skin, increasing fracture risks. Pigmentation in the form of melasma, age spots, lentigens may show an increase, as there is more UV penetration due to thinned out skin.

Studies have shown that up to 30% of dermal collagen may be lost in first 5 years after menopause, collagen decreases at the rate 2.1% per year and skin thickness at the rate 1.1% per year.<sup>4</sup> Estrogen protects against oxidative damages. Axillary and pubic hair progressively decline with lowering estrogen levels.

Estrogen therapy itself can be responsible for inducing skin conditions like melasma/chloasma, hyperpigmentation in existing naevi, sensitivity issues and an increase in acanthosis nigricans.

Lowered estrogen levels alter the hair texture and character. Hair becomes brittle and dull resulting in easy breakage, thinning and loss of volume. Eventually length also decreases.

Hormonal changes with menopause change the physiology of skin in different ways. Density of estrogen receptors are greatest on face, genitalia and lower limbs (thighs). The cells that constitute the surface of the skin

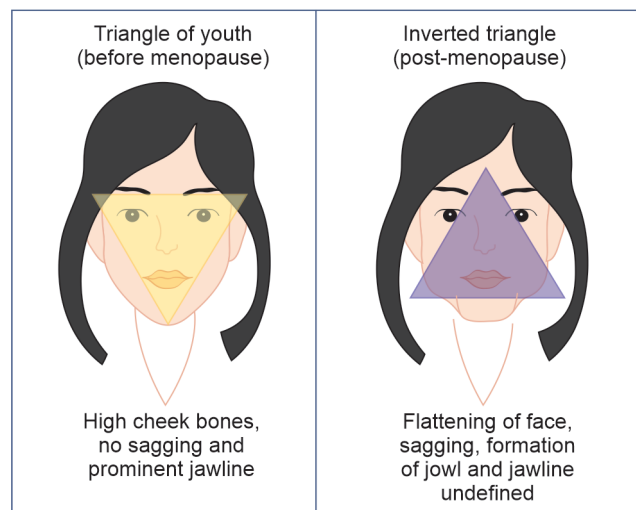
are similarly seen in the lining of urethra, bladder and vagina and thus skin may be the mirror to the internal changes experienced.

### Face

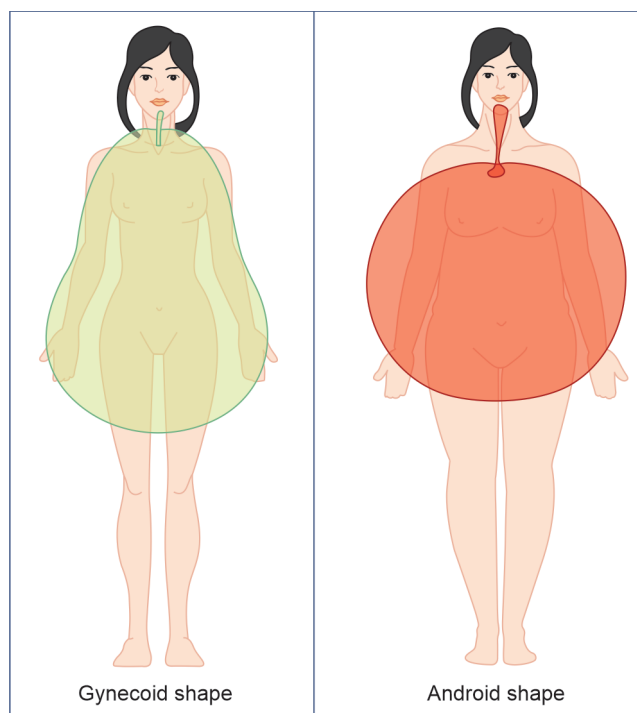
The female aging trajectory turns sharply after 50. The overall magnitude of face shape changes is higher in early menopause. A flatter face with sagging soft tissue, appearance of jowl turning the young look of an inverted triangle into a broader base (Fig. 7.1), deepening of nasolabial folds, deep set eyes, thinner lips, elongated nose and ears.

Facial aging was best predicted by the years since last menstruation and mainly attributable to bone resorption in mandible, skin becomes translucence, fragile. Dry and fine lines occur with atrophy of dermis.<sup>5</sup>

Other body skin attributes, which show a matter of concern, are decreased sebum and low sweat production giving a shriveled appearance to skin. Decrease in melanocyte and Langerhan cells is seen, which may give an appearance of small hypopigmented areas that are considered normal. There is redistribution of fat, increase in body weight and abdominal fat deposition changing gynecoid body shape to android due to increase in waist to hip ratio (Fig. 7.2).



**Fig. 7.1:** Change in the shape of face with menopause



**Fig. 7.2:** Redistribution of fat

**Table 7.1:** Common conditions of skin and hair associated with menopause

Pruritus	Androgenetic alopecia (FPHL)
Keratoderma climactericum	Hirsutism
Hyperhidrosis (hot flashes/hot sweat)	Senile alopecia
Impaired wound healing	Frontal fibrosing alopecia
Menopausal acne	Trichotillomania
Atrophic vulvovaginitis	Telogen effluvium
Vulvar lichen sclerosis	Onychoschizia
Dysesthetic vulvodynia	Vulvovaginal candidiasis

**Skin changes with menopause are physiological:**

- In pruritus, xerosis is one of the most noticeable causes and can be managed well by using low pH moisturizers twice daily,

post bath emollients along with humidifiers, keeping body temperature optimum and soft cotton clothing.

- Keratoderma climactericum also known as Haxthausen disease is oval-shaped hyperkeratotic patches occurring on palms and soles predominantly seen in menopausal age group on pressure areas. Treated with keratolytics such as salicylic acid and high concentration of urea compounds.
- Hyperhidrosis, commonly known as night sweats and flashes, is a concern in more than one-third menopausal individuals which is due to decreasing estrogen levels. Therefore, those on HRT may benefit. Other treatments followed are gabapentin, serotonin-norepinephrine reuptake inhibitors, acupuncture, and promising studies on oxybutynin have been seen.<sup>6</sup>
- Wound healing is impaired and blood flow in dermal capillaries is decreased which is more pronounced in estrogen

deficient skin and better in woman on HRT.

- Menopausal acne also known as adult acne, shows a typical presentation along the jawline extending up to the neck. The now unmasked testosterone stimulates sebaceous glands to secrete thicker sebum giving appearance of oily skin and acne. They are painful and very bothersome. Investigations of total serum testosterone can be done and patient should be evaluated for obesity, diabetes mellitus, hypertension, and hyperlipidemia. History for PCOS, congenital adrenal hyperplasia or medication to rule out other causes of acne should be elicited. OCPs may work but discouraged in post-menopausal period due to their side effects. Spironolactone is considered the drug of choice. Topical anti-acne therapy along with clinic procedures gives quick relief.
- Changes in genitalia exhibit narrower shorter vagina showing atrophic epithelium with increased pH inviting infections. Vulval architecture changes and there is decline in subcutaneous fat and decreased pubic hair. Vulvovaginal candidiasis is a fungal infection, prevalent in the menopausal women with whitish thick curd-like discharge and plaques on vaginal wall with complaints of pruritus and burning.

#### Common Hair Upsets in Menopause

- Androgenic alopecia or female pattern hair loss (FPHL) show progressive reduction in hair cycle resulting in shrinkage of hair follicle. Primarily treatment is with 2 to 5% minoxidil, which decreases hair loss and instills regrowth in 60%.
- In hirsutism, the body hair decreases but facial hair tends to increase. PCOS seems to be associated with menopausal hirsutism. Rare but, one must keep in mind congenital adrenal hyperplasia, Cushing's syndrome, benign or malignant androgen secreting ovarian and adrenal tumors,

adrenal ganglioneuromas, ovarian hyperthecosis, ovarian neoplasms and non-malignant virilization.

- Frontal fibrosing alopecia is a slow but progressive lymphocytic cicatricial alopecia that produces symmetrical frontal or temporal recession associated with loss of body hair and eyebrows. The cicatricial area is atrophic, pale and darker due to environmental exposure, may be a variant of lichen planopilaris. Drugs such as anti-androgens, spironolactone, finasteride 2.5 mg/day are helpful. Locally intralesional triamcinolone can be administered in dose of 2.5 mg/mL in hairline and eyebrows.
- Telogen effluvium (TE) is severe when in acute form after menopause, the hair loss is diffuse and may last as long as 6 months. Normally 90% scalp hair are in anagen (growing phase) and 10% in telogen (resting phase) at any given time. In TE, the anagen/telogen ratio may be shifted to 70% and 30%. Senile alopecia shows reduced follicular density though anagen to telogen ratio (hair growth cycle) is normal. Some blood work of importance would be serum ferritin and vitamin B<sub>12</sub> levels.
- Onychoschizia/onychorrhexis or brittle nails is a common complaint. Normal nail contains 18% water. Repeated exposure to water decreases nail moisture. This nail fragility dominates in menopausal women, most likely cause being decreasing estrogen levels, dehydrating the nail plate. Also attributed to nail cosmetics and iron deficiency. Systemic biotin is also replenished.

#### Menopausal Skin and Treatment Options

Women on systemic HRT have shown some degree of improvement or delay in signs of dermatological changes attributed to menopause. Though estrogen has positive effect on skin but exogenous supplementation may risk ovarian, breast or endometrial cancers. HRT induced cardiovascular concerns may also be a reason of worry.

More recently, plant hormones similar to estrogen in structure namely isoflavones are considered. Phytoestrogens show increased affinity for ER beta enzymes in skin, bones and heart which are more receptor specific so as to minimize any side effects at all. They support collagen synthesis.

Phytoestrogens in post-menopausal women help to decrease hot flashes, improve mood and quality of life.

Lifestyle changes like exercise, lowering cocoa, caffeine, hot drinks/foods and spices in diet reduce hot flashes. Sun screen and sun protective gears, moisturizers help in protection. Anti-aging and reviving products with retinol, AHAs, beta hydroxy acids, vitamin C as collagen promoters, genistein and many stem cell derivatives are used as topical applications.

Aesthetic procedures are on the growth and have no bounds. Thermage/radiofrequency skin-tightening laser devices, increase skin collagen, chemical peels, toxins, dermal thread lifts, crosslinked hyaluronic acid dermal fillers are some minimal invasive office procedures but play a major role in building confidence in the woman today. Other surgical face lifts are also on the rise.

## Hair Treatment

### *Hormone Therapy in Female Pattern Hair Loss (FPHL)*

Hair loss is of psychosocial and aesthetic importance. Correction of underlying hormonal imbalance for hyperandrogenism should be taken care of. Systemic therapy consists of many combinations and need to be tailored as per patient sensitivity and response.

**Cyproterone acetate (CPA) and chlormadinone acetate (CMA):** CPA is a progestogen ester, and antiandrogen which competitively blocks effects of androgens like testosterone and DHT by reducing the production in gonads, thereby decreasing

their concentration.<sup>7</sup> CPA is more beneficial than CMA when there is a hormone dysregulation and shows no benefits in FPHL when there are no signs of hyperandrogenism.<sup>8</sup>

Recommended dose is 50 mg/day, but usage is low due to associated side effects which include weight gain, breast tenderness and decrease in libido.<sup>9</sup> Others being hepatotoxicity, multiple-meningiomas in doses above 25 mg/day.

**Finasteride and dutasteride:** Finasteride is a 5 alpha reductase inhibitor which binds with type-1 enzyme. Women with hyperandrogenism are more likely to benefit though also given in normoandrogenism with report of significant hair growth in 65% and minimal results in approximately 30% cases. A dose of 2.5 mg/day is recommended.

Women must be scanned for breast malignancy and those with positive familial history must avoid these medications. Dutasteride is a more potent form of finasteride which binds with type-I and type-II enzymes. A dose of 0.5 mg/day is helpful in female pattern hair loss and in frontal fibrosing alopecia.

**Spirolactone:** It is a potassium sparing diuretic which inhibits action of DHT competing for androgen receptors. It is more commonly used in hirsutism and acne and a dose of 100 to 200 mg/day is given in female pattern hair loss.

**Flutamide:** An oral antiandrogen, it is used in FPHL in hyperandrogenic women with a dosage of 250 mg/day. Hepatotoxicity must be watched for.

Post-menopausal finasteride 2.5–5 mg/day would be drug of choice whereas spironolactone and flutamide are commonly used perimenopausal.<sup>10</sup>

Biotin and other hair vitamin supplementations are very popular and are used as supportive therapy.



### Topical

Minoxidil 2–5% lotion which is still considered gold standard with or without cocktail of many hair rejuvenators such as procapil, saw-palmetto and aminexil can be applied.

Aesthetic treatments like microneedling, mesotherapy with stem cell derivatives or nutritive supplements, platelet-rich plasma (PRP), RegeneraActiva (regenerative medicine) creating multiple micrografts which are then implanted on affected area of scalp increasing scalp neovascularization and low intensity laser lights all of these are used to promote hair growth. Camouflage techniques including dyes, micropigmentation, hair fibers, wigs, hair extensions, hair patches also can be used. Hair transplant can be done but usually a last resort in females.

### Treatment of Hirsutism

Systemically, oral contraceptive pills (OCP) are main stay of treatment although it is not the drug of choice after menopause. Other treatments include antiandrogens, flutamide, spironolactone and finasteride.

Topical treatment with eflornithine inhibits L-ornithine decarboxylase which retards hair growth. Laser hair reduction is recommended and a preferred mode of treatment. Other conventional methods used are hair electrolysis which is almost obsolete. Epilation methods like threading, plucking and waxing are used widely. Hair removal creams and camouflaging techniques, like bleaching, have been commonly used but may often cause irritation, rash and pigmentary changes.

Earlier not considered of much importance and overlooked, skin and hair attributes, today demand attention. When we best understand the changes in hair and skin and the psychosocial aspect associated with them

in menopause, then our position in treating and guiding our patients becomes much more gratifying. We create an atmosphere of healthy individuals in society.

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