

Reexamining Methods of Facial Cleansing

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What is the perfect method for cleansing the face? This is a question I must answer daily for patients in my practice. The truth is, I am not sure what the best method is for washing the face. There are many acceptable ways to remove sebum and environmental dirt from the face, but the concept of a single-best method is somewhat controversial. I casually asked 30 dermatologists about their facial cleansing recommendations for patients and received about 7 to 10 different and equally credible responses. The goal of this article is to provide an overview of new facial cleansing techniques and products currently available. Ultimately, dermatologists must determine which cleansing method is suitable for each patient on an individual basis.

Soap

Many of the dermatologists I have consulted stated that they tell patients to never use soap on the face. I suspect these dermatologists are referring to soap in the chemical sense as a reaction between a fat and an alkali resulting in a fatty acid salt with detergent properties.¹ Currently, there are 3 different types of bar cleansers on the market referred to as *soap*. True soaps are composed of long chain fatty acid alkali salts with a pH of 9 to 10.² These are probably the soap products the dermatologists I consulted advised their patients to avoid. The high pH of these cleansers allows the thorough removal of sebum but can also damage the intercellular lipids in diseased or sensitive skin. Other soap products are synthetic detergents, or syndets, containing less than 10% real soap, with a pH adjusted to 5.5 to 7. These cleansers are the bulk of the products found in a dermatologist's closet of samples. They are less likely to damage the intercellular lipids but also may not remove all of the sebum from extremely oily skin. A third type of soap known as a

combar combines both alkaline soaps and syndets to create a bar with greater cleansing abilities but less intercellular lipid damage.³

Selecting the proper type of soap may be a challenge for dermatologists, but once the 3 categories of cleansers are identified, the task becomes much easier. In general, all beauty bars, mild cleansing bars, and sensitive skin bars are of the syndet variety. Most deodorant bars or highly fragranced bars are of the *combar* variety, and very few true soaps are currently on the market.

Lipid-Free Cleanser

Lipid-free cleansers are liquid products that clean without fats, which distinguishes them from soap-type cleansers. Lipid-free cleansers are applied to dry or moistened skin, rubbed to produce lather, and rinsed or wiped away. These products may contain water, glycerin, cetyl alcohol, stearyl alcohol, sodium lauryl sulfate, and, occasionally, propylene glycol. Lipid-free cleansers leave a thin moisturizing film on the skin and can be used effectively in individuals with excessively dry, sensitive, or dermatitic skin. However, they do not have strong antibacterial properties and may not remove odor from the axilla or groin and are not effective for removing excessive environmental dirt or sebum. Lipid-free cleansers are best used where minimal cleansing is needed.

Cleansing Cream

Cleansing creams are composed of water, mineral oil, petrolatum, and waxes⁴ and are commonly used by mature women who grew up in an era when cleansing creams were the only alternatives to harsh alkaline soaps. The most common variant of cleansing cream, known as *cold cream*, is created by adding borax to mineral oil and beeswax.⁵ Cold creams are popular because they remove cosmetics and cleanse dry skin in one step.

Abrasive Scrub

The realization that exfoliation of desquamating corneocytes produces smooth skin in older patients led to the concept of an abrasive scrub. Abrasive scrubs incorporate

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polyethylene beads, aluminum oxide, ground fruit pits, or sodium tetraborate decahydrate granules to induce various degrees of exfoliation.⁶ The most abrasive scrub is produced by aluminum oxide particles and ground fruit pits. In general, products containing these rough-edged particulates are not appropriate for patients with sensitive skin. Mild facial scrubbing is produced by polyethylene beads, which are smooth and round. Abrasive scrubs containing sodium tetraborate decahydrate granules are less aggressive and soften and dissolve during use. The main problem with abrasive scrubs for epidermabrasion is the firm nature of the scrubbing granules that do not deform when pressed too firmly against the skin.

Woven Mesh

Woven mesh products were introduced for facial cleansing around the same time as abrasive scrubs. The difference is that woven mesh products induce exfoliation with an implement and abrasive scrubs use a particulate to perform the same action. A very popular product introduced into the marketplace was composed of a nonwoven polyester fiber web sponge.⁷ This product originally was designed to remove open comedones. The web stiffness was decreased later and the sponge impregnated with a mild cleanser to produce a product designed for various skin types.

Cleansing Cloth

The desire for thorough but less abrasive cleansing led to the development of the disposable cleansing cloth. These cloths are comprised of a combination of polyester, rayon, cotton, and cellulose fibers held together by heat through a technique known as *thermobonding*. Additional strength is imparted to the wipe by hydroentangling the fibers. This is achieved by entwining the individual rayon, polyester, and wood pulp fibers with high pressure jets of water eliminating the need for adhesive binders and thereby creating a soft strong cloth. The cloths are packaged dry and impregnated with a cleanser that foams modestly when moistened. The type of cleanser in the cloth varies based on the need for strong sebum removal for oily skin or modest sebum removal for dry skin. Humectants and emollients also can be added to the cloth to decrease barrier damage with cleansing or to smooth the skin scale present in xerosis.

In addition to the composition of ingredients preapplied to the dry cloth, the weave of the cloth also determines its cutaneous effect. Two types of fiber weaves are used in cleansing cloth products: open weave and closed weave. Open weave cloths derive their name from the

2- to 3-mm windows between the adjacent fiber bundles in each cloth. These cloths are used in individuals with dry and/or sensitive skin to increase the softness of the cloth and decrease the surface area contact between the cloth and the skin, yielding a milder exfoliant effect. Closed weave cloths, in comparison, are designed with a much tighter weave and provide more aggressive exfoliation. Ultimately, the degree of exfoliation achieved depends on the cloth weave, the pressure with which the cloth is moved over the skin surface, and the length of time the cloth is applied to the skin.

Cleansing Pouch

The cleansing pouch is a variation of the fibered cleansing cloth; however, it also can be used as a metered delivery system for skin cleansing and conditioning agents. The cleansing pouch is created by placing a plastic membrane between 2 fibered cloths containing holes of various diameters. The size of the holes determines how quickly the contents of the pouch are released on the skin surface. Typically, the cleansing pouch does not produce as much exfoliation as a plain cleansing cloth.

Sonic Skin Care Brush

The newest mechanized technique for facial cleansing is the sonic skin care brush (Clarisonic™). This device was developed by many of the same engineers and researchers that developed the Sonicare toothbrush, which uses sonic motion to thoroughly remove dental plaque. The sonic skin care brush has an enlarged brush head with soft tufted bristles for facial cleansing. The miniaturized motor creates an oscillatory motion of the brush head. The waterproof handheld device runs on a rechargeable battery and can be used in the shower.

I had the opportunity to study this brush informally to determine the degree of facial cleansing provided as part of a funded research grant from Pacific Bioscience Laboratories, Inc. The researchers and I elected to apply a dark facial foundation and powder to the faces of 6 Caucasian women and then attempted to remove the makeup with various cleansers. We cleansed the face using a timed cleansing sequence with a lipid-free cleanser, foaming syndet-based face wash, abrasive polyethylene bead scrub, face cloth, and the sonic skin care brush. After completing the cleansing sequence, we used a sponge soaked in isopropyl alcohol to remove any remaining cosmetic. The amount of dark foundation remaining after the cleansing technique was complete provided a nice contrast on the white rubber sponge. We found that the lipid-free cleanser removed the least

amount of foundation and powder followed by the foaming syndet-based face wash. These products cleansed the skin surface but did not clean as well in the dermatoglyphics. This effect was more pronounced in individuals with prominent pores and/or acne scarring. The abrasive polyethylene bead scrub removed more facial foundation than the lipid-free cleanser and foaming syndet-based face wash but not as much as the textured face cloth, which was able to traverse the skin surface and dermatoglyphics more evenly. However, the sonic skin care brush produced the most thorough facial foundation removal. Its brush bristles were able to traverse the dermatoglyphics, facial pores, and facial scars more adeptly than any other cleansing method (Z.D.D., unpublished data, 2004).

The better facial foundation removal achieved with the sonic skin care brush may be attributed to the ability of the closely-spaced, tufted, flexible bristles to reach uneven surfaces of the facial skin. The sonic motion of the brush also aided in dislodging the facial foundation particles in a manner similar to the sonic surgical instrument cleansers used to dislodge debris in liposuction cannulas and reusable injection needles.

The researchers and I also had the opportunity to use the brush on 10 patients with various dermatologic conditions including acne, trichostasis spinulosa, pseudofolliculitis barbae, and seborrheic dermatitis. Although the sonic skin care brush provided excellent cleansing on the uneven skin surface caused by these conditions, the most impressive results were seen in patients with seborrheic dermatitis. The sonic skin care brush was able to adeptly remove the skin scale in facial folds, as well as hairy areas of the face such as the eyebrows (Z.D.D., unpublished data, 2004). Adequate

cleansing of eyebrows and the male beard has always been a challenge due to the dense coarse nature of the hair. The oscillating motion of the brush, as opposed to more common rotary facial brushes, allows the brush to traverse hair-bearing skin without tangling the hair in the brush. The brush also was good for cleaning in and behind the ears. Although more research is needed to verify these early results, it appears that this technology, originally developed for dental use, may have dermatologic utility as well.

Summary

This article examined various facial cleansing methods using a variety of cleansers, implements, and mechanized devices. Each method offers unique advantages to the user. Ultimately, the dermatologist should try each of them and determine which method best suits their concept of ultimate facial skin hygiene.

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