

les nouvelles  
*esthétique* & spa  
AMERICAN EDITION

LNE & Spa—the magazine for skin care and spa professionals January 2009 \$7.50







# smoking and the skin

a look at one really bad  
habit that affects our appearance

## SMOKING IS ONE OF THE MOST PREVENTABLE CAUSES OF DISEASE

and death today. While it is widely known and accepted that smoking contributes to diseases of the heart and lungs, the adverse effects that it has on the skin are not as frequently discussed. It is a major contributor to many dermatologic conditions and complications such as skin discoloration, extracellular matrix degradation, deep wrinkling, premature skin aging, poor wound healing and abnormal skin growth formation.

People often begin smoking at a young age, when ignoring the warnings of possible disease and death is easier. For this reason many, if not most, anti-smoking campaigns have limited success. Focusing the message on the fact that smoking is not only a danger to skin health but also ages the skin much faster could be more compelling. Although this may seem superficial, the billions of dollars that are being spent annually on cosmetic injections, elective surgery and topical anti-aging products demonstrate that it is a message that could make an impact. If we can help our patients stop smoking in order to stay beautiful, the ancillary benefit is that we will also be helping their overall health. That, of course, is our ultimate goal. ➔

BY JENNIFER LINDER, M.D.

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### No breath of fresh air

We depend on oxygen for the proper function of our bodies. Simply stated, we need oxygen to live. Air is pulled into our lungs and travels down to the smallest air sacs in the lungs called the alveoli. It is there that the capillaries carry deoxygenated blood to be replenished with more oxygen. This rich, red blood is then carried around the body to sustain all of its organs and systems, including the skin's cells. Without adequate oxygen, the body suffers.

The nicotine in cigarette smoke causes vasoconstriction or blood vessel contraction. In addition, the carbon monoxide in cigarettes bonds with oxygen, greatly reducing its availability to the body. The combination of nicotine and carbon monoxide creates a situation where there are not only smaller pipes to carry the oxygen, but also less oxygen flowing through them.

Smoking just one cigarette restricts blood flow for up to 90 minutes. This means that there is a greatly reduced amount of oxygen passing through the skin. If a person smokes more than one cigarette in an hour and a half, then the time the skin goes without proper oxygenation is multiplied exponentially. Amazingly, once this restricted oxygen flow has persisted in the skin over time, the body attempts to deliver more blood to the skin by producing more blood vessels. Eventually, this process leads to telangiectasias—chronically dilated groups of capillaries that are visible as dark red blotches on the skin—that is characteristic of a condition known as smoker's skin. In addition to these excessive visible capillaries, the skin of smokers exhibits a grey or yellow tone rather than the pink hue of healthy skin due to excessive deoxygenation.

### Degrading the matrix

The extracellular matrix is exceedingly important not only to the function of our skin but also to its appearance. The matrix is comprised of collagen, elastin and other structural and adhesive proteins. Enzymes called matrix metalloproteinases (MMP) work to break down these proteins to rid the skin of spent or damaged portions. A strong network of healthy collagen fibers is responsible for

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the structure and strength of our skin. It functions as the scaffolding of the dermis. Elastin provides the ability for the skin to be moveable, elastic and also to return to its original shape after movement. As we age, the production of these proteins decreases. Exposure to UV rays and environmental pollutants accelerates this degradation by increasing MMP (specifically MMP-1) activity, causing the unwanted breakdown of healthy and necessary matrix components. Smoking is an avoidable environmental pollutant that compromises health and ages the skin prematurely.

In the mid 1990s, University of California researchers performed a study to identify the correlation between smoking and facial wrinkling. Published in the *International Journal of*

*Dermatology*, the studies identified the risk of moderate or severe facial skin wrinkling as more than twice as high for men who smoked than those who had never smoked and three times higher for women smokers.

### Slows healing process

Slow wound healing is another serious and sometimes deadly effect of smoking. The increased vasoconstriction and decreased collagen production associated with smoking are significant concerns, as the main determining factor of the strength of an operative incision is healthy collagen. Those who smoke should disclose this to their surgeon prior to undergoing any type of surgery, whether elective or mandatory. It is recommended, of course, that smoking be discontinued to make surgery safer, enable faster healing and improve overall health.

We all know that smoking has been linked to the development of cancer. It also increases the formation of numerous types of neoplasms (tumors). Neoplasms are abnormal growths of  
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tissue whose cells proliferate more rapidly than normal. The end result is a tumor that is foreign to normal tissue, whether benign or malignant.

### The ugly truth

In addition to the many devastating effects of smoking on the skin, it is also important to stress to patients the other unsightly and unpleasant side effects of smoking. Yellow fingers and fingernails, increased wrinkling and skin laxity and a sallow complexion are only a few, not to mention bad breath and yellow teeth. The negative effects of smoking show on the skin relatively quickly and enough damage can be incurred to cause smoker's skin after only five years, which may be only partially correctable.

There are treatments and topical ingredients that will help improve the skin once someone has quit smoking. Professional detoxifying and oxygenating procedures promote circulation and oxygenation of skin cells, which can dramatically improve skin tone. Ingredients like ascorbic acid (vitamin C), retinol (vitamin A) and certain peptides increase collagen synthesis to strengthen the skin and minimize wrinkling. Caper bud extract and algae work

to support the capillaries and reduce their hyperpermeability. Matrix metalloproteinase inhibiting ingredients (MMPi) like resveratrol, soy proteins, epigallocatechin gallate (EGCG), sodium chondroitin sulfate and ascorbic acid work to protect healthy matrix proteins from the damaging effects of excess MMP activity in the dermis. Dermal fillers can be used to correct lip lines and deeper wrinkles around the face. Superficial chemical peel treatments improve the overall health and appearance of the skin, reduce fine lines and wrinkles and greatly improve the skin's surface texture. There are many additional options available. However, nothing can supply the necessary oxygen for continued skin cell health better than simply quitting smoking.

### Join the effort

Each November, the American Cancer Society sponsors the Great American Smokeout. This is a day in which smokers are encouraged to stop smoking for 24 hours in the hope that they will quit permanently. Physicians and clinicians should consider every day a good one to help patients end this addiction and allow their skin to begin its repair. Hold educational workshops to demonstrate what happens to the skin of smokers. Appeal to teens and young adults as well as older patients, who are more concerned with aging skin. Provide specialized treatments and product packages for those trying to quit. A strong patient clinician trust relationship means that each of us can have an impact. Education is the key to helping patients see the benefits of not smoking. Living a smoke free life is important not only for their appearance, but for their overall health. ■

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