

Up in Smoke

There are many reasons for people not to smoke, and for those who do, to quit. In fact, cigarette smoking is the leading cause of preventable death and disability in the United States. But, most people may not know the effects of smoking on the skin. The smoker invariably looks older than her stated age, yet an alarming number of younger women are beginning to smoke cigarettes. Whether the reasons to smoke include peer pressure or body weight concerns, neither issue can possibly justify the deleterious outcomes. The smoke-lined face is unattractive, does not respond well to rejuvenation surgery, and is more likely to develop skin cancer. These negative consequences of smoking damage the skin, which is our largest and most protective organ. Infact researchers in England have just uncovered a connection that may link facial wrinkling from smoking to the development of chronic obstructive pulmonary disease (COPD), published in *Thorax* (2006;61:568-671). There are multiple organ systems including the heart, lung, intestine, stomach, pancreas, urinary bladder and breast, to list a few, which are more likely to fail from smoking, but this article is intended to address only the cigarette smoking effects on the skin – one and only one organ.

Our skin is composed of cells and protein known as collagen. The collagen accounts for about 70% of the dry weight of the skin; obviously, the health and maintenance of the collagen keeps the skin looking young, soft and supple. Approach a person in their eighties and pinch the back of her hand; you will find that the skin retracts back very slowly, compared to the skin of a baby. The reason for a rapid return of the skin from a 'pinch test' is dependant upon the amount and the health of the collagen within the skin. Keeping young-looking skin requires healthy collagen. Research indicates that smokers have more of the collagen degrading enzyme (MMP-1) than non-smokers.¹ Apparently, the smoker is 'burning up' the skin, causing lines and wrinkles to appear earlier in life than the non-smoker. Wrinkles are unattractive and problematic to our appearance, but smokers continue to increase their rate of formation, the more that they smoke.

The protective nature of our skin includes its repair and healing abilities. Smokers just do not heal as fast, and therefore as effectively as non-smokers; this delay in healing is responsible for wider, thicker, and less attractive scars. Some plastic surgeons, including your author, actually refuse to operate on some smokers; their post-operative outcomes are not as favorable. One reason for this healing delay may be in the inability of the healing cells called keratinocytes to migrate across the incision, closing the wound. Studies of cell migration in the presence of nicotine demonstrate a significant defect and may partially account for the poor healing of smokers, compared to non-smokers.² Smokers are therefore at increased risk of post-surgical tissue death or rejection.

Cigarette smoking also affects the oxygen carrying capacity of the blood by actually poisoning the hemoglobin. As the blood circulates to the healing tissue, it is not as effective in releasing oxygen and removing the carbon dioxide, or the waste products of metabolism. Additionally, the capillary circulation, or the tiny vessels of the skin, closes in response to nicotine. The blood flow becomes abnormal and often does not reach the healing tissue to generate a repair response. This restriction in blood flow can result in the loss of skin at the healing wound, leading to wide, thick scars. Smokers are more likely to develop skin cancers and those cancers that do develop tend to be larger than those of non-smokers. In a recent hospital-based case-controlled study of current smokers, (relative risk, 3.3; 95% confidence interval), after adjustment for age, sex, and sun exposure, there remained a dose-response relationship with the number of cigarettes and pipes smoked. It was found that cigarette smoking was an independent risk for the development of cutaneous squamous cell carcinoma.³ Skin cancers of the face are often difficult to treat without leaving visible scars. These scars will never completely disappear and may permanently disfigure an otherwise beautiful face.

All of us have decisions to make about our own health, but in this society, it is often difficult to find the information to support the correct decisions. What is true about smoking, that most of us realize, is that it is an addiction. Therefore, the process of smoking cessation involves sacrifice and commitment. There is help available in the form of prescription medications, behavior modification therapy, hypnotherapy, group therapy, and alternative strategies to assist in smoking cessation. Those of us who refrain from 'lighting up' will so favorably spare the damage to their skin and all their other organ systems, that, hopefully they will never suffer the consequences mentioned above. Let us not wait for a health care crisis to stop smoking; and let us be positive role models for our children, who really do watch us very carefully. In so doing, the health care system in our country could be totally revolutionized because we took the steps to prevent disease by refusing to smoke. Your skin will thank you.

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