A plastic surgeon comments on smoking

by

Mary H. McGrath, MD, MPH, FACS

Plastic surgeons hold strong opinions about the harmful impact of cigarette smoking on wound healing and postoperative complications, as well as on a patient's overall general health. These convictions date back to 1984, when a visually compelling paper showed varying degrees of facial flap necrosis in face-lift patients who smoked. The report reviewed more than 1,100 face lifts and found that a smoker was 12.46 times more likely to suffer skin loss than a patient who did not smoke. This finding prompted the authors to state that "Heavy smokers can reasonably be denied elective aesthetic surgery unless they stop smoking."[1] While there were prior experimental studies indicating that smoking had an adverse effect on wound healing, this clinical study had a formative impact on later plastic surgical practice guidelines.

Cigarette smoke contains nicotine, carbon monoxide, and hydrogen cyanide, and each has been shown to impair wound healing by producing relative tissue hypoxia. Nicotine is a vasoconstrictor that diminishes tissue oxygenation, predisposes to microvessel thrombosis through increased platelet adhesion and direct endothelial cell damage, and diminishes cell proliferation and function. Carbon monoxide reduces oxygen carrying capacity and hydrogen cyanide inhibits oxidative metabolism and oxygen transport.[2]

The consequences of tissue ischemia are most evident in surgical procedures where tissue is at risk for interrupted circulation, as in surgical undermining, the transfer of skin flaps, microsurgical tissue transfer, and grafts of all types, including bone. Many of the techniques used in plastic surgery rely on good blood supply, and tobacco use compromises the outcome.

A number of clinical studies have documented increased morbidity in plastic surgical patients who smoke. A review of 132 patients having abdominoplasty showed wound healing problems in 47.9 percent of smokers versus 14.8 percent of nonsmokers.[3] In patients having free trans-

verse rectus abdominis musculocutaneous flap breast reconstruction, smokers have two times the incidence of mastectomy flap necrosis than nonsmokers. Abdominal wall donor site complications are also twice as common and include abdominal flap necrosis and hernia.[4]

Similarly, complications in women having breast reconstruction with expanders are significantly more frequent in smokers, as is mastectomy flap necrosis, regardless of the type of reconstruction.[5] Numerous additional studies document poorer outcomes in patients using tobacco products; a few among these include reviews of smokers having digital replantation surgery,[6] flap reconstruction in the lower extremity,[7] head and neck reconstruction,[8] and breast reduction.[9]

The clinical evidence of adverse outcomes in smokers has resulted in several suggested practices in plastic surgery. Reduction of risk by smoking cessation is routinely discussed. Depending on the acuity of the situation and the nature of the surgery, many plastic surgeons refuse to operate until the patient has achieved smoking cessation for at least four to six weeks preoperatively and is prepared to refrain from smoking for two to four weeks postoperatively. These avoidance guidelines are offered to the patient accompanied by educational materials and information about pharmacologic replacement therapy. For some surgical candidates, it is useful to encourage compliance by alerting the patient that a serum cotinine concentration, or use of a test strip for nicotine content in the urine, will be done just before surgery. This message is accompanied by the assurance that surgery will be cancelled if there is evidence of noncompliance.

For many plastic surgeons, the response to this position on smoking is surprisingly effective and very gratifying. It is uncommon to find patients who do not express the desire to quit smoking. The majority of patients respond readily to the information about skin necrosis and tissue loss when it is accompanied by good explanations delivered by the surgeon, and successfully stop smoking through the perioperative period. This is anecdotal experience, but many never return to tobacco use and will comment later that smoking cessation turned out to be an ancillary benefit of the surgical experience for which they are grateful. Ω

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Dr. McGrath *is professor of surgery, division of plastic surgery, University of California–San Francisco.*