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Injectable Skin Fillers

Rhoda S. Narins
Dermatology Surgery and Laser Center of New York, White Plains, New York and Department of Dermatology, New York University Medical Center, New York, New York, U.S.A.

Joel L. Cohen
AboutSkin Dermatology and DermSurgery and Department of Dermatology, University of Colorado, Boulder, Colorado, U.S.A.

Kenneth Beer
Palm Beach Esthetic Center, West Palm Beach, Florida and Department of Dermatology, University of Miami, Miami, Florida, U.S.A.

INTRODUCTION

The search for the ideal cutaneous filler has spanned over a century. Presently, interest in soft-tissue augmentation is growing exponentially. As the baby boomer generation enters the market for cosmetic procedures, it is estimated that the number of soft-tissue augmentation procedures performed will rise geometrically. In today's society, cosmetic procedures are more accepted, openly discussed, and are the focus of several prime-time television shows. Within cosmetic dermatology and plastic surgery, the focus of significant time, attention and money is on volume restoration and correction of wrinkles, folds, and scars. There are now more filler options with increased safety profiles than ever before.

Recent advances have expanded our soft-tissue augmentation choices. Several new fillers have recently been approved by the U.S. Food and Drug Administration (FDA) and many more are in the short-term pipeline. These materials amplify our options of treatment modalities for the aging face.

During the normal aging process, there is a loss of connective and subcutaneous tissue, most notably in the face, neck, and hands. Over time, cumulative changes from both dynamic forces and photodamage lead to fine lines, wrinkling, loss of elasticity, and thinning of the dermis. There is a loss and repositioning of fat with hollowing of the cheeks. These changes are responsible for increased visibility of several bony landmarks. Aging also results in atrophy of the lips, descent of the corners of the mouth, and an overall diminished support of the lower third of the face. One of the most prominent stigmata of the aging face is mid-face descent. This descent, combined with the loss of tissue volume, results in prominent nasolabial and melolabial creases. Subcutaneous tissue augmentation with injectable fillers can fill lines, replace lost volume, and re-position structures that have begun to sag. Thus, these materials may be used for a rejuvenating effect to soften the appearance of aging, provide a fuller more youthful face, and recontour lines that form over time.

Fillers frequently work synergistically with surgical procedures (facelifts, laser resurfacing, etc.) to enhance the results of these modalities. Patients who do not want to undergo a surgical or ablative procedure can often obtain excellent results using fillers in conjunction with other low-risk techniques (non-ablative lasers, peels, thread lifts, botulinum toxin, etc.). While the botulinum toxins are unmatched in their ability to rejuvenate the upper third of the face, the lower third of the face is most directly impacted by fillers. The lower third of the face disproportionately bears the brunt of gravitational forces and loss of volume. Fillers can be used to reverse these changes. In addition to rejuvenation, fillers have a significant role in repairing defects such as scars. Scars from acne, surgery, or trauma result predominantly from loss or contraction of tissue. Each of these types of scars can also be greatly improved with fillers.

Each type of filler has different strengths and weaknesses (Table 1). Physicians familiar with multiple fillers have the greatest ability to maximize their patients' benefit with these products—so it behooves the cosmetic dermatologist to know and understand the various properties of the fillers at his or her disposal.

IDEAL FILLER CRITERIA

The ideal filler would be affordable and would provide predictable results for filling lines and scars and restoring volume. Depending on the circumstance, it should persist for months or years without significant degradation. It would be technically easy to use and able to pass through a small gauge needle and injected into the skin with minimal discomfort. This filler would fill superficial lines as well as deep folds and furrows. It would be biocompatible and non-allergenic, allowing injection at the patient's initial visit without the need for a skin test. The ideal filler would have a safety profile that would include being: non-inflammatory, non-toxic, non-carcinogenic, non-teratogenic, stable post-injection, and non-migratory. It would be packaged ready-to-use and shipped and stored at room temperature with a long shelf life. It would be free of transmissible diseases and have minimal post-procedure downtime and morbidity such as swelling, redness, or bruising.