Dermal Fillers for Dental Professionals

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DERMAL FILLERS

for Dental Professionals

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Preface

This book presents a clinical experience–based framework for the incorporation of dermal fillers for facial rejuvenation procedures into a general dental practice or dental specialty practice. These procedures are a natural progression in the evolution of cosmetic dentistry. The dentist's and dental specialist's existing skill set of esthetic assessment, administration of local anesthesia, and making patients comfortable in the office setting make this type of treatment fairly easy to incorporate into the practice routine.

Today, providing dermal filler and/or cosmetic neurotoxin injections is permitted by an overwhelming majority of the state dental licensing boards in the United States and abroad. What's more, the American Dental Association and state associations have been sponsoring courses that train dentists in these procedures for many years. And why not? Under U.S. medical licensing guidelines, any physician with a medical degree from an accredited institution—regardless of specialty—can offer cosmetic facial injections as a service to their patients with no additional training. Does anyone really believe that the average obstetrician or rheumatologist has greater expertise in facial anatomy than a dentist? What about estheticians? In some states, an individual with no medical education can take a weekend course and then give facial injections, provided they are under the "delegation" of a physician.

Dental training and skills make the group exceedingly well qualified to provide safe and esthetically pleasing dermal filler injections. Like most dental procedures, administering facial injections for cosmetic purposes requires a combination of excellent technical and artistic skills, as well as comprehensive understanding of head and neck anatomy and knowledge of current materials and treatment modalities.

We are certainly not suggesting that the average dentist or dental specialist does not require additional training to learn how to select an appropriate dermal filler product, practice safe facial injection techniques, or prevent complications. On the contrary, our goal in writing this book is to provide the information that the dental clinician needs—and none of the information that dentists, by virtue of their training, already possess—to become qualified providers in the highly rewarding (and potentially lucrative) area of facial rejuvenation.

The scope of dental and dental specialty practice has never been static. The purpose of this book is not to promote the need for all dentists and dental specialists to provide these cosmetic services. But rather the objective is to present how numerous dermal filler procedures can be successfully and safely incorporated into an existing practice using the model that we, as both practicing clinicians and academicians, have developed and taught to hundreds of others over many years.

Section I: Getting Started with Dermal Filler Treatment

1

DERMAL FILLERS: WHAT EVERY DENTIST SHOULD KNOW

The term *facial rejuvenation* refers to several different categories of treatments designed to improve the appearance of the face: plastic surgery such as rhinoplasty, blepharoplasty, and rhytidectomy; less invasive procedures such as dermal abrasions and chemical peels; and the growing list of minimally invasive therapies, including laser skin resurfacing, microdermabrasion, neurotoxin injections, and dermal filler injections (Fig 1-1). In 2019, the American Society of Plastic Surgeons reported that from 2000 to 2018, the number of facelift surgeries declined 9%, while the number of neurotoxin injections increased an astronomical 845%. Similarly, dermal filler treatments have increased 244% since 2006, the first year for which data were collected (Table 1-1).[1] As these numbers demonstrate, neurotoxins and dermal fillers have radically changed the market for facial rejuvenation procedures in the United States, and this trend will continue to increase at least for the next several years.

Some of the reasons for this trend are obvious. Neurotoxins such as Botox Cosmetic (Allergan) and Dysport (Galderma) and dermal fillers can usually be administered in less than an hour, produce effects that are apparent immediately or within days, and require little or no downtime. Moreover, these esthetic enhancements are subtle enough not to attract attention and thus can be undertaken discreetly, which many people appreciate. Indeed, the intent of these procedures is not to make a person look 20 years younger but rather for them to appear more radiant and refreshed at their present age (Fig 1-2).

Unlike surgical procedures, neurotoxin and dermal filler treatments are luxuries that fit many budgets. At an average cost of

FIG 1-1 *Facial rejuvenation* is a term that encompasses esthetic procedures in plastic surgery, nonsurgical procedures such as dermal abrasion and chemical peeling, and minimally invasive procedures such as neurotoxin and dermal fillers.

Facial cosmetic procedure trends in the United States since 2000*

Procedure	2018	2000	Change
Facelift (rhytidectomy)	121,531	133,856	–9%
Nose reshaping (rhinoplasty)	213,780	389,155	–45%
Eyelid surgery (blepharoplasty)	206,529	327,514	–37%
Botulinum toxin type A† injection	7,437,378	786,911	+845%
Soft tissue fillers‡ injection	2,676,970	778,000§	+244%

*Data from the American Society of Plastic Surgeons.[1]
†Includes Botox (Allergan), Dysport (Galderma), and Xeomin (Merz North America).
‡Includes all commercial dermal fillers as well as platelet-rich plasma and acellular dermal matrix.
§Number of procedures in 2006, the year data was first reported.

FIG 1-2 The effects of neurotoxin and dermal filler treatments are subtle and appear natural, unlike plastic surgery procedures.

$397 and $682 per site for neurotoxin and dermal filler (eg, Juvéderm, Allergan) injections, respectively, these treatments are comparable to the cost of tooth whitening or a day at the spa. Compare those numbers to the average cost of a simple rhinoplasty ($5,350) or dermabrasion ($1,250).[1] The relative affordability of minimally invasive procedures makes them appealing to people at all income levels, including those who likely would never consider seeking surgical treatment to address their age-related esthetic concerns.

Based on popular stereotypes, many readers might assume that middle-aged women are the ones primarily driving this trend. Not so. The "daddy do-over" has been quietly gaining in popularity for several years, and the average age of patients skews younger all the time as more 20- and 30-somethings seek dermal filler treatment for acne scars, nose recontouring, lip augmentation, and other cosmetic enhancements. In 2018, individuals aged 20–39 made up 18% of all neurotoxin injections and 11% of dermal filler treatments.[1]

FIG 1-3 Neurotoxins target the dynamic lines and folds of facial expression.

FIG 1-4 Dermal fillers target the static lines and wrinkles that are manifestations of aging on skin.

NEUROTOXINS AND DERMAL FILLERS: UNDERSTANDING THE DIFFERENCES

Currently, there are approximately three neurotoxin procedures for every dermal filler procedure performed in the United States (7.4 million vs 2.6 million).[1] Botox, the first commercially available neurotoxin, was initially developed and gained FDA approval in 1989 as a therapeutic agent for the treatment of strabismus, an eye muscle disorder. Today, many dentists use Botox therapeutically to treat patients suffering from temporomandibular joint pain related to clenching and bruxing and to relax the upper lip in patients who have a gummy smile. Botox Cosmetic was not FDA approved until 2002, just shortly before the approval of the first hyaluronic acid dermal filler in 2003.

Dynamic versus static wrinkles

Although the aim of these injectable agents is the same—to smooth facial wrinkles—they use different mechanisms of action to achieve it. Cosmetic neurotoxin targets the *dynamic* lines of expression that result from repetitive facial movement (Fig 1-3). It is injected directly into the muscles that animate these types of wrinkles, including frown lines, crow's feet, and forehead creases. The muscles become paralyzed, and within 2 to 3 days, the lines and wrinkles disappear. These effects last an average of 3 to 4 months.

Unlike neurotoxins, dermal fillers target *static* wrinkles, the ones we develop over time as we age (Fig 1-4). These static wrinkles are present regardless of facial expression and usually accompany other visible effects of aging, such as hollowed cheeks and eye sockets, irregular or blotchy pigmentation, skin laxity, and dryness. These facial manifestations of intrinsic aging are a result of reduced collagen production and slower cell turnover rates. (Their appearance can, however, be accelerated by extrinsic factors such as chronic sun exposure and smoking.) Intrinsic aging is a natural consequence of physiologic changes over time that occur at variable yet genetically determined rates. In some lucky people, these lines, wrinkles, and folds do not make an appearance until they reach 55 or 60 years old, whereas others begin to see them in their late 30s and 40s, but for all of us they are an inevitable effect of aging.

Nevertheless, we spend billions of dollars each year on expensive elixirs and procedures in our never-ending quest to prevent and diminish the visible signs of aging on our

TABLE 1-2 **Costs and total expenditures of the multibillion-dollar industry to combat aging***

Procedure	National average surgeon/ physician fee	Total expenditure
Cosmetic surgical procedures		
Cheek implant (malar augmentation)	$3,015	$43,322,535
Chin augmentation (mentoplasty)	$2,364	$38,769,600
Dermabrasion	$1,249	$100,790,553
Ear surgery (otoplasty)	$3,163	$72,382,092
Eyelid surgery (blepharoplasty)	$3,156	$651,805,524
Facelift (rhytidectomy)	$7,655	$930,319,805
Forehead lift	$3,623	$140,554,285
Lip augmentation (other than injectable materials)	$1,767	$54,527,853
Lip reduction	$2,009	$2,147,621
Neck lift	$5,424	$280,819,182
Nose reshaping	$5,350	$1,143,723,000

*Data from the American Society of Plastic Surgeons.[1]

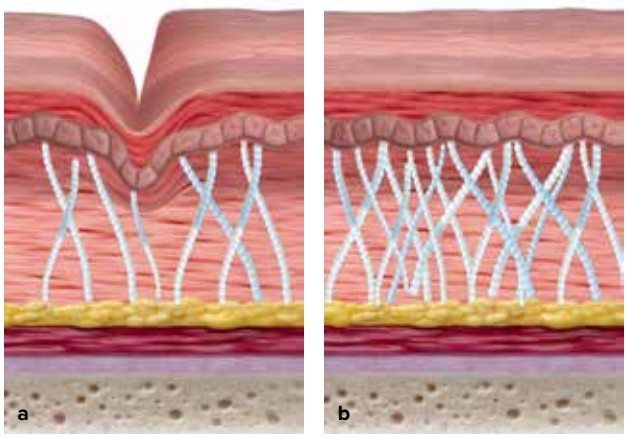

FIG 1-5 Some dermal filler products stimulate the production of collagen and elastin to diminish the appearance of lines and wrinkles. *(a)* Before application of dermal filler. *(b)* After application of dermal filler.

skin. And every year, the industry expands with new agents and modalities added to the long list of topical medical products (vitamin A acid, α-hydroxy acids, antioxidants, and moisturizers) and procedures (glycolic acid peels, deep peels, dermabrasion, laser resurfacing, and plastic surgery) already available (Table 1-2).

In this book, we focus exclusively on the treatment of static wrinkles associated with aging using FDA-approved commercial dermal fillers and autologous serum-derived agents. As detailed in chapter 3, choosing a dermal filler requires an understanding of how its constituent components interact with the body. Broadly speaking, dermal fillers achieve their effects by one of two mechanisms of action. A *stimulator* works to reverse the loss of hydration and elasticity in the skin by inducing the production of new collagen (Fig 1-5), whereas a *volumizer* provides immediate volume replacement to smooth the appearance of

TABLE 1-2 *(CONT)* **Costs and total expenditures of the [illegible]-dollar industry to combat aging**

Procedure	National average surgeon/ physician fee	Total expenditure
Cosmetic minimally invasive procedures		
Botulinum toxin type A (Botox, Dysport, Xeomin)	$397	$2,952,639,066
Chemical peel	$669	$926,114,763
Injection lipolysis (eg, Kybella [Allergan])	$1,054	$67,448,622
Intense pulsed light (IPL) treatment	$391	$264,140,832
Laser hair removal	$285	$307,084,650
Laser skin resurfacing		
Ablative	$2,071	$332,878,043
Nonablative (Fraxel [Solta Medical], etc)	$1,144	$495,961,752
Microdermabrasion	$131	$92,933,103
Nonsurgical skin tightening (Pelleve [Cynosure], Thermage [Solta Medical], Ultherapy [Ulthera])	$2,059	$690,362,110
Soft tissue fillers		
Acellular dermal matrix	$2,065	$17,707,375
Calcium hydroxyapatite (Radiesse [Merz North America])	$691	$157,018,694
Fat-face	$2,126	$96,435,360
Hyaluronic acid (eg, Juvéderm Ultra, Ultra Plus, Voluma, Volbella, and Vollure, Restylane Lyft and Silk [Galderma], Belotero [Merz North America])	$682	$1,451,925,486
Platelet-rich plasma (PRP)	$683	$87,010,102
Polylactic acid (Sculptra [Galderma])	$915	$111,556,800
Polymethyl-methacrylate microspheres (Bellafill [Suneva Medical])	$889	$15,614,396
Total 2018 expenditures		$16,507,440,034

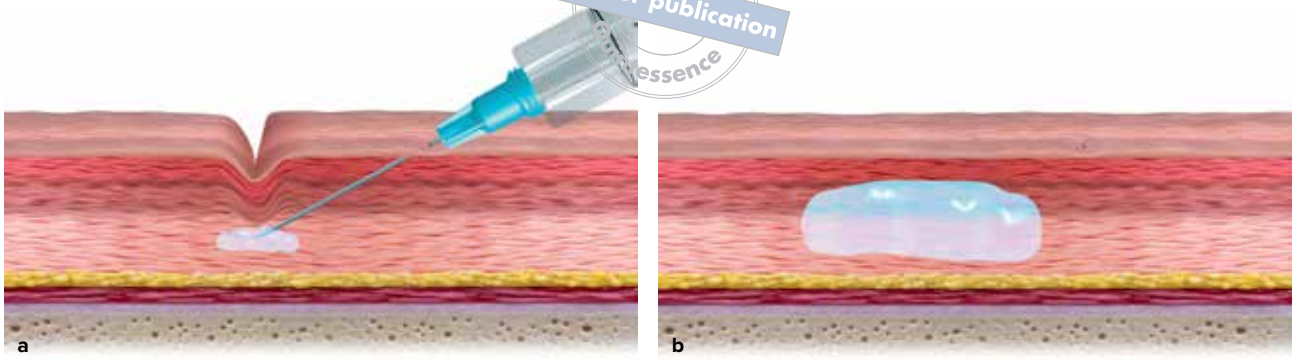

FIG 1-6 Other dermal filler products are designed to add volume to sunken skin as a way to smooth the appearance of fine lines and wrinkles. *(a)* At the start of application of dermal filler. *(b)* After application of dermal filler.

fine lines and wrinkles (Fig 1-6). Many products combine these mechanisms of action in one agent. With dozens of commercial products to choose from, it is incumbent on clinicians to understand how their physicochemical properties affect their performance in terms of biocompatibility, longevity, and other clinical considerations, all of which are discussed in chapter 3.

OVERCOMING OBSTACLES

As more dentists (and specialists from other medical fields) begin to compete for patients in the lucrative facial rejuvenation market, they face growing opposition from the so-called core physicians in the medical esthetic field—namely board-certified cosmetic dermatologists and plastic surgeons. Those in support of this trend argue that dentists are better qualified to perform dermal filler procedures than most physicians: They are experts in the facial musculature, are proficient in administering local anesthesia, routinely encounter the most common adverse events (ie, pain, swelling, inflammation) in their daily practice, and have a fine-tuned esthetic sensibility. Those opposed assert that dentists lack the knowledge and training to achieve the types of results that patients demand and are woefully unprepared to respond to the most serious complications, which can result in blindness or death.

Ultimately, the decision is a personal one. The following are some important issues to consider.

Legal considerations

A decade ago, the idea of dentists becoming providers of facial rejuvenation therapy would have raised a lot of eyebrows, not only within professional dental associations but also among rank-and-file dentists. However, it appears that attitudes have changed. Today, a majority of state dental licensing boards allow dentists to perform dermal filler and Botox procedures for general esthetic and therapeutic purposes. Some of the states that permit dentists to perform these services limit their scope, stipulating that they must be delivered as part of a dental treatment plan and not as a standalone procedure. Others have outlined specific regulations or certification requirements that dentists must meet before they can offer these services. And yes, a small number of states still consider them outside the scope of dental practice and prohibit them altogether.

Moreover, the American Dental Association, dentistry's national governing body with more than 163,000 members, has been providing and sponsoring continuing education in both neurotoxin and dermal filler injection procedures to general dentists and specialists alike for many years. Can there be any doubt that these procedures—like tooth whitening 20 years ago—will become a standard part of mainstream dentistry and eventually practiced throughout the United States? Check with your state dental board if you do not know the rules and regulations in your state before making your decision.

Another question relevant to state regulations has to do with malpractice insurance. If your dental liability malpractice insurance does not cover dermal filler procedures, you

are strongly advised to find a third-party carrier who will add a rider policy to protect you in the event of a liability claim.

Ethical considerations

While the boundaries separating general and specialty practices are fading, both in medicine and dentistry, even some dentists question whether their training adequately prepares them to administer cosmetic facial injections. After all, don't dermatologists undergo rigorous training to specialize in these procedures?

Actually, many dermatology and plastic surgery programs provide minimal training in dermal filler procedures. The Accreditation Council for Graduate Medical Education (ACGME) requires dermatology residents to "demonstrate knowledge of the indications, contraindications, complications, and basic techniques of" many popular cosmetic procedures (including dermal fillers), and to "perform or observe" five dermal filler procedures.[2] (Dermatologists who complete a fellowship in esthetic medicine are a different story.) Moreover, according to the American Academy of Facial Esthetics, dermal filler procedures are routinely performed by physicians trained in obstetrics and gynecology, ophthalmology, gastroenterology, internal medicine, and podiatry as well as registered nurses, physicians' assistants, and so-called medical estheticians.[3] A strong argument can be made that dentists have more knowledge and training in the anatomy, biochemistry, and physiology of the head and neck than any of these providers.

Practical considerations

There are important practical questions to ask yourself before making your decision. For example, how would adding esthetic facial therapy to your practice affect your personal brand? A practice that already promotes smile makeovers, tooth whitening, and other cosmetic services will find it easier than one that promotes holistic therapies, for instance. Similarly, your current patient demographics should be an important factor in your decision. Is your practice family-oriented with an emphasis on conservative treatment? Or is it more spa-like, appealing to patients who like to be pampered with personal music devices and the like? And don't forget to factor in your competition. Is there another dental practice in your area offering filler treatments? That could have a big impact on your decision one way or another. If there is a tic dermatologist in your building or vicinity, that will also influence your thinking.

Finally, do not underestimate the importance of gaining buy-in from both your front and back office staff. It is vital that all members of the staff receive training in how the procedures work, what they cost, the amount of time to schedule for appointments, the materials required, and how to incorporate them into operating systems. Your patients' first line of contact is your front office staff, so they will need scripts to help them answer questions about the treatments.

One effective way to engage your staff in the new service is to treat them (and even their family members) at no cost. Staff treatment sessions are a win-win: Employees cannot help but take a personal interest in the new procedures, and you get more opportunities to practice your injection techniques. A huge bonus is that your employees can share their own experiences with current and prospective patients and become true advocates of the new service.

All of these considerations must be weighed against the potential benefits of adding facial rejuvenation treatments to your practice portfolio.

RETURN ON INVESTMENT

A standard dental operatory is suitable for performing cosmetic dermal filler injections and requires no retooling or purchase of special equipment. And at $500 to $600 per procedure, these services are not only profitable but can have a dramatic impact on practice production. Investment costs, on the other hand, are negligible. The practice management software may have to be updated and new forms and letterhead printed. Inventory costs will rise with the need to stock filler products. As described previously, staff training can be carried out in-house at minimal cost. That leaves marketing, which requires a careful strategy for those who want to offer their new services to others beyond their patients of record.

Most dentists learn early in their career that a personal recommendation made by a satisfied patient can do more for their bottom line than any marketing campaign. Dental appointments top the list of the average person's least-favorite activities, so having a patient refer a friend is an exceptional honor. Indeed, the dentist-patient relationship is a unique and special one, with few if any analogues.

Our patients trust our professional skills in diagnosing their problems and delivering their treatment safely

and effectively. They also trust our advice on matters that are purely esthetic, such as matching a shade or choosing the shape of a crown. We know our patients' faces better than anyone else (except perhaps their spouses). Who better, then, to matter-of-factly suggest a minimally invasive procedure to smooth the lines around their mouth (ie, nasolabial folds) that add years to their appearance? Especially considering many of these patients may otherwise never seek such treatment.

This strategy will obviously take time and patience, but you can use that time to improve your skills through practice on staff, family, and friends. In the beginning, you will want to focus on patients who are more likely to feel comfortable if the procedure takes longer than expected or requires a follow-up to add more filler. The same discretion was required when you first opened your dental practice. The advantage today is that you have a whole practice of patients who already respect and trust you.

CONCLUSION

If you ultimately decide to incorporate cosmetic dermal filler procedures into your dental practice, you cannot hope to be successful unless you continue to deliver the same high quality of care, and that requires training and knowledge. This unique book was written by dentists for dentists; it recognizes and builds on the practicing dentist's knowledge in areas of overlap, such as head and neck facial musculature, anesthesia, and managing patient expectations. In areas that fall outside the scope of dentistry, it takes a more comprehensive approach. Thus, in addition to providing step-by-step instructions for performing dermal filler procedures to address simple, moderate, and advanced conditions, the book includes chapters on the physicochemical properties of commercial fillers, standard injection protocols, facial esthetic analysis, adverse effects and potential complications, locating specific dermal planes, and other critical concepts.

Expanding your practice to include facial esthetic treatment can be a catalyst for positive change and bring many rewards, such as the unfamiliar pleasure of witnessing your patients' enthusiasm and excitement on the day they present for their new treatment.

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