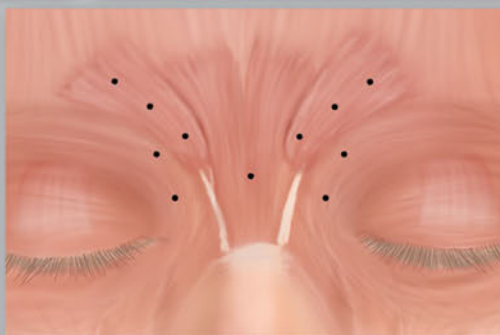
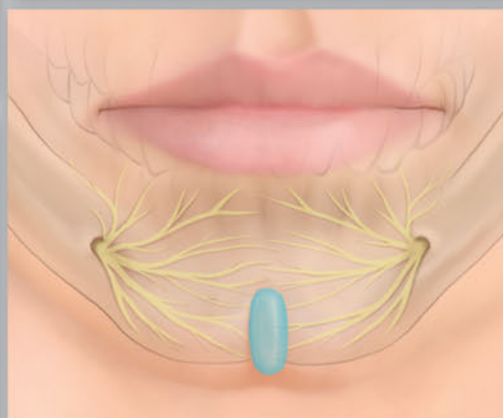
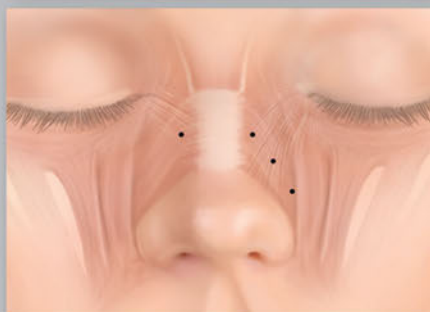
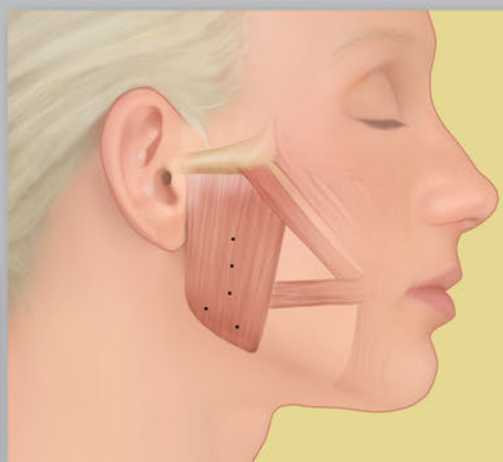
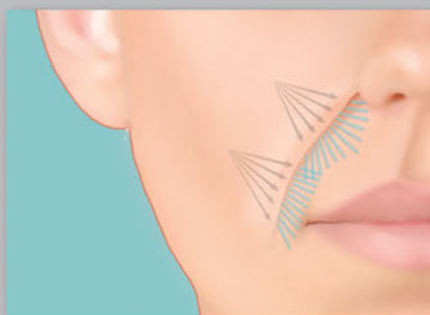


Cosmetic Injection Techniques

A Text and Video Guide to Neurotoxins and Fillers

Theda C. Kontis
Victor G. Lacombe



 MediaCenter.thieme.com
includes videos online

 **Thieme**

Cosmetic Injection Techniques

A Text and Video Guide to Neurotoxins and Fillers



Cosmetic Injection Techniques

A Text and Video Guide to Neurotoxins and Fillers

Theda C. Kontis, MD, FACS

Assistant Professor
Johns Hopkins Hospital
Board-Certified Facial Plastic Surgeon
Facial Plastic Surgicenter
Baltimore, Maryland

Victor G. Lacombe, MD

Board-Certified Facial Plastic Surgeon
Santa Rosa, California

Foreword by Jean D. Carruthers, MD, FRCSC, FRC(Ophth)

Clinical Professor
Department of Ophthalmology
University of British Columbia
Vancouver, British Columbia

Sarah E. Faris, MA, CMI

Medical Illustrator

Thieme
New York · Stuttgart

Thieme Medical Publishers, Inc.
333 Seventh Ave.
New York, NY 10001

Executive Editor: Timothy Hiscock
Managing Editor: J. Owen Zurhellen IV
Editorial Assistant: Elizabeth Berg
Senior Vice President, Editorial and E-Product Development: Cornelia Schulze
Production Editor: Barbara A. Chernow
Medical Illustrator: Sarah E. Faris, MA, CMI
International Production Director: Andreas Schabert
Vice President, Finance and Accounts: Sarah Vanderbilt
President: Brian D. Scanlan
Compositor: Carol Pierson, Chernow Editorial Services, Inc.
Printer: Everbest Printing Co. Ltd.

Library of Congress Cataloging-in-Publication Data

Kontis, Theda C.

Cosmetic injection techniques : a text and video guide to neurotoxins and fillers / Theda C. Kontis,
Victor G. Lacombe.

p. ; cm.

Includes bibliographical references.

ISBN 978-1-60406-712-5 — ISBN 978-1-60406-713-2 (eISBN)

I. Lacombe, Victor G. II. Title

[DNLM: 1. Cosmetic Techniques. 2. Face—surgery. 3. Biocompatible Materials—therapeutic use. 4. Face,
anatomy & histology. 5. Injections, subcutaneous—methods. 6. Neurotoxins—therapeutic use. WE 705]
617.5'20592—dc23 2012036154

Copyright ©2013 by Thieme Medical Publishers, Inc. This book, including all parts thereof, is legally protected by copyright. Any use, exploitation, or commercialization outside the narrow limits set by copyright legislation without the publisher's consent is illegal and liable to prosecution. This applies in particular to photostat reproduction, copying, mimeographing or duplication of any kind, translating, preparation of microfilms, and electronic data processing and storage.

Important note: Medical knowledge is ever-changing. As new research and clinical experience broaden our knowledge, changes in treatment and drug therapy may be required. The authors and editors of the material herein have consulted sources believed to be reliable in their efforts to provide information that is complete and in accord with the standards accepted at the time of publication. However, in view of the possibility of human error by the authors, editors, or publisher of the work herein or changes in medical knowledge, neither the authors, editors, nor publisher, nor any other party who has been involved in the preparation of this work, warrants that the information contained herein is in every respect accurate or complete, and they are not responsible for any errors or omissions or for the results obtained from use of such information. Readers are encouraged to confirm the information contained herein with other sources. For example, readers are advised to check the product information sheet included in the package of each drug they plan to administer to be certain that the information contained in this publication is accurate and that changes have not been made in the recommended dose or in the contraindications for administration. This recommendation is of particular importance in connection with new or infrequently used drugs.

Some of the product names, patents, and registered designs referred to in this book are in fact registered trademarks or proprietary names even though specific reference to this fact is not always made in the text. Therefore, the appearance of a name without designation as proprietary is not to be construed as a representation by the publisher that it is in the public domain.

Printed in China

5 4 3 2 1

ISBN 978-1-60406-712-5

Also available as an e-book:
eISBN 978-1-60406-713-2

*I dedicate this book to David and Alexandra, for their love and support;
to my Mom, my greatest fan; and in memory of my father, my angel.*

– TCK

*I dedicate this book to my wife, Alice, and my children, Victoria and Max.
You all mean the world to me. Love, Victor.*

– VGL

To access additional material or resources available with this e-book, please visit <http://www.thieme.com/bonuscontent>. After completing a short form to verify your e-book purchase, you will be provided with the instructions and access codes necessary to retrieve any bonus content.

Contents

▶ denotes a chapter with additional video content on MediaCenter.thieme.com

Foreword by Jean D. Carruthers	x
Preface	xi

Section I Introduction to Neurotoxins

1 Neurotoxins Overview	2
2 Neurotoxin Preparation	5
3 Instrumentation for Neurotoxin Injections	6
4 The Physicians Coalition for Injectable Safety	8

Section II Neurotoxin Injection Techniques

▶ 5 Neurotoxin Injection for Glabellar Frown Lines	10
▶ 6 Neurotoxin Injection for Forehead Wrinkles	16
▶ 7 Neurotoxin Injection for Smile Lines and Crow’s Feet	22
▶ 8 Neurotoxin Injection for Lateral Brow Lift	26
▶ 9 Neurotoxin Injection for Chemical Brow Lift	29
▶ 10 Neurotoxin Injection for Lower Eyelid Roll	32
▶ 11 Neurotoxin Injection for Bunny Lines	34
▶ 12 Neurotoxin Injection for Nasal Tip Lift	38
13 Neurotoxin Injection for Nasal Flare	40
▶ 14 Neurotoxin Injection for Elevating the Oral Commissures	42

▶ 15	Neurotoxin Injection for Lip Lift	45
▶ 16	Neurotoxin Injection for Smoker's Lines	47
	17 Neurotoxin Injection for Gummy Smile	50
▶ 18	Neurotoxin Injection for Dimpled Chin	54
▶ 19	Neurotoxin Injection for Platysmal Banding	57
▶ 20	Neurotoxin Injection for Necklace Lines.....	60
▶ 21	Neurotoxin Injection for Nefertiti Neck Lift.....	62
▶ 22	Neurotoxin Injection for Masseter Hypertrophy.....	66
	23 Neurotoxin Injection for Parotid Gland Hypertrophy.....	69
	24 Neurotoxin Injection for Submandibular Gland Hypertrophy	72
	25 Neurotoxin Injection for Gustatory Sweating (Frey Syndrome).....	74
▶ 26	Neurotoxin Injection for Profusely Sweating Underarms	76
	27 Neurotoxin Injection for Profusely Sweating Hands.....	80
	28 Neurotoxin Injection for Profusely Sweating Feet	82
	29 Neurotoxin Injection for Migraines	84
	30 Management of Neurotoxin Injection Complications.....	88

Section III Introduction to Fillers

	31 Fillers Overview	92
▶ 32	Anesthesia Techniques	96
	33 Filler Injection Methods	100

Section IV Filler Injection Techniques

▶ 34	Filler Injection for Nasolabial Folds.....	104
	35 Filler Injection with Polymethylmethacrylate (Artefill)	108
▶ 36	Filler Injection for Marionette Lines	111
▶ 37	Filler Injection for Lip Augmentation	114
▶ 38	Filler Injection for Elevating the Oral Commissures.....	118

▶ 39 Filler Injection for Vertical Lip Lines 120

▶ 40 Filler Injection for Glabellar Frown Lines 122

41 Filler Injection for Forehead Wrinkles 125

▶ 42 Filler Injection for Tear Trough Deformity 128

43 Filler Injection for Sunken Upper Eyelids 131

▶ 44 Filler Injection for Lateral Brow Lift 134

45 Filler Injection for Sunken Temples 137

46 Filler Injection for Nonsurgical Rhinoplasty 140

47 Filler Injection for Nasal Valve Stenting 146

▶ 48 Filler Injection for Medial Midface Hollowing 149

▶ 49 Filler Injection for Cheekbone Augmentation 152

▶ 50 Filler Injection for Sunken Cheeks 156

51 Filler Injection for Chin Augmentation 160

▶ 52 Filler Injection for the Mental Crease 164

▶ 53 Filler Injection for Jawline Rejuvenation 166

▶ 54 Filler Injection for Earlobe Rejuvenation 168

55 Filler Injection for Acne Scars 170

56 Filler Injection for Aging Hands 173

▶ 57 Filler Injection with Poly-L Lactic Acid for Facial Volumizing (Sculptra) 176

58 The “Liquid Facelift” 180

59 Management of Filler Injection Complications 182

Appendices

A Neurotoxin/Filler Injection Techniques Arranged by Order of Difficulty and Level of Experience Required 190

B Sample Informed Consent Form for Neurotoxin Injections 192

C Sample Informed Consent Form for Filler Injections 193

Index 195

Foreword

Drs. Theda C. Kontis and Victor G. Lacombe, two highly respected facial plastic surgeons, share their combined experiences in this practical handbook on *Cosmetic Injection Techniques*. If “Seeing Is Believing,” the authors have done a superb job in making the facial tissue “transparent” for everyone interested in this increasingly important subject area. Universal appreciation of the predictable effectiveness and safety of cosmetic injections has opened up the possibilities of other medical treatments to the benefit and health of millions.

Cosmetic surgeons have the privilege of using transcutaneous treatments to restore patients’ faces to their natural best. Drs Kontis and Lacombe written a text to assist with this process. The anatomy drawings are precise, clearly labeled, and well correlated with the clinical issues under discussion. Details

of injection technique are carefully explained and demonstrated. But none of this efferent response is possible without a secure afferent knowledge of anatomy—both classical and as found with the subject themselves.

This book is a labor of love written by authors who represent variations in techniques from the East and West coasts of the United States. I recommend it to all readers who choose to review their treatment plans from start to finish and who value learning from experts who teach with passion as well as knowledge.

Jean D. Carruthers MD, FRCSC, FRC(Ophth)
Fellow American Society of Ophthalmic
Plastic and Reconstructive Surgery,
Clinical Professor, Department of
Ophthalmology
University of British Columbia
Vancouver, British Columbia

Preface

I hear and I forget.
I see and I remember.
I do and I understand.

Confucius
Chinese philosopher (551 BC–479 BC)

The number of nonsurgical facial enhancements has skyrocketed in the past 10 years. As a consequence of patient demand, many physicians, nurses, and physician assistants have begun to treat such patients. This book is a guide and quick reference for the many professionals and paraprofessionals who have become facial injectors. It is not, however, a training manual for the naive injector. We highly discourage the novice injector from using this book as a primer on injections. In our opinion, nothing can replace training that is offered by courses and by one-on-one preceptorships.

This book was designed to augment the knowledge of a beginner injector and to train the experienced injector in how to perform “finesse” injections. The face can be shaped and minor irregularities and asymmetries improved by performing the techniques we describe. In addition, we hope to help the injector “look through” the skin to the underlying anatomy. This will help to identify both the targets of injection and the important structures to avoid.

The authors are aware that there is certainly more than one way to treat a certain anatomic region. It was our aim, by having authors from two very different locales (East Coast and West Coast), and different practices, that the “best” injection technique would be described by comparing our techniques of injection. In cases where our techniques markedly differed, alternate techniques are presented.

The products described in the book are all U.S. Food and Drug Administration (FDA)-approved fillers and neurotoxins; however, most of the techniques described are considered “off-label” uses of the products. The doses of products described serve as a general guide for injection. Although the utmost care was taken in ensuring the accuracy of the dosing listed, we urge the injector to use his or her best judgment or experience in the unlikely event that a misprint suggests an inappropriate dose. The comments we make about specific products are often our opinion derived from clinical observation. Others may have

different observations clinically, and we respect these variations in clinical practices and results.

We realize that this book will be utilized by injectors with different skill levels. In an attempt to promote safe utilization of these products, we have devised a rating scale for each technique. Each injection technique is evaluated in terms of difficulty for the trainer, risks involved in performing the injection, and patient satisfaction with the results. Appendix A lists the chapters by degree of difficulty, as a cross-reference for injectors who would like to safely advance to more challenging injection techniques. The rating system is as follows:

Degree of difficulty for the injector:

- Easy
- Intermediate
- Advanced
- Expert injectors only should attempt these injections

Patient satisfaction with procedure:

- Variable results; results may be subtle
- Good results; patients usually pleased
- High patient satisfaction; predictable results

Risks of complications:

- Low
- Medium
- High

The products described in this book include Botox, Dysport, Xeomin, Re-

stylane, Perlane, Juvederm Ultra and Ultra Plus, Belotero, Radiesse, Sculptra, and Artefill. These products are the most commonly used fillers and neurotoxins at the time this manual was written. New products are being developed and may be available at the time of publication. However, because we have no experience with these new products, they will not be described in this edition. The experienced injectors, however, will be able to extrapolate the techniques and dosing strategies described in this book to newer products, if they desire.

■ Disclosure

T.C.K. is a speaker/trainer for Allergan, Medicis, and Valeant. V.G.L. is a speaker/trainer for Allergan, Medicis, and Valeant, and serves as a principal investigator for Juvederm Voluma.

Disclaimer

The material presented is a compilation of the clinical experiences of the authors. Off-label uses of FDA approved products are described. A qualified health care professional should be consulted before using any therapeutic procedure discussed. Readers should verify all information and data before treating patients or employing any therapies described in this publication.

Acknowledgment

The authors would like to thank the people at Thieme Publishers for believing that a well-illustrated manual for facial injectables was needed in the medical literature. Specifically, we appreciate the editorial assistance of Timothy Hiscock and J. Owen Zurhellen at Thieme. This quality of this book was enhanced by the fabulous artwork of our medical illustrator, Sarah E. Faris. Her attention to detail and her artistic

skill have made this volume one that is not only thorough, but easy to read and understand. We would also like to thank Kristi Fritz for scheduling patients for injection technique demonstrations and for acting as videographer for such sessions. Finally, and most importantly, we thank our patients who have graciously agreed to have their procedures filmed so that medical professionals can learn safe injection techniques.

■ SECTION I ■

Introduction to Neurotoxins

1

Neurotoxins Overview

■ Action

Peripheral neuromuscular blocking agents.

- Vacuum dried
- Store in freezer until reconstituted; refrigerate after reconstitution

■ Mechanism of Action

Botulinum toxins irreversibly bind to the presynaptic terminal of the neuromuscular junction and prevent release of acetylcholine, thereby preventing muscle contraction.

Dysport: AbobotulinumtoxinA (BoNTA-ABO)

- 300 DU (Dysport units) per vial (also contains 0.125 mg human serum albumin, 2.5 mg lactose)
- Lyophilized
- Store in freezer until reconstituted; refrigerate after reconstitution

■ Botulinum Toxin A (BoNTA) Formulations

Botox: OnabotulinumtoxinA (BoNTA-ONA)

- 100 BU (Botox units) per vial (also contains 0.5 mg human serum albumin, 0.9 mg sodium chloride)

Xeomin: IncobotulinumtoxinA (BoNTA-INC)

- 100 XU (Xeomin units) per vial (also contains 1.0 mg human albumin, 4.7 mg sucrose)
- Lyophilized
- Stored at room temperature; refrigerate after reconstitution

Neuronox

- Approved in 2004 by South Korean Food and Drug Administration (FDA), manufactured by Medy-Tox Inc. (Seoul, Korea)
- Not U.S. FDA-approved in the United States
- 50, 100, and 200 U vials available (100 U contains 0.5 mg human serum albumin and 0.9mg sodium chloride)
- Lyophilized
- Conversion ratio appears to be 1:1 with Botox
- Stored in freezer until reconstituted; refrigerate after reconstitution

Purtox

- Pending FDA approval
- Similar to Xeomin without complexing proteins

BTXA

- Not FDA-approved in the United States

- The only botulinum toxin A registered with the Chinese government
- Lyophilized
- Contains 5 mg bovine serum albumin, 25 mg dextran, 25 mg sucrose per 100 units
- Conversion ratio to Botox unknown
- Store in freezer, refrigerate after reconstituted

■ Botulinum Toxin B (BoNTB) Formulation

Myobloc: BoNTB (rimabotulinumtoxinB)

- Solstice Neurosciences Inc., Malvern, PA
- Minimal use cosmetically due to painful injection and limited duration
- FDA-approved only for cervical dystonia

Table 1.1 Comparison of Botulinum Toxin A Formulations

Product	Year of FDA Approval	Generic Name	Composition	Manufacturer	Similar Product Trade Names	Dosing Ratio Compared with Botox
Botox	2002	OnabotulinumtoxinA	900 kd	Allergan, Inc., Irvine, CA	Botox cosmetic, Vistabel, Vistabex	NA
Dysport	2009	AbobotulinumtoxinA	500–900 kd	Medicis Aesthetics, Inc., Scottsdale, AZ	Reloxin, Azzalure	2.5–3:1
Xeomin	2011	IncobotulinumtoxinA	150 kd No complexing proteins	Merz Aesthetics, Inc., Franksville, WI	Xeomeen, Bocouture	1–1.5:1
Neuronox	N/A	N/A	900 kd	Medy-Tox Inc., Seoul, Korea	Meditoxin, Cunox, Siax, and Botulift	1:1
Purtox	Pending	N/A	150 kd No complexing proteins	Mentor Corp., Santa Barbara, CA		1–1.5:1
BTXA	N/A	N/A	900 kd	Lanzhou Biologics, Lanzhou, China	Prosigne	?

Abbreviation: N/A, not applicable.

■ Additional Reading

Flynn TC. Advances in the use of botulinum neurotoxins in facial esthetics. *J Cosmet Dermatol* 2012;11:42–50 [PubMed](#)
 Nettar K, Maas C. Neuromodulators: available agents, physiology, and anatomy. *Facial Plast Surg* 2011;27:517–522 [PubMed](#)

Moers-Carpi M, Dirschka T, Feller-Heppt G, et al. A randomised, double-blind comparison of 20 units of onabotulinumtoxinA with 30 units of incobotulinumtoxinA for glabellar lines. *J Cosmet Laser Ther* 2012 [PubMed](#)

2

Neurotoxin Preparation

Package inserts for the neurotransmitters state that they should be reconstituted with nonpreserved saline (0.9% sodium chloride). However, clinical practice has determined that using preserved saline results in much less patient discomfort.

Botox, Botox Cosmetic—100 BU (Botox units) may be reconstituted with:

- 1 mL preserved saline, which produces a solution of 10 BU per 0.1 mL
- 2 mL preserved saline, which produces a solution of 5 BU per 0.1 mL
- 2.5 mL preserved saline, which produces a solution of 4 BU per 0.1 mL
- 4 mL preserved saline, which produces a solution of 2.5 BU per 0.1 mL

Xeomin—100 XU (Xeomin units) may be reconstituted and used similar to Botox, above.

Dysport—300 DU (Dysport units) may be reconstituted with:

- 2.5 mL preserved saline, which produces a solution of 12 DU per 0.1 mL
- 1.5 mL preserved saline, which produces a solution of 20 DU per 0.1 mL
- 1.0 mL preserved saline, which produces a solution of 30 DU per 0.1 mL

General conversion ratios:

- 1 BU = 1.0 to 1.5 XU
- 1 BU = 2.5 to 3.0 DU

■ Additional Reading

Moers-Carpi M, Tan K, Fulford-Smith A. A multicentre, randomized, double-blind study to evaluate the efficacy of OnabotulinumtoxinA (20 units) in the treatment of glabellar lines when compared to IncobotulinumtoxinA (30 units). *European Masters in Aesthetic and Anti-aging Medicine*, September 30–October 1, 2011, Paris

3

Instrumentation for Neurotoxin Injections

After reconstitution, botulinum toxin A (BoNTA) can be injected using a 1-mL syringe with a 30-gauge needle. Product can be withdrawn from the vial with a 20-gauge needle, and a 30-gauge or smaller needle can then be used for injection. A “No Waste” syringe with or without a Luer lock (Acuderm Inc., Fort Lauderdale, FL, or Exelint International, Los Angeles, CA) is also available that pushes the last drop of product through the needle hub. Alternatively, non-drip insulin syringes (BD Ultra-Fine Needle, Becton Dickinson, Franklin Lakes, NJ) may be used. These syringes are available in 0.3 and 0.5 mL and have an attached 31-gauge, 8-mm needle.

When using these non-drip insulin syringes, the needle is pre-attached. The BoNTA must be reconstituted and the vial stopper removed. Neurotoxin is drawn up into each syringe and the syringes labeled with the product name, lot number, and expiration date. The syringes are stored in the refrigerator. Because the needles are so fine and fragile, care must be taken not to hit the vial with the needle tip while aspirating the product. In addition, the utmost care is required during re-capping of the needle (prior to patient use) to prevent damage or blunting of the fine needle tip.



Fig. 3.1 Dripless 0.5 mL (left) and 0.3 mL (right) BD insulin syringes may be used for BoNTA injections. These syringes have a pre-attached 31-gauge needle.

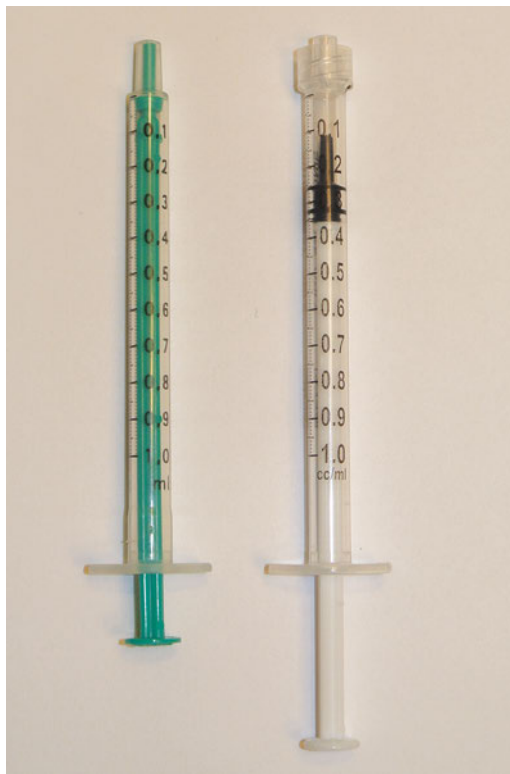


Fig. 3.2 “No Waste” syringe pushes plunger into needle hub. (Left) Acuderm, (right) Exelint.

4

The Physicians Coalition for Injectable Safety

The increased popularity of injectable procedures has been accompanied by an unfortunate increase in the performance of these procedures by unqualified personnel. It is the authors' concern that the use of this book by untrained individuals could produce disastrous results. The Physicians Coalition for Injectable Safety (PCIS) was created to provide the public with information on qualified injectors, Food and Drug Administration (FDA)-approved materials, and information on injectable training that can be obtained by qualified professionals. We direct patients and injectors to the PCIS Web site, <http://www.injectablesafety.org>, for appropriate information about the safe use of injectable materials.

The PCIS is represented by over 5,000 board-certified members of the Ameri-

can Society for Aesthetic Plastic Surgery (ASAPS), the American Society of Plastic Surgeons (ASPS), the American Society for Dermatologic Surgery (ASDS), the American Academy of Facial Plastic and Reconstructive Surgery (AAFPRS), the American Society of Ophthalmic Plastic and Reconstructive Surgery (ASOPRS), the International Society of Aesthetic Plastic Surgery (ISAPS), the International Federation of Facial Plastic Surgery Societies (IFFPSS), and the Canadian Society for Aesthetic Plastic Surgery. We encourage professionals to utilize the PCIS Web site for up-to-date information about injectables and injectable safety, laws and ethical guidelines pertaining to the purchase of injectables, research and statistics, and courses available for training in the use of injectables.

■ SECTION II ■

Neurotoxin Injection Techniques
