

Joaquín J. García

Atlas of Salivary Gland Pathology



D.F.
© MAYO
2003

Atlas of Salivary Gland Pathology

Joaquín J. García

Atlas of Salivary Gland Pathology

 Springer

Joaquín J. García, MD
Mayo Clinic School of Medicine
Department of Laboratory Medicine & Pathology
Mayo Clinic Rochester
Rochester, MN
USA

ISBN 978-3-319-09020-7 ISBN 978-3-319-09021-4 (eBook)
<https://doi.org/10.1007/978-3-319-09021-4>

Library of Congress Control Number: 2018950422

© Springer International Publishing AG, part of Springer Nature 2019

This work is subject to copyright. All rights are reserved by the Publisher, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, reuse of illustrations, recitation, broadcasting, reproduction on microfilms or in any other physical way, and transmission or information storage and retrieval, electronic adaptation, computer software, or by similar or dissimilar methodology now known or hereafter developed.

The use of general descriptive names, registered names, trademarks, service marks, etc. in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use.

The publisher, the authors, and the editors are safe to assume that the advice and information in this book are believed to be true and accurate at the date of publication. Neither the publisher nor the authors or the editors give a warranty, express or implied, with respect to the material contained herein or for any errors or omissions that may have been made. The publisher remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

This Springer imprint is published by the registered company Springer Nature Switzerland AG
The registered company address is: Gewerbestrasse 11, 6330 Cham, Switzerland

Dedicated to Qwest, Arolyn, & the Queen Bee . . .

Preface

The incidence of salivary gland cancer is relatively low, affecting approximately 8 per 100,000 persons in the United States each year. Since benign and malignant salivary gland neoplasms commonly share overlapping clinical, radiologic, and pathologic features, a subset of cases continues to pose diagnostic challenges to head and neck specialists. Misclassification may pose patient care challenges, including undertreatment or overtreatment. The *Atlas of Salivary Gland Pathology* represents a gross and microscopic visual tour of salivary gland neoplasms for aspiring and practicing diagnosticians.

Rochester, MN, USA

Joaquín J. García, MD

Contents

1	Gross Anatomy	1
2	Microscopic Anatomy	9
3	Intraoperative Examination	15
4	Gross Examination	21
5	Microscopic Examination	29
6	Acinic Cell Carcinoma	37
7	Adenoid Cystic Carcinoma	47
8	Basal Cell Adenoma	57
9	Basal Cell Adenocarcinoma	65
10	Canalicular Adenoma	73
11	Carcinosarcoma	79
12	Clear Cell Carcinoma	85
13	Epithelial-Myoepithelial Carcinoma	91
14	Intraductal Carcinoma	99
15	Lymphadenoma	107
16	Lymphoepithelial Carcinoma	113
17	Mucoepidermoid Carcinoma	119
18	Myoepithelioma	129
19	Myoepithelial Carcinoma	135
20	Oncocytoma	141
21	Oncocytic Carcinoma	149
22	Pleomorphic Adenoma	153
23	Pleomorphic Adenoma, Carcinoma Ex	161
24	Polymorphous Adenocarcinoma	171
25	Salivary Duct Carcinoma	179
26	Secretory Carcinoma	187
27	Small Cell Neuroendocrine Carcinoma	195
28	Warthin's Tumor	203
	Index	209

Contributors

Tiffany Y. Chen, MD Mayo Clinic School of Medicine, Mayo Clinic Rochester, Rochester, MN, USA

Joaquín J. García, MD Mayo Clinic School of Medicine, Department of Laboratory Medicine & Pathology, Mayo Clinic Rochester, Rochester, MN, USA

Jeffrey R. Janus, MD Mayo Clinic School of Medicine, Department of Otorhinolaryngology, Mayo Clinic Rochester, Rochester, MN, USA

Nirusha Lachman, PhD Mayo Clinic School of Medicine, Department of Anatomy, Mayo Clinic Rochester, Rochester, MN, USA

Luke D. Wilson, PA (ASCP) Mayo Clinic School of Medicine, Department of Laboratory Medicine & Pathology, Mayo Clinic Rochester, Rochester, MN, USA



Major salivary glands are visible as three paired organs: *parotid*, *submandibular*, and *sublingual glands*. The parotid gland is, for practical purposes, divided into superficial and deep lobes. The facial nerve courses between the superficial and deep lobes, serving as a surgical landmark. *Stensen's duct*, formed by the convergence of several excretory ducts within the parotid gland, empties into oral cavity buccal mucosa opposite the maxillary second molar. The subman-

dibular gland is located in the submandibular triangle and empties glandular secretions into the anterior floor of mouth by way of *Wharton's duct*. Lastly, the sublingual gland is situated in the lingual sulcus of the floor of mouth and empties into the oral cavity via *Bartholin's duct*.

Minor salivary glands, distributed widely throughout the mucosa and submucosa of the upper aerodigestive tract, are typically grossly inapparent (Figs. 1.1–1.8).

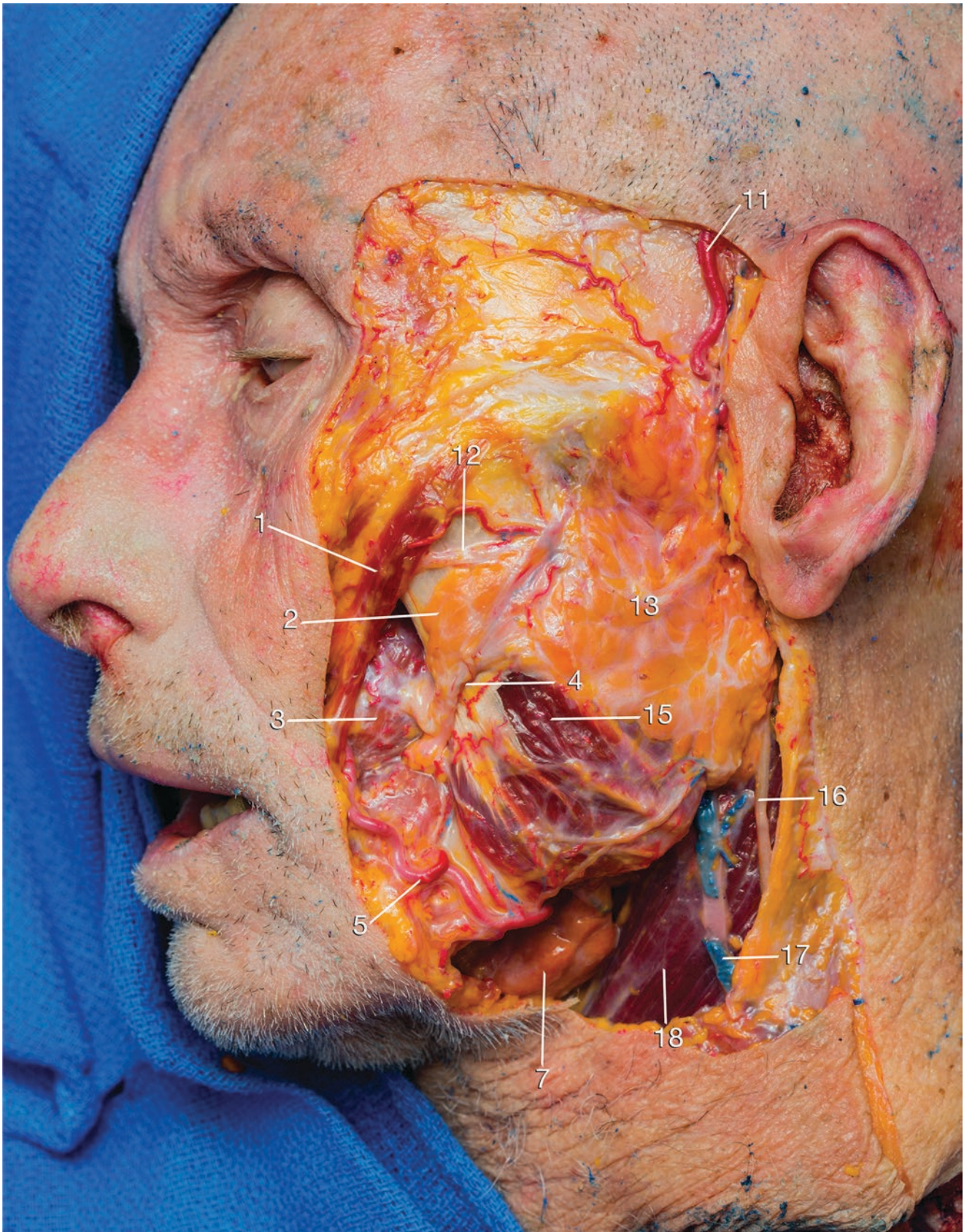


Fig. 1.1 (Gross Anatomy) Anatomic relationships of parotid and submandibular glands. 1—Zygomaticus major muscle, 2—Accessory parotid gland, 3—Buccinator muscle, 4—Stensen's duct, 5—Facial artery, 7—Submandibular gland, 11—Superficial temporal artery, 12—Zygomatic branch of facial nerve, 13—Parotid gland, superficial lobe, 15—Masseter muscle, 16—Great auricular nerve, 17—External jugular vein, 18—Sternocleidomastoid muscle



Fig. 1.2 (Gross Anatomy) Anatomic relationships of parotid and submandibular glands. 1—Zygomaticus major muscle, 3—Buccinator muscle, 4—Stensen's duct, 5—Facial artery, 7—Submandibular gland, 11—Superficial temporal artery, 12—Zygomatic branch of facial nerve, 15—Masseter muscle, 16—Great auricular nerve, 17—External jugular vein, 18—Sternocleidomastoid muscle

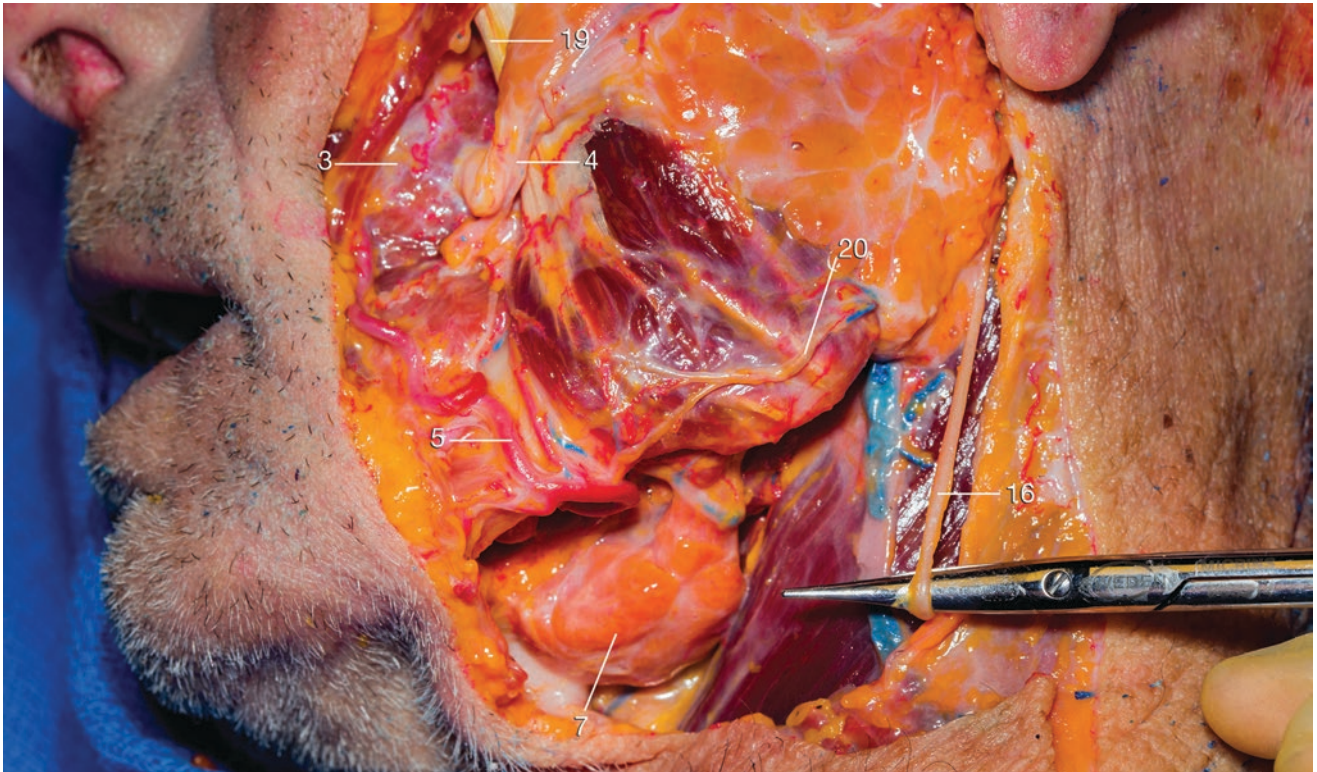


Fig. 1.3 (Gross Anatomy) Anatomic relationships of parotid and submandibular glands. 3—Buccinator muscle, 4—Stensen's duct, 5—Facial artery, 7—Submandibular gland, 16—Great auricular nerve, 19—Tendon of masseter muscle, 20—Marginal mandibular branch of facial nerve

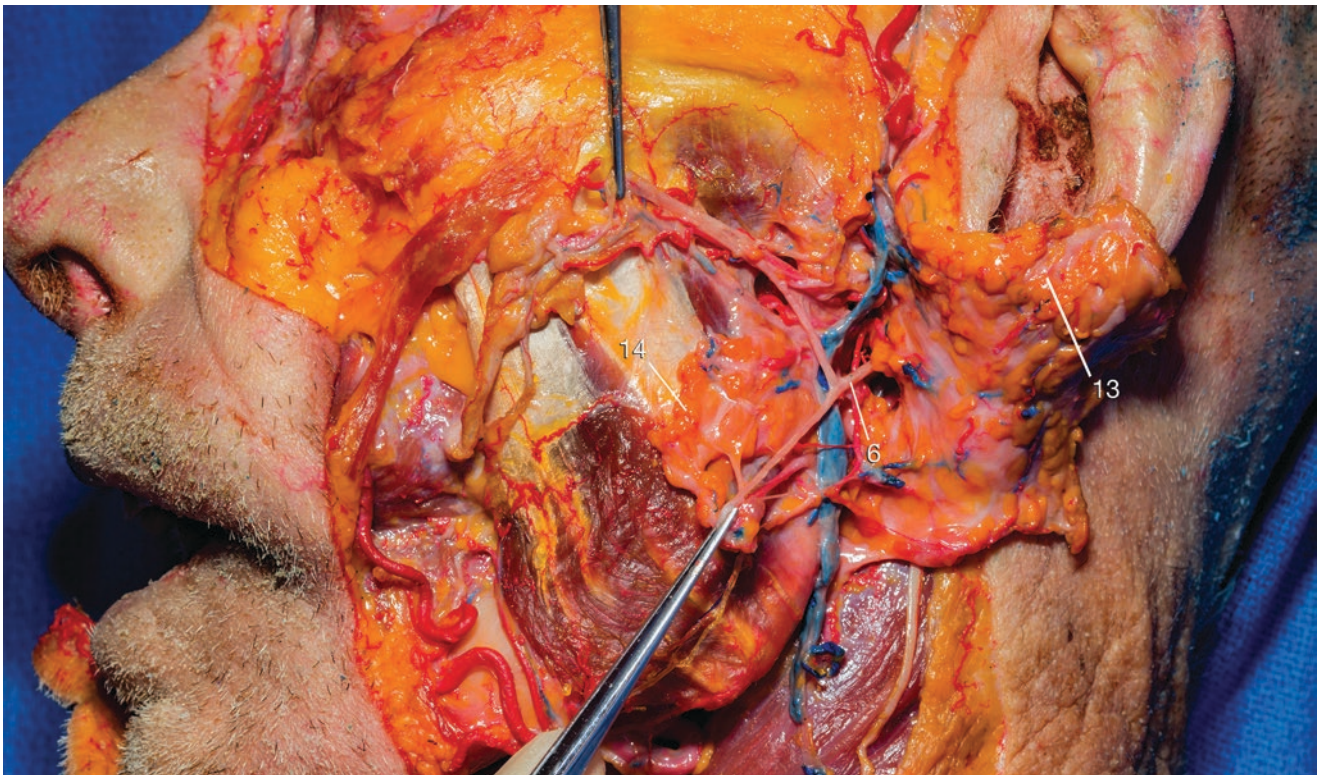


Fig. 1.4 (Gross Anatomy) Anatomic relationships of parotid and submandibular glands. 6—Buccal branch of facial nerve, 13—Parotid gland, superficial lobe, 14—Parotid gland, deep lobe



Fig. 1.5 (Gross Anatomy) Anatomic relationships of parotid and submandibular glands. 3—Buccinator muscle, 4—Stensen's duct, 5—Facial artery, 7—Submandibular gland, 19—Tendon of masseter muscle, 20—Marginal mandibular branch of facial nerve

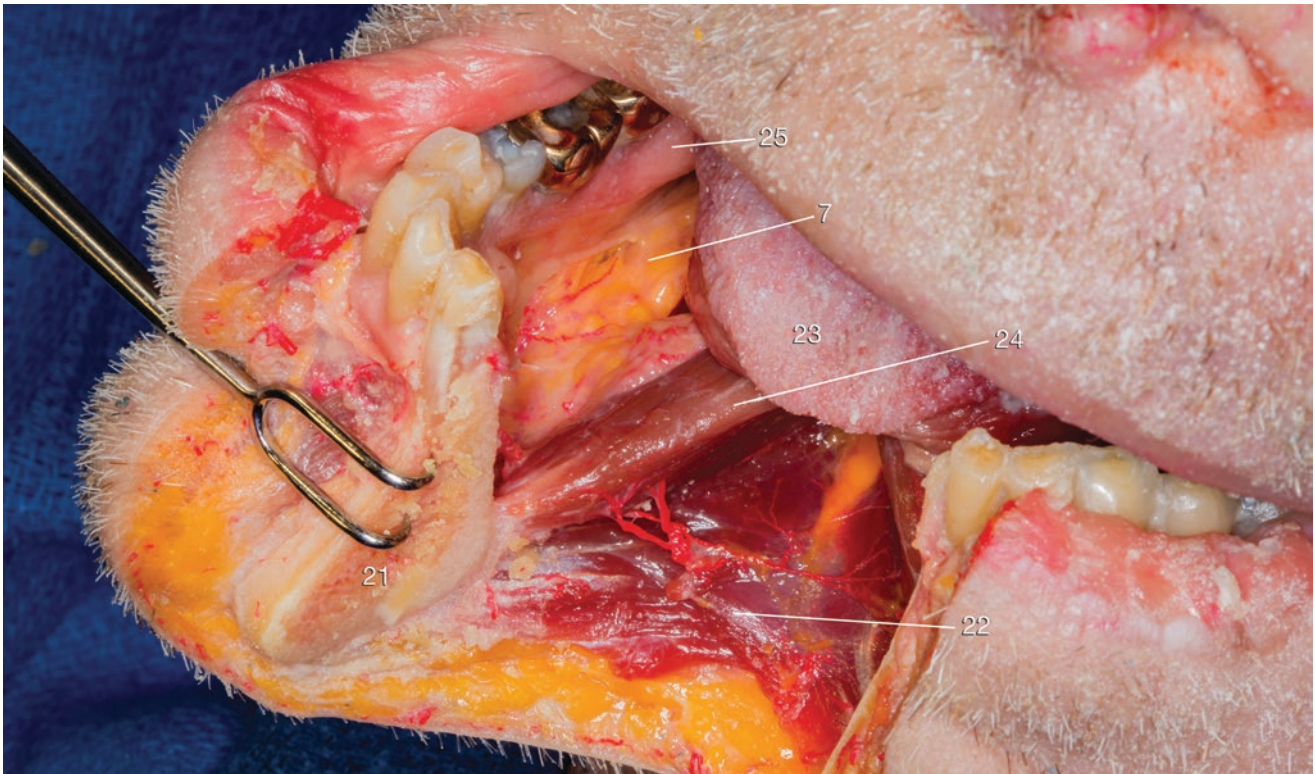


Fig. 1.6 (Gross Anatomy) Anatomic relationships of submandibular gland. 7—Submandibular gland, 21—Mandible, 22—Mylohyoid muscle, 23—Tongue, 24—Geniohyoid muscle, 25—Gingival mucosa



Fig. 1.7 (Gross Anatomy) Anatomic relationships of submandibular gland. 7—Submandibular gland, 8—Wharton's duct, 21—Mandible, 22—Mylohyoid muscle, 23—Tongue, 24—Geniohyoid muscle, 25—Gingival mucosa

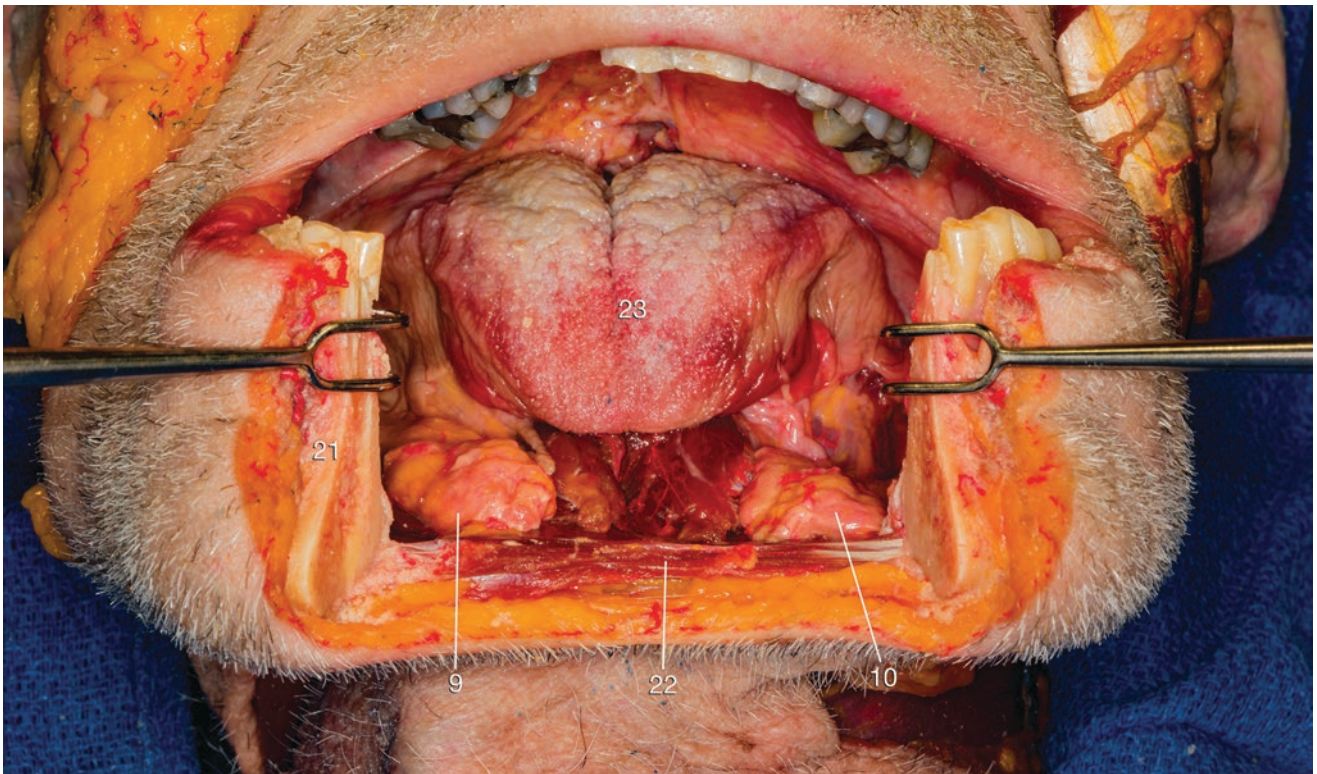


Fig. 1.8 (Gross Anatomy) Anatomic relationships of sublingual glands. 9—Sublingual gland, right, 10—Sublingual gland, left, 21—Mandible, 22—Mylohyoid muscle, 23—Tongue