

# CONTENTS

<b>SECTIONAL RADIOGRAPHIC ANATOMY AND SCANNING .....</b>	<b>1</b>	
<b>ANATOMIC RADIOGRAPHS .....</b>	<b>1</b>	
<i>John M. Loré, Sr., 1938</i>		
Sagittal Section Through the Midportion of the Maxillary Sinus and Orbit .....	2	
Sagittal Section Through the Lateral Wall of the Nose, Lateral Border of the Tongue, and Lamina of the Thyroid Cartilage Showing Its Superior and Inferior Cornua .....	4	
Sagittal Section Through the Floor of the Nose and the Body of the Tongue .....	6	
Sagittal Section Through the Middle of the Skull .....	8	
Frontal Coronal Section in the Region of the Second Molar Teeth .....	10	
Frontal Coronal Section Just Beyond the Third Molar Teeth .....	12	
Frontal Coronal Section in the Region of the Anterior Faucial Pillar and Tonsil .....	14	
<b>CT AND MRI .....</b>	<b>16</b>	
<i>David F. Hayes and Scott Cholewinski</i>		
Single-Plane CT Scans .....	16	
Frontal Coronal Section in the Region of the Second Molar Teeth .....	16	
Frontal Coronal Section Just Beyond the Third Molar Teeth .....	17	
Frontal Coronal Section in the Region of the Anterior Faucial Pillar and Tonsil .....	18	
Three-Dimensional Reconstructed CT Scans .....	18	
MR Images .....	26	
Imaging in the Diagnosis and Treatment of Head and Neck Disease .....	26	
Overview .....	26	
<i>Scott Cholewinski</i>		
<b>ADVANCED TECHNIQUES FOR CT IN THE HEAD AND NECK .....</b>	<b>34</b>	
<i>Ronald A. Alberico and Ahmed Abdehalim</i>		
The Role of Imaging in the Head and Neck .....	34	
Detection of Perineural Disease at the Skull Base .....	35	
Oblique Imaging of the Oral Pharynx to Avoid Dental Artifact .....	36	
Multiplanar Techniques to Evaluate Tumor Location and Margins .....	37	
Three-Dimensional CT of the Inner Ear .....	39	
Contrast Medium-Enhanced High-Resolution CT .....	40	
CT Angiography of the Neck: Venous Malformation With Traumatic Arteriovenous Fistula .....	42	
CT Venography of Facial Venous Malformation .....	44	
CT Angiogram of ECA/ICA Bypass .....	45	
Three-Dimensional CT of Vascular Tumor Relationship .....	46	
Endoluminal and Cut-Away View of the Trachea With Medial Deviation of the Carotid Artery .....	47	
<b>EXAMPLES OF MRI IN THE SUPERIOR MEDIASTINUM .....</b>	<b>48</b>	
<i>John M. Loré, Jr.</i>		
Multinodular Goiter in the Mediastinum .....	52	
Paraganglioma (Second Primary Thoracic Chain, T4 by CT Scan) .....	53	
Metastatic Papillary Carcinoma of the Thyroid (Usual Type) .....	53	
Magnetic Resonance Angiography .....	54	
<b>ULTRASOUND .....</b>	<b>54</b>	
<i>David F. Hayes</i>		
Example Uses of Ultrasound .....	54	
<b>POSITRON EMISSION TOMOGRAPHY .....</b>	<b>56</b>	
<i>Robert S. Miletich and John M. Loré, Jr.</i>		
Role of PET in Oncology .....	57	
Role of FDG-PET in Head and Neck Cancer .....	57	
Conclusion .....	63	
<b>2 EMERGENCY PROCEDURES .....</b>	<b>65</b>	
<b>VENOUS AIR EMBOLISM .....</b>	<b>65</b>	
<i>John Lauria</i>		
MALIGNANT HYPERTHERMIA .....	65	
<i>John Lauria</i>		
Other Untoward Events Associated With Endotracheal Anesthesia .....	66	
<b>BLINDNESS AND OPHTHALMIC COMPLICATIONS OF SURGERY OF THE HEAD AND NECK .....</b>	<b>66</b>	
<i>Daniel P. Schaefer and Arthur J. Schaefer</i>		
Blindness .....	66	

<b>CARDIOPULMONARY RESUSCITATION .....</b>	<b>70</b>	
<i>William M. Morris</i>		
Emergency Cardiac Care .....	70	
Sequence of BLS .....	70	
Closed Cardiac Massage .....	72	
Open Cardiac Massage Resuscitation .....	72	
Thoracentesis .....	74	
Insertion of Intercostal Catheter .....	74	
Open Thoracotomy for Empyema Drainage .....	78	
Intercostal Catheter Suction Drainage With Underwater Seals .....	80	
Cricothyroidotomy .....	82	
Management of Acute Respiratory Emergencies .....	84	
Emergency Establishment of Airway .....	84	
<b>BASIC CONSIDERATIONS .....</b>	<b>87</b>	
Needle Biopsy Techniques .....	87	
<i>Ashok Koul</i>		
Needle Aspiration Biopsy .....	87	
Core Needle Biopsy .....	87	
Large-Needle Aspiration Biopsy .....	89	
Commonly Used Terminology for Squamous Epithelium .....	91	
<i>Ashok Koul</i>		
Commonly Used Special Stains for Head and Neck Lesions .....	91	
Mucosal Biopsy: Toluidine Blue Staining Technique .....	91	
Exfoliative Cytology Biopsy Technique .....	91	
Z-Plasty .....	91	
Definition .....	91	
Technique of Basic Z-Plasty .....	92	
Types and Modifications of Z-Plasty .....	98	
Tissue Expansion .....	100	
Effects of Tissue Expansion .....	100	
W-Plasty .....	102	
Rhombic Flap .....	104	
Excision of Dog-Ears .....	106	
Bone, Cartilage, and Nerve Grafts .....	107	
Basic Principles Relative to Bone and Cartilage Grafts and Implants .....	107	
Rib, Iliac, and Costochondral Grafts .....	107	
Iliac Bone Graft—"Trap Door Type" .....	110	
Auricular Cartilage Graft .....	110	
Sural Nerve Grafts .....	112	
Skin Incision .....	112	
Nonabsorbable Sutures for Mucosal Repair .....	112	
Preoperative and Postoperative Care .....	114	
<i>William R. Nelson and R. Lee Jennings</i>		
Preoperative Care .....	114	
Postoperative Care .....	116	
Common Departures From Sound Management —"Pitfalls" .....	123	
<i>Donald P. Shedd</i>		
Open Biopsy of a Lump in the Neck Before Performing a Complete Head and Neck General Examination .....	124	
Inadequate Incisional Biopsy of an Oral Cavity Lesion .....	124	
Inadequate Excisional Biopsy of a Suspicious Oral Cavity Lesion .....	124	
Failure to Review Previous Histopathologic Slides .....	124	
Permitting a Single Histopathologic Benign Diagnosis to Override a Clinical Diagnosis of Carcinoma .....	125	
Biopsies of the Larynx, Hypopharynx, Nasopharynx, Esophagus, or Trachea Before Radiologic Studies and Imaging Techniques .....	125	
Lack of Multidisciplinary Approach When Indicated .....	125	
Tailoring the Scope of Surgical Resection to the Ability of the Surgeon Rather Than to the Objective Requirements Imposed by the Lesion .....	125	
A Compromise of the Ablative Phase of Surgery to Accommodate Limited Reconstructive Skills .....	126	
Compromise of Surgical Margins Because Radiation Therapy or Chemotherapy Was or Is to Be Given .....	126	
Performing the Right Operation on the Wrong Patient .....	126	
Assessing the Degree of Success or Failure of Radiation Therapy on the Basis of the Response of the Lesion During or Immediately on the Completion of Treatment .....	126	
Failure to Realize the Implication of the "Condemned Mucosa" or Multiple Primary Syndrome .....	127	
Failure to Perform a Complete General Physical Examination as Well as a Complete Head and Neck Examination .....	127	
Prolonged Watch-and-Wait Attitude in the Face of an Asymptomatic Mass .....	127	
Inadequate Search for an "Occult" Primary Tumor .....	127	
Abandonment of the Patient With Neck Metastasis From an Undetectable Primary Tumor .....	128	
Enucleation of Tumors of the Major Salivary Glands and Thyroid Gland .....	128	
Treating a Patient With Antibiotics for an Extended Period of Time Without a Biopsy .....	128	
The Place for Chemotherapy in Management of Squamous Cell Carcinoma of the Head and Neck .....	128	
<i>Monica B. Spaulding</i>		
Recurrent or Metastatic Head and Neck Cancer .....	129	
Preoperative Chemotherapy, Uncompromised Surgery, and Selective Radiotherapy in the Management of Advanced Squamous Cell Carcinoma of the Head and Neck .....	132	
<i>John M. Loré, Jr., Sol Kaufman, Nan Sundquist,     and Kandala Chary</i>		

A Comprehensive, Interdisciplinary Head and Neck Service .....	141
<i>John M. Loré, Jr., A. Charles Massaro, and Angela Bontempo</i>	
Bone Imaging and Pathology .....	142
<i>Scott Cholewienski, John Asirwatham, Daniel Broderick, and John M. Loré, Jr.</i>	
Methods of Bone Involvement: Mandible .....	142
<b>VOICE, SPEECH, AND SWALLOWING REHABILITATION OF THE HEAD AND NECK PATIENT .....</b>	<b>143</b>
<i>Allen M. Richmond</i>	
Total Laryngectomy .....	143
Conservation Surgery: Cancer of the Larynx .....	144
Swallowing .....	144
Glossectomy .....	146
Palatal Surgery .....	147
Voice .....	147
Hearing, Cochlear Implants, and Middle Ear Surgery .....	148
Malignant Melanoma .....	149
<i>Constantine P. Karakousis</i>	
Soft Tissue Sarcoma .....	152
<i>Constantine P. Karakousis</i>	
Thyroid-Related Orbitopathy .....	154
<i>Daniel P. Schaefer</i>	
Pathogenesis .....	154
Epidemiology .....	154
Clinical Course .....	155
Differential Diagnosis .....	156
Treatment Plan .....	160
Dental and Prosthetic Considerations in Head and Neck Surgery .....	161
<i>David M. Casey</i>	
Maxillofacial Prostheses .....	166
<i>David M. Casey</i>	
Osseointegrated Implants in Head and Neck Reconstruction .....	171
<i>Maureen Sullivan</i>	
<b>DIAGNOSTIC ENDOSCOPY .....</b>	<b>179</b>
<b>PERORAL ENDOSCOPY OF THE HEAD AND NECK .....</b>	<b>179</b>
Indirect Mirror Laryngoscopy and Nasopharyngoscopy and Cervical Esophagoscopy .....	179
Direct Optical Laryngoscopy and Nasopharyngoscopy .....	180
Cervical Esophagoscopy .....	181
Direct Rigid Laryngoscopy and Nasopharyngoscopy .....	181
Direct Rigid Laryngoscopy and Hypopharyngoscopy .....	182
Rigid Bronchoscopy .....	188
Flexible Bronchoscopy .....	192
Tracheal Lengths .....	192
Esophagoscopy .....	194
Cervical Esophagoscopy After Total Laryngectomy or Cervical Esophageal Surgery .....	194
Rigid Esophagoscopy .....	196
Microscopic Endolaryngoscopy .....	200

Telescopic Endolaryngeal Surgery .....	204
Nasopharyngoscopy .....	205
Rigid and Flexible Direct Optical Nasopharyngoscopy, Laryngoscopy, Cervical Esophagoscopy, and Rhinoscopy .....	210
Rigid Nasopharyngoscopes .....	210
Flexible Nasopharyngoscopes .....	210
Rigid and Flexible Direct Optical Rhinoscopy .....	210
Cervical Esophagoscopy .....	212

## **5 THE SINUSES AND MAXILLA .....** 214

Intranasal Antrostomy .....	214
Rhinoscopy .....	214
Caldwell-Luc Antrotomy .....	217
Intranasal Ethmoidal Surgery for Benign Disease .....	220
Uncapping of Anterior Ethmoidal Cells .....	220
Ethmoidectomy .....	220
Endoscopic Diagnosis and Surgery for Sinusitis .....	222
External Ethmoidectomy .....	223
Sphenoidal Sinusotomy .....	226
Puncture of Anterior Wall of Sphenoidal Sinus .....	226
Enlargement of Natural Sphenoidal Ostium or Anterior Wall Puncture Site .....	226
Other Approaches to the Sphenoidal Sinus .....	228
Frontal Sinusotomy (Trephination) .....	230
External Frontoethmoidectomy .....	232
Osteoplastic Approach to the Frontal Sinus .....	234
Anatomy of Frontonasal Duct .....	234
Partial and Radical Maxillectomy .....	236
Case 1: Esthesioneuroblastoma .....	237
Case 2: Esthesioneuroblastoma, Nonresectable, Stage C .....	238
Case 3: Neuroendocrine Carcinoma, Nonresectable, Stage C .....	238
Removal or Saving Remainder of Soft Palate After Partial Maxillectomy .....	238
Radical Resection of Maxilla With Orbital and Partial Ethmoidal Exenteration .....	239

Resection of Maxilla Including the Floor of the Orbit With Preservation of the Globe .....	246
En-Bloc Resection for Chondrosarcoma .....	246
Limited Resection of the Maxilla .....	248
Cysts of Maxilla .....	250
Excision of Nasoalveolar Cyst .....	252
Excision of Nasopalatine Duct Cyst .....	254
Closure of Oroantral Fistula .....	256
<b>ENDOSCOPIC SINUS SURGERY .....</b>	<b>258</b>
<i>Keith F. Clark</i>	

## **6 THE NOSE AND THE NASOPHARYNX .....** 267

Anatomy of the Lateral Wall of the Right Nasal Cavity .....	267
---	-----

Uncinate Process .....	267
Bulla Ethmoidalis .....	267
Infundibulum Ethmoidalis .....	267
Anatomy of Epistaxis .....	270
Anterior and Posterior Packing for Epistaxis .....	272
Ligation of Ethmoidal Arteries .....	276
External Ethmoidectomy Approach to Epistaxis .....	279
Septal Dermoplasty .....	280
Ligation of Internal Maxillary Artery .....	282
Removal of Nasal and Nasopharyngeal Polyps .....	286
Transpalatine Exposure of the Nasopharynx and the Sphenoidal Sinus .....	288
Transmaxillary Approach to Nasopharynx and Base of the Skull .....	294
Posterior Choanal Atresia .....	295
Newborn and Young Children .....	295
Older Children and Adults .....	296
Submucous Resection of Nasal Septum .....	300
Septoplasty Type I .....	304
Septoplasty Type II .....	310
Rhinoplasty .....	316
Alternate Techniques of Rhinoplasty .....	324
Correction of Broad Nasal Tip .....	325
Augmentation of Dorsum of Nose .....	326
Additional Nasal Tip Procedures .....	326
Columellar Graft for Collapsed Nasal Tip .....	328
Type I .....	328
Type II .....	328
Nares and Columella Procedures .....	330
Nasofacial and Nasolabial Flaps .....	332
Septal Flap for External Nasal Defect .....	334
Nasolabial Flap .....	336
Excision and Reconstruction of Ala Nasi .....	336
Excision and Reconstruction of Columella .....	336
Resection of Tumor of Tip of Nose .....	338
Resection and Reconstruction of Tumor of the Superior Dorsum of the Nose .....	340
Full-Thickness Graft to Nose .....	340
Composite Graft From Ear to Nose .....	342
Type of Flap .....	342
Reconstruction of Nose With Arm Flap .....	344
Nasal Reconstruction With Lateral Forehead Flap .....	346
Nasal Reconstruction With Combined Scalp and Forehead Flaps .....	348
The Sickle Flap .....	348
The "Scalping" Flap .....	348
Nasal Turn-in Flaps .....	350
Nasal Reconstruction .....	352
Transection of Forehead and Scalp Pedicle .....	352
Revision of Nasolabial Fold and Ala Nasi .....	352
Enlargement of Nares With Z-Plasty .....	352
Resection of Nasal Septum for Carcinoma (Lateral Rhinotomy Approach) .....	354

Total Resection of Nose for Carcinoma .....	356
Resection of Nasal Glioma—External Ethmoid Approach ...	358
Excision of Rhinophyma .....	362

## THE FACE ..... 367

Anatomy of Facial and Scalp Muscles .....	367
Basic Technique for Facial Excisions .....	369
Sebaceous Cysts .....	369
Dermabrasion .....	371
Excision of Tumors of Skin of Forehead .....	373
Excisions for Carcinoma of Skin of Temple .....	375
Basal Cell Carcinoma .....	375
Squamous Cell Carcinoma .....	376
Rotation Flaps .....	377
Temporal Scalp Flap .....	377
Cheek Flap .....	378
Excision of Tumors of Cheek by Cheek Flap Rotation .....	379
Facial Paralysis .....	380
<i>Shirley A. Anain and John M. Loré, Jr.</i>	
Management Possibilities .....	381
Facial Reanimation .....	381
Cross-Face Nerve Grafts with Microvascular Muscle Transfer .....	381
Upper Lid Gold Weights .....	382
Hypoglossal-Facial Nerve Anastomosis .....	384
Masseter Muscle Transposition—Intraoral .....	386
Fascial Slings for Facial Paralysis .....	388
Treatment of Paralysis of the Depressors of the Lower Lip .....	390
Trigeminal Neuralgia (Tic Douloureux) .....	392
Incision and Drainage of Abscesses .....	394

## GENERAL PURPOSE FLAPS

Introduction: Flap Selection and Design .....	399
Classification of Large Transposed Myocutaneous Flaps .....	400
Limitations and Pitfalls with Major Standard Regional Flaps .....	401
Limitations and Pitfalls According to Specific Flaps .....	401
Blood Supply to Skin Flaps .....	402
Pectoralis Major Myocutaneous Flap .....	404
Reconstruction of the Entire Hypopharynx and Portion of Cervical Esophagus, Oropharynx, and Nasopharynx .....	412
Cross Section of Reconstructed Hypopharynx .....	412
Applications of the Pectoralis Major Flap .....	420
Deltopectoral Flap .....	425
Reconstruction of Oropharynx, Hypopharynx, and Portion of Cervical Esophagus .....	425
Applications of Deltopectoral Flap .....	434
Apron Flap .....	436

Laterally Based Chest Flap .....	438
Mutter (1842) Nape of Neck Flap .....	440
Posterior Scapula Flap .....	442
Forehead Flap (Temporal Flap) .....	444
Reconstruction of Cheek with Forehead Flap .....	446
Midline Forehead Flap .....	452
Fat Flip Flap .....	454
<b>THE LIPS .....</b>	<b>458</b>
Lip Excision and Reconstruction .....	458
Planing of Lip .....	458
Shield Excision of Lower Lip .....	458
Cupid's Bow .....	460
Elliptical Excision of Benign Lip Lesion .....	460
Distortion of Mouth Corrected by Z-Plasty .....	460
Excision of Large Benign Lesions of Upper Lip with Nasolabial Flap .....	460
Repair of Large Vermilion Defects .....	462
Abbe-Estlander Lip Operation .....	464
Correction of Rounded Commissure of Lips .....	467
Plication of the Orbicularis Oris Muscle to Repair Partial Paralysis of the Lower Lip .....	468
Modifications of Abbe-Estlander Lip Operation .....	469
Reconstruction of Center Lower Lip Defect .....	469
Reconstruction of Upper Lip Defect .....	470
Correction of Rounded Commissure of Lips .....	470
Reconstruction of Large Defects of Upper Lip .....	472
Reconstruction of Upper Lip with Cheek Flap .....	472
Fan Flap Reconstruction for Large Defects of Upper Lip .....	474
Excision and Repair of Large Lesions of Upper Lip .....	476
Burow's Technique .....	476
Gillies' Technique .....	476
Repair of Large Defects of Upper Lip .....	478
Bitemporal ("Visor") Flap for Large Upper Lip and Cheek Defects .....	480
Resection of Lower Lip with Bernard Reconstruction .....	482
Reconstruction of the Lower Lip .....	484
Reconstruction of the Lower Lip after the Exirption of a Lip Cancer .....	484
Reconstruction of the Upper Lip after an Operation of Lip Cancer .....	485
Reconstruction of the Lower Lip from the Cheeks after an Operation of a Lip .....	486
Cancer with the Resection of a Part of the Lower Jaw .....	486
<b>CLEFT LIP AND PALATE .....</b>	<b>493</b>
ROBERT J. PERRY and JOHN M. LORÉ, JR.	
Cleft Lip .....	493
Types of Cleft Lip Deformities .....	493
Normal Anatomy .....	493
Unilateral Cleft Lip Repair .....	494
Triangular Flap Cleft Lip Repair: Tennison-Randall Technique .....	496
Rotation Advancement Cleft Lip Repair .....	498
Bilateral Cleft Lip Repair .....	500
Basic Deformities of Cleft Lip (Bilateral Complete) .....	500
Repair of Complete Bilateral Cleft Lip (Straight-Line Closure) .....	502
Repair of Incomplete Bilateral Cleft Lip (Rotation- Advancement Technique) .....	504
Cleft Palate .....	506
Types of Cleft Palate Deformities .....	506
Reconstructive Goals .....	506
Optimal Age for Operation .....	506
Repair of Complete Cleft of Secondary Palate .....	506
Repair of Incomplete Cleft of Secondary Palate .....	512
Repair of Complete Unilateral Cleft Palate .....	514
Pharyngeal Flap in Cleft Palate Repair .....	516
Pharyngeal Flap for Velopharyngeal Insufficiency .....	517
<b>PERIORBITAL REGION .....</b>	<b>523</b>
Anatomy .....	523
Repair of Lids and Conjunctiva .....	523
Wounds of the Conjunctiva .....	524
Repair of Lid Lacerations .....	524
Management of Disruption of the Canaliculi .....	524
Reconstruction of Lids .....	524
Reconstruction of Lower Lid .....	526
Resection of Large Basal Cell Carcinoma of Lower Lid With Reconstruction Using Lateral Cheek Flap .....	532
Reconstruction of Upper Lid .....	534
Bridge Flap Repair of Large Upper Lid Defects, Cutler-Beard Technique .....	542
Resection of Large Basal Cell Carcinoma Involving Both Lids and Nose .....	544
Excision of Superficial Basal Carcinoma in Region of Lateral Canthus of Lower Lid .....	546
Excision of Benign Lesion of Upper Lid .....	548
Reconstruction of Superficial Horizontal Defect of Portion of Lower Lid .....	548
Eyelash Reconstruction .....	550
Eyebrow Reconstruction .....	550
Excision of Lesions at the Medial Canthus .....	552
Medial Canthoplasty and Repair of Related Injuries .....	554
Dacryocystorhinostomy .....	558
Correction of Scar Contracture of the Lids and Ectropion .....	560
Tarsorrhaphy .....	562
Temporary Tarsorrhaphy .....	562
Graft for Defect of Infraorbital Rim .....	564
Decompression of the Orbit for Exophthalmos .....	566

Resection of Benign Tumor of Lacrimal Gland .....	569	Repair of Large Mandibular Defects Utilizing the DBDB Plate .....	618
Resection of Adenoid Cystic Carcinoma of the Lacrimal Gland .....	570	Open Reduction of Depressed Fracture of Zygomatic Arch With or Without Fracture of Body of Zygoma (Gillies' Technique) .....	620
<b>THE EAR ..... 573</b>		Open Reduction of Depressed Fracture of Zygoma and Portion of Maxilla .....	622
Otoplasty .....	573	Early Reduction .....	622
Cartilage Incision Technique .....	573	Late Reduction .....	622
Mattress Suture Technique (Correction of Prominent or Deformed Ears) .....	576	Early Reduction of Depressed Comminuted Fracture of Anterior Wall of Maxilla .....	624
Surgical Treatment of Hematoma of the Auricle: "Cauliflower Ear" .....	580	Intraosseous Wiring for Facial Fractures .....	626
Z-Plasty for Stenosis of External Auditory Canal .....	582	"Tent Peg" Method of Reduction and Fixation of Facial Bone Fractures .....	628
Excision of Small Malignant Tumor of Cartilaginous Portion of External Auditory Canal .....	584	Open Reduction of Complete Fracture of Upper Dental Arch of Maxilla (Le Fort I or Guérin) .....	630
Excision of Malignant Tumors of the Auricle .....	586	Suspensory Wire Technique .....	630
Excision of Hemangioma of the Face Involving Lobule of the Ear .....	586	Direct Intraosseous Wiring Technique .....	630
En Bloc Resection of the External Auditory Bony Canal .....	588	Internal Fixation of Fracture Through Middle Third of Maxilla (Le Fort II or Pyramidal Fracture) .....	632
Total Resection of the Auricle With a Portion of the External Auditory Canal, Parotidectomy, and Radical Neck Dissection for Recurrent Malignant Melanoma .....	590	Open Reduction of Fractures Through Glabella, Orbit, and Zygomatic Arch (Le Fort III or Craniofacial Dysjunction) .....	634
Technique .....	590	Techniques of the Use of Miniplates in Le Fort I, II, and III Fractures .....	636
Posterior Approach to the 7th (Facial) Nerve .....	590	Le Fort I—Basic .....	636
Final Pathology Diagnosis .....	592	Le Fort I—Complicated .....	636
<b>FRACTURES OF FACIAL BONES ..... 595</b>		Le Fort II .....	636
JOHN M. LORÉ, JR. and DOUGLAS W. KLOTCH		Le Fort III .....	637
Basic Principles .....	595	Internal Fixation of Fractured Hard Palate .....	638
Reduction of Fractured Nose .....	596	Fractures Involving the Frontal Sinus .....	638
Depression of Right Nasal Bone with Lateral Displacement of Left Nasal Bone .....	597	Fractures of Floor of Orbit .....	640
Depression of Nasal (Frontal) Process of Right Maxilla .....	598	External Traction for Depressed Facial Fracture .....	646
Fractures of Mandible—Outline .....	599	Management of Zygomatic (Malar) Fractures .....	648
Fracture of Condylar Process—Outline .....	600	Douglas W. Klotch	
<b>FRACTURES OF MANDIBLE ..... 602</b>		Repair of Simple Fractures .....	649
Douglas W. Klotch		Repair of Complex Fractures .....	650
Overview of Fracture Repair .....	602	<b>CYSTS AND TUMORS INVOLVING THE MANDIBLE ..... 653</b>	
Open Reduction of Fractures of the Mandible .....	603	Excision of Cysts of the Mandible .....	653
Technical Aspects of Fracture Repair .....	605	Radicular Cyst .....	653
Compression Plating for Treatment of Mandibular Fractures .....	610	Dentigerous Cyst .....	656
Douglas W. Klotch and Joachim Prein		Marginal Segmental Resection of Mandible .....	658
Outline of Procedures for Rigid Internal Fixation .....	612	Resection of Large Benign Tumors of Mandible .....	660
Fracture in Row of Teeth .....	614	Mandibular Reconstruction .....	664
Fracture Posterior to Row of Teeth .....	614	Reconstruction of Mandible Using Steinmann Pin and Tie Wires .....	665
Fractures at Angle of Mandible .....	616	Mandibular Reconstruction Using Steinmann Pin .....	666
Use of Eccentric Dynamic Compression Plate .....	616	Other Options Relative to Mandibular Reconstruction .....	672
Use of Dynamic Mandible Defect-Bridging Plate .....	616	Results of Reconstruction With Kirschner Wire and Steinmann Pin .....	672
Fracture in the Edentulous Mandible .....	618		
Treatment of Oblique Fractures by Utilizing the Lag Screw Principle .....	618		



Reconstruction of the Mandible Using Plates With or Without Free Autogenous Nonvascularized Bone Grafts .....	675
Resection and Second-Stage Reconstruction of Anterior Portion of Mandible Using Iliac Bone Graft .....	678
Resection and Reconstruction of Major Portion of Body of Mandible With Bent Steinmann Pin and Tie Wires and Forehead Flap .....	682
Summary .....	686
Marginal Resection of Mandible, Partial Glossectomy, and Radical Neck Dissection for Carcinoma of the Floor of the Mouth .....	688

## **ORAL CAVITY AND OROPHARYNX ..... 698**

Excision of Dysplasia (Leukoplakia) and/or Erythroplasia (Erythroleukemia) of Tongue and Buccal Mucous Membrane .....	698
Excision of Carcinoma In Situ or Small Limited Carcinoma of Tongue .....	700
Excision of Small Midline Cancer of Anterior Third of Tongue .....	702
Median Labiomandibular Glossectomy (Trotter Approach to Base of Tongue, Pharynx, and Base of Skull) .....	704
Resection of Stage T1 Carcinoma of the Midline of the Floor of the Mouth .....	708
Inlay Graft to Floor of Mouth for Carcinoma .....	710
Resection of Malignant Tumors of the Oral Cavity and Oropharynx With Extension Above Into the Nasopharynx and Below to the Hypopharynx With Cervical Metastasis With or Without Involvement of the Mandible Including the Parapharyngeal Space .....	714
Approaches .....	714
Bone Involvement: Mandible .....	716
Guidelines .....	716
Resection for Carcinoma of Tonsil, Soft Palate, or Base of Tongue by Mandibulotomy and Reconstruction .....	720
Resection of Hemimandible, Lateral Oropharyngeal Wall, and Portion of Soft Palate and Hemiglossectomy With Reconstruction Using a Forehead Flap Versus Pectoralis Major Flap .....	724
Combined Radical Neck Dissection, Partial Glossectomy or Hemiglossectomy, and Hemimandibulectomy Including Retromolar Trigone .....	726
Base of Tongue .....	732
Anatomy of the Tongue .....	732
Resection of Base of Tongue .....	732
Approaches to Base of Tongue .....	733
Resection of Base of Tongue via Midline Mandibulotomy (Mandibular Swing) .....	734
Midline Mandibulotomy (Mandibular Swing) .....	736
Resection of Base of Tongue and Total Glossectomy .....	738
Resection of Lesions of the Buccal Wall .....	742

Buccal Wall Lesions: Benign, Premalignant, and Malignant Squamous Cell Carcinoma .....	742
Plan for Resection of Premalignant and Malignant Lesions of the Buccal Wall .....	744
Radical Resection of Buccal Wall With Mandibulectomy Associated With Oropharyngeal and Retromolar Trigone Invasion: Advanced Squamous Cell Carcinoma .....	745
Reconstruction of Buccal Wall Lesions .....	746
Resection of Carcinoma of the Retromolar Trigone and the Buccal Wall .....	747
Excisions of Lesions of Soft and Hard Palate .....	752
Resection of Extensive Benign Minor Salivary Gland Tumors of the Soft Palate .....	760
Resection of Carcinoma of Soft Palate .....	764
Excision of Ranula .....	766
Resection of Hemangioma and Neurofibroma of Tongue .....	768
Tonsillectomy and Adenoidectomy .....	770
Adenoidectomy .....	770
Salivary Duct Calculi .....	773
Repair of Laceration of the Stensen Duct (Parotid) .....	773
Reconstruction and Reimplantation of Stensen's Duct in the Buccal Wall .....	774
Pierre Robin Syndrome .....	774

## **16 THE NECK ..... 780**

JESUS E. MEDINA and JOHN M. LORÉ, JR.

Cervical Lymph Nodes .....	780
Spinal Accessory Nerve .....	781
Cervical Lymph Node Metastatic Guide .....	781
Classification .....	786
Radical Neck Dissection .....	788
Evaluation of Cervical Lymphadenopathy on Computed Tomography and Magnetic Resonance Imaging .....	797
Modifications of Radical Neck Dissections .....	797
Parotid Extension of Radical Neck Dissection (High Exposure of Internal Jugular Vein and Internal Carotid Artery) .....	798
Modified Radical Neck Dissection Preserving the Spinal Accessory Nerve (Type I) .....	802
Incision Modifications of Radical Neck Dissection .....	804
Modified Radical Neck Dissection Preserving the Spinal Accessory Nerve, the Internal Jugular Vein, and the Sternocleidomastoid Muscle (Type III) .....	808
Selective Neck Dissections .....	811
Extended Neck Dissections .....	814
Resection of Lower Margin of Mandible Combined with Radical Neck Dissection .....	814
Posterior Neck Dissection .....	818
Keun Lee	
Excision of Thyroglossal Cyst and Sinus .....	824
Resection of Submandibular Salivary Gland for Benign Disease .....	828

Phrenic Nerve Crush .....	832
Scalene and Infraclavicular Internal Jugular Node Biopsy .....	832
Muscle Lengthening for Torticollis .....	834
Branchial Cleft Cysts .....	836
First Branchial Cleft .....	836
Second Branchial Cleft (Most Common) .....	838
Third Branchial Cleft (Rare) .....	838
Fourth Branchial Cleft .....	838
Resection of Branchial Cleft Cysts .....	840
Second Branchial Cleft .....	840
Excision of Branchial Fistula and Sinus Tract .....	843
Excision of Cystic Hygroma (Lymphangioma) .....	845
Excision of Benign Lesions of the Submental Space .....	848
Resection of Ganglioneuroma of the Neck and Superior Mediastinum .....	850
Excision of Neuroma .....	852
Incision and Drainage of Abscesses of the Neck .....	854
Abscess of Tongue and Floor of Mouth Presenting in Submental Space (Ludwig's Angina) .....	854
Lateral Cervical Abscess .....	854
Penetration Wounds of the Neck .....	856
Diagnosis and Treatment .....	856

## **17 THE PAROTID SALIVARY GLAND AND MANAGEMENT OF MALIGNANT SALIVARY GLAND NEOPLASIA ..... 861**

General Considerations .....	861
Fine-Needle Aspiration Biopsy .....	861
Total Lateral Lobectomy of the Parotid Salivary Gland .....	862
Facial Nerve in Infants .....	866
Deep Lobectomy of Parotid Salivary Gland .....	868
Mandibulotomy and Deep Lobe Lobectomy of the Parotid Salivary Gland with Dissection of Parapharyngeal Space .....	872
Free Facial Nerve Graft .....	876
Gustatory Sweating (Frey's Syndrome) .....	876
Excision of the Recurrent Benign Tumor of the Parotid Gland .....	878
Management of Salivary Gland Tumors .....	880
<i>Thom R. Loree</i>	
Additional Caveats Relative to Malignant Tumors of the Parotid Salivary Gland .....	882
<i>John M. Loré, Jr.</i>	
Adenocarcinoma Not Otherwise Specified (NOS) .....	883
Malignant Mixed Tumor .....	884
<i>Nieva B. Castillo</i>	
Parotid Extension of Radical Neck Dissection .....	886
High Exposure of Internal Jugular Vein and Internal Carotid Artery .....	886
Parotitis .....	888

<b>ENDOCRINE SURGERY ..... 892</b>	
JOHN M. LORÉ, JR., MEGAN FARRELL and NIEVA B. CASTILLO	
<b>THYROID GLAND ..... 892</b>	
Diagnostic Evaluation .....	892
History .....	892
Physical Examination .....	893
Fine-Needle Aspiration of the Thyroid Gland .....	893
Thyroid Scans ( <sup>123</sup> I and <sup>99m</sup> Tc) .....	895
Sonography .....	895
Computed Tomography .....	896
Magnetic Resonance Imaging .....	896
Positron Emission Tomography .....	896
Anatomic Considerations .....	896
Posterior Suspensory Ligament .....	897
Recurrent Laryngeal Nerve .....	897
Inferior Thyroid Artery .....	898
External Branch of the Superior Laryngeal Nerve .....	899
Parathyroid Glands .....	899
Access to the Superior Mediastinum .....	900
Motor Nerve Supply to the Strap Muscles .....	901
Thyroglossal Duct Tract .....	901
Normal Ectopic Thyroid .....	901
Basic Surgical Technique .....	903
Definition of Terms .....	904
Evaluation of Laryngeal Nerve Function .....	905
Arytenoid Dislocation .....	906
Management of Thyroid Cancer .....	907
Total Thyroidectomy Versus Subtotal Thyroidectomy or Lobectomy .....	907
Nerve Paralysis .....	908
Hypoparathyroidism .....	908
Potential Problems in Management .....	909
Hormonal Replacement .....	910
Additional Evidence Supporting Total Thyroidectomy .....	910
Management of Well-Differentiated Thyroid Cancer (Includes Papillary, Follicular, and Hürthle Cell Oncocytic Carcinoma) .....	914
Pathologic Classification .....	914
<i>Nieva B. Castillo</i>	
Danger of Underestimating Malignancy .....	919
Treatment .....	919
Imaging .....	922
Medullary Carcinoma of the Thyroid .....	922
Origin and Characteristics .....	922
Types .....	923
Classification of Multiple Endocrine Neoplasia .....	923
Diagnosis .....	923
Familial MCT .....	924
Suggested Follow-up Regimen .....	924
Family Screening .....	925

Management of Residual or Recurrent MCT .....	926
Scope of the Operation .....	926
Prognosis .....	927
Hürthle Cell Carcinoma .....	927
Papillary Tall Cell Carcinoma .....	927
Undifferentiated or Anaplastic Carcinoma .....	928
Squamous Cell Carcinoma .....	928
Summary of Management of Thyroid Cancer .....	929
Substernal Goiter (Median Sternotomy and Total Thyroidectomy With Superior Mediastinal Node and Radical Neck Dissection) .....	929
Graves' Disease .....	932
Exophthalmic Graves' Disease.....	934
Toxic Multinodular Goiter .....	934
Total Thyroid Lobectomy .....	935
Subtotal Thyroid Lobectomy .....	946
Modified Radical Neck Dissection with Preservation of the Sternocleidomastoid Muscle and the Spinal Accessory Nerve .....	950
Total Thyroidectomy Without or With Radical Neck Dissection .....	955
Autonomous Thyroid Nodule .....	960
Endemic Goiter Not Due to Iodine Deficiency (Beierwaltes) .....	960
Hashimoto's Thyroiditis (1912)—Struma Lymphomatosa .....	960
Lingual Thyroid .....	962
Complications of Thyroid Surgery .....	963
Suggested Postoperative Orders After Thyroid Surgery .....	966
<b>PARATHYROID GLANDS .....</b>	<b>966</b>
Pathology of the Parathyroid Glands .....	966
<i>John E. Asirwatham</i>	
Embryology .....	966
Anatomy .....	966
Diseases of Parathyroid .....	966
Intraoperative and Frozen Section Examination of Parathyroid .....	967
Hypercellularity .....	968
Surgery of Parathyroid Glands .....	968
Blood Supply of the Parathyroid Glands .....	968
Hyperparathyroidism .....	972
Hyperparathyroidism Associated With MEN Syndromes .....	975
Preoperative and Intraoperative Techniques for the Surgical Management of Sporadic Hyperparathyroidism: Adenoma and Hyperplasia .....	976
<i>John M. Loré, Jr.</i>	
Section 1: The Author's (JML) Experience and Suggestions Regarding Imaging .....	976
Section 2: Summary Evaluations, Pros and Cons, for Each Imaging and Nonimaging Modality .....	980
Section 3: Pearls and Pitfalls Regarding Parathyroid Imaging .....	982
Indications for Surgery in Primary Hyperparathyroidism .....	984
Chemical Diagnosis of Hyperparathyroidism .....	984
Overview of Surgical Principles .....	985
Detailed Review of Surgical Principles .....	986
Excision of Parathyroid Adenomas .....	990
Excision of Mediastinal Parathyroid Adenomas and Cystadenoma .....	996
Mediastinoscopy .....	997
Anatomy .....	997
Discussion .....	997
Excision of Posterior Superior Mediastinal Parathyroid Cystadenoma via Median Sternotomy .....	999
Postoperative Care .....	1002
Osteoporosis .....	1002
Hypocalcemia .....	1002
<b>19 THE TRACHEA AND MEDIASTINUM .....</b>	<b>1015</b>
Tracheoscopy .....	1015
Tracheostomy .....	1015
Cervical Mediastinotomy and Tracheomediastinotomy .....	1024
Tracheal Resection .....	1026
Closure of Cutaneous Tracheal Fistula .....	1034
Closure of Cervical Tracheoesophageal Fistula .....	1036
Mediastinum Anatomy .....	1036
Mediastinoscopy .....	1038
Mediastinal Dissection .....	1040
Suprasternal Approach via the Superior Thoracic Inlet (Limited Dissection) .....	1040
Resection of the Medial Third of the Clavicle on One Side .....	1040
Median Sternotomy .....	1041
Resection of the Manubrium With or Without a Portion of the Sternum and Medial Portion of the Clavicle .....	1041
Exposure of the Mediastinum by Resection of the Medial Third of the Clavicle .....	1041
Diseases Amenable to the Approach With Medial Third Clavicle Resection .....	1041
Median Sternotomy, Total Thyroidectomy, With Superior Mediastinal Node and Radical Neck Dissection .....	1046
Mediastinal Dissection for Tracheostoma Recurrence (Sisson Procedure) .....	1056
Transcervical Total Thymectomy .....	1062
<b>20 THE LARYNX .....</b>	<b>1069</b>
Indirect Mirror Laryngoscopy .....	1069
Anatomy of Superior Laryngeal Nerve .....	1069
Punch Biopsy of Lesions of Larynx and Hypopharynx .....	1073
Stripping (De-Epithelialization) of a Vocal Cord .....	1074
Endoscopic Removal of Congenital Cyst of Ventricle in Newborn (Internal Laryngocèle) .....	1076
CO <sub>2</sub> Laser in Laryngeal and Endobronchial Surgery .....	1077
Microlaryngoscopy Using the CO <sub>2</sub> Laser .....	1077

Endoscopic Intracordal Injection of Teflon Paste .....	1078
Thyoplasty/Vocal Cord Medialization .....	1080
Laryngofissure (Thyrotomy) .....	1082
Cordeectomy and Arytenoidectomy for Bilateral Abductor Cord Paralysis .....	1084
Lateralization of Arytenoid Cartilage (Arytenoidopexy) for Bilateral Abductor Vocal Cord Paralysis .....	1086
Cancer of the Larynx .....	1089
Treatment .....	1094
Radiation Therapy for Laryngeal Cancer <i>Dhiren K. Shah</i>	
Partial Laryngectomy (Outline) .....	1100
Cordeectomy for Small Carcinoma of True Vocal Cord .....	1105
Vertical or Frontolateral Laryngectomy .....	1106
Omohyoid Muscle Laryngoplasty .....	1114
Strap Muscle Laryngoplasty .....	1116
Horizontal or Supraglottic Laryngectomy .....	1118
Simultaneous Radical Neck Dissection .....	1120
Laryngeal Suspension .....	1125
Total Laryngectomy .....	1126
Tracheostomal Problems .....	1134
Technique of Construction of Large Tracheal Stoma .....	1134
Correction of Tracheal Stomal Stenosis .....	1135
Total Laryngectomy and Radical Neck Dissection .....	1136
Tongue Flap (Myomucosal) for Reconstruction of Portion of Hypopharynx Associated With Total Laryngectomy .....	1142
Voice Prostheses: Post-Total Laryngectomy .....	1143
Tracheal Esophageal Puncture (TEP) .....	1143
Singer-Blom Technique (Modified) .....	1144
Panje Voice Button Prosthesis .....	1146
Total Laryngectomy and Radical Neck Dissection .....	1148
Resection of External Laryngocoele .....	1152
Laryngeal Trauma .....	1154
Correction of Laryngeal Web .....	1162
Technique of McNaught (1950) .....	1162
Technique of Frazer (1968) .....	1162
Aspiration .....	1162
Carbon Dioxide Laser .....	1164
<b>THE HYPOPHARYNX AND THE ESOPHAGUS .....</b>	<b>1171</b>
Repair of Pharyngoesophageal Diverticulum .....	1171
Exposure of the Superior Portion of the Thoracic Esophagus .....	1176
Repair of Iatrogenic Injury to the Esophagus .....	1176
Resection of Adenocarcinoma From the Cervical Esophagus .....	1176
Cricopharyngeal Myotomy .....	1178
Transhyoid Pharyngotomy .....	1180
Anterior Pharyngotomy .....	1180
Resection of Carcinoma at Posterior Wall of Hypopharynx and Oropharynx and Radical Neck Dissection (Lateral Pharyngotomy Approach) .....	1181
Introduction to Reconstruction of Pharynx and Esophagus .....	1186
Carcinoma of the Hypopharynx and Cervical Esophagus .....	1187
Myomucosal Tongue Flap and Dermal Graft for Reconstruction of Entire Hypopharynx, Posterior Wall of Oropharynx, and Nasopharynx Associated With Total Laryngectomy and Total Hypopharyngectomy .....	1188
Cervical Esophagoscopy .....	1190
Reconstruction of Hypopharynx and Cervical Esophagus Using PMF With Dermal Graft .....	1190
Reconstruction After Partial "Cuff" Cervical Esophagectomy, Hypopharyngectomy, and Total Laryngectomy Above the Thoracic Inlet Using Local Cervical Flaps .....	1192
Free Skin Graft Over Tantalum Gauze .....	1196
Thoracic Skin Flap .....	1196
Resection for Cancer of the Cervical Esophagus .....	1199
Gastric Pull-Up .....	1200
Gastric Pull-Up With Extrathoracic Esophagectomy .....	1200
Resection of Cancer of Cervical Esophagus at the Thoracic Inlet .....	1206
Cervical Esophagocolostomy .....	1213
Reconstruction of Esophagus Using Transverse and Descending Colon .....	1216
Stamm Gastrostomy .....	1222
Janeway Gastrostomy .....	1224
Percutaneous Endoscopic Gastrostomy .....	1227
<i>Daniel Sette Camara</i>	
<b>22 VASCULAR PROCEDURES .....</b>	<b>1233</b>
JOHN M. LORÉ, JR., JOSEPH M. ANAIN, NIEVA B. CASTILLO, and L. NELSON HOPKINS	
Vascular Surgery in Operations of Neck, Extracranial Portions of Head, Face, and Thoracic Outlet .....	1233
Basic Principles .....	1233
Degenerative Vascular Disease .....	1240
Extracranial Cerebrovascular Disease .....	1242
Exposure of Bifurcation of Carotid Arteries and Endarterectomy .....	1244
Endarterectomy With Patch Graft .....	1248
Intraluminal Shunts Used in Endarterectomy .....	1248
Complications of Carotid Artery Surgery .....	1250
Controversies of Carotid Artery Surgery .....	1252
Carotid Artery Stenting: Indications, Technique, and Results .....	1254
<i>L. Nelson Hopkins</i>	
Exposure of Cervical Portion of Subclavian Arteries and Proximal Portion of Vertebral Arteries .....	1256
Vertebral Artery Reconstruction .....	1258
Surgical Treatment of Occlusion of Vertebral Arteries .....	1258

Exposure of Distal Common Carotid Artery and Placement of Bypass Graft .....	1262	Thoracic Outlet Syndrome—Scalenotomy .....	1340
Subclavian Steal Syndrome .....	1262		
Surgical Treatment of Occlusion of Common Carotid and Subclavian Arteries and Subclavian Steal .....	1264		
Atherosclerotic Aneurysm .....	1266	<b>23 BASE OF THE SKULL SURGERY .....</b>	<b>1348</b>
Anomalies of the Internal Carotid Artery .....	1266	Base of Skull and Parapharyngeal Space .....	1349
Exposure of Innominate Artery and Proximal Portion of Right Subclavian and Common Carotid Arteries via Sternal-Splitting Incision .....	1268	Parapharyngeal Space .....	1350
Bypass Graft for Obstruction of Innominate Artery ....	1270	Anatomy of the Parapharyngeal Space .....	1350
Resection of Kinked Obstruction in Internal Carotid Artery .....	1272	CT versus MRI .....	1351
Alternate Method to Correct Kinked Internal Carotid Artery .....	1274	Approaches to the Parapharyngeal Space .....	1352
Fibromuscular Dysplasia .....	1274	Glossopharyngeal Neuralgia .....	1361
Vasculitis .....	1275	Infratemporal Approach to the Skull Base .....	1365
Radiation Arteritis .....	1275	<i>Ernesto A. Diaz-Ordaz</i>	
Spontaneous Carotid Artery Intimal Dissection .....	1275	Surgery of the Parapharyngeal Space .....	1365
Neoplastic Disease .....	1276	Advanced Radical Exposure .....	1368
Metastatic Squamous Cell Carcinoma .....	1276	Mandibular Swing .....	1374
Resection of Portion of Common and Internal Carotid Arteries Involved by Cancer .....	1277	Craniofacial Resection .....	1377
Results of Resection and Reconstruction of the Internal Carotid Artery in Metastatic Carcinoma ....	1283	Bilateral Total Maxillectomy for Chondrosarcoma .....	1386
Paragangliomas—Head and Neck .....	1283	Supraorbital Approach to the Orbit and Paranasal Sinuses .....	1391
Resection of Carotid Body Tumor .....	1294	Cranial Portion .....	1391
Resection of Intravagale Paraganglioma With Preservation of Major Vessel Continuity .....	1300	<i>Gregory J. Castiglia and Daniel P. Schaefer</i>	
Intravagale Paragangliomas and Bilateral Superior Sympathetic Ganglion Paragangliomas and Unilateral Carotid Body Tumors .....	1302	Facial Portion .....	1394
Endovascular (Glomus) Jugulare Paraganglioma Tumor .....	1307	<i>John M. Loré Jr. and Daniel P. Schaefer</i>	
Trauma to Vessels .....	1310	Reconstruction .....	1394
Vascular Trauma Outline .....	1310	Transseptal Transsphenoidal Hypophysectomy	
Immediate Sequelae of Vessel Injuries .....	1310	—Cryosurgical and Surgical .....	1395
Late Sequelae of Vessel Injuries .....	1313	Cryosurgical Hypophysectomy .....	1400
Resection of Arteriovenous Aneurysm of the Face ....	1314	Surgical Ablative Hypophysectomy .....	1400
Resection of Aneurysm of Common or Internal Carotid Artery .....	1320	Endoscopic Endonasal Transsphenoidal Approach to the Pituitary Gland .....	1404
Transection of Internal Carotid Artery/Internal Jugular Vein Fistula With Resection of False Aneurysm .....	1320	<i>Douglas B. Moreland</i>	
Lateral Venotomy for Foreign Body .....	1326	Temporal Bone Resection .....	1408
Control of Hemorrhage .....	1328	<i>John S. Lewis</i>	
Effects of Cancer: Carotid Artery Blowout .....	1328		
Prevention and Management of Carotid Artery Blowout .....	1328		
Protection for Carotid Artery .....	1331		
Protection for Carotid Artery and Sources of Muscle Bulk .....	1334		
Ligation of More Proximal Vessel .....	1336		
External Carotid Artery Ligation .....	1336		
Harvesting Saphenous Vein for Graft .....	1338		
		<b>24 MICROVASCULAR SURGERY .....</b>	<b>1417</b>
		<i>ROBERT W. DOLAN</i>	
Microvascular Free Flaps .....	1417	Microvascular Free Flaps .....	
Historical Perspective and Introduction .....	1417	Historical Perspective and Introduction .....	
Flap Classification .....	1418	Flap Classification .....	
Typical Donor Flaps .....	1418	Typical Donor Flaps .....	
Recipient Defects and Microvascular Flap Selection ....	1420	Recipient Defects and Microvascular Flap Selection ....	
Microsurgery .....	1422	Microsurgery .....	
Advantages and Disadvantages of Specific Flaps .....	1428	Advantages and Disadvantages of Specific Flaps .....	
Radial Forearm .....	1429		
Fibular Osteocutaneous .....	1436		
Rectus Musculocutaneous .....	1441		
Scapular Osteocutaneous .....	1448		
Latissimus .....	1456		
Jejunal .....	1462		
Iliac Crest Osteocutaneous .....	1464		
Gracilis .....	1468		
		<b>INDEX .....</b>	<b>1471</b>