

# Contents

Preface .....	xii
Contributors .....	xiv
<b>1 The Dual Character of Nasal Surgery .....</b>	<b>2</b>
<i>Hans Behrbohm</i>	
<b>1.1 Introduction .....</b>	<b>2</b>
<b>1.2 Historical Review .....</b>	<b>3</b>
1.2.1 Origins of Plastic Nasal Surgery .....	3
1.2.2 The Development of Plastic Surgery in Berlin and at the Charité Hospital from the 18th to 20th Centuries .....	3
1.2.3 History of Surgery of the "Internal Nose" .....	5
<b>1.3 Phylogensis .....</b>	<b>7</b>
<b>1.4 The Nose as a Respiratory Organ .....</b>	<b>8</b>
<b>1.5 The Nose as a Sensory Organ .....</b>	<b>8</b>
1.5.1 The Olfactory Sense .....	8
1.5.2 The Vomeronasal Organ .....	9
<b>1.6 Prerequisites for the Concept of         Functional-Aesthetic Nasal Surgery .....</b>	<b>9</b>
1.6.1 Septal Surgery with Functional and Aesthetic Goals .....	9
1.6.2 Principles of Submucous Septoplasty .....	10
1.6.3 The Pediatric Nasal Septum .....	10
1.6.4 The Nasal Valve .....	10
1.6.5 Physiological Limits of Nasal Breathing .....	11
1.6.6 Atraumatic, Structure-Conserving Techniques of Septorhinoplasty .....	11
<b>1.7 Functional Aspects of Septorhinoplasty .....</b>	<b>13</b>
1.7.1 Olfactory Disturbances .....	13
<b>1.8 Recurrent and Chronic Sinusitis .....</b>	<b>14</b>
Wibke Behrbohm	
<b>1.9 Adjunctive Intranasal Measures .....</b>	<b>18</b>
Tympanic Ventilation Problems .....	21
Rhinogenic Headache .....	22
Nasal Surgery and Sleep-Disordered Breathing .....	23
Wolfgang Pirsig	
Rhinophonia .....	25
Wolfram Seidner	
<b>20 Aesthetic Aspects of Septorhinoplasty .....</b>	<b>26</b>
<b>21 Selecting an Approach for Septorhinoplasty .....</b>	<b>27</b>
Open versus Closed—An Old Controversy .....	27
Endonasal Approaches .....	27
Endoscopic Approach .....	34
Open Approach .....	34
<b>22 Special Techniques .....</b>	<b>44</b>
J. Eichhorn-Sens	
Treatment of the Concavity of the Lower Lateral Cartilages .....	44
Conservative Cephalic Trim .....	44
Sliding Technique .....	44
Lateral Crural Steal Technique .....	44
Tongue-in-Groove Technique .....	47
Push-Down Technique .....	47
Dome Division .....	49
Bending Technique .....	49
<b>2 Contemporary Rhinoplasty: Personal Principles and Philosophy .....</b>	<b>56</b>
<i>M. Eugene Tardy, Jr.</i>	
<b>2.1 Introduction and Personal Philosophy .....</b>	<b>56</b>
<b>2.2 Indications .....</b>	<b>57</b>
<b>2.3 Contraindications .....</b>	<b>58</b>
<b>2.4 Alternative Techniques .....</b>	<b>58</b>
<b>2.5 Preoperative Considerations .....</b>	<b>58</b>
<b>2.6 Special Surgical Requirements .....</b>	<b>59</b>
<b>2.7 Preoperative Analysis .....</b>	<b>59</b>
<b>2.8 Surgical Techniques .....</b>	<b>60</b>
<b>2.8.1 Surgery of the Nasal Tip .....</b>	<b>61</b>
<b>2.8.2 Profile Alignment .....</b>	<b>75</b>
<b>2.8.3 Bony Pyramid Narrowing and Alignment .....</b>	<b>77</b>
<b>2.8.4 Alar Base Reduction .....</b>	<b>78</b>
<b>2.8.5 Dressings and Bandages .....</b>	<b>78</b>
<b>2.9 Key Technical Points .....</b>	<b>78</b>
<b>2.10 Postoperative Care .....</b>	<b>79</b>
<b>2.11 Complications .....</b>	<b>79</b>
<b>2.12 Summary .....</b>	<b>79</b>
<b>3 Facial Proportions and Aesthetic Ideals in Rhinoplasty .....</b>	<b>82</b>
<i>Randolph B. Capone and Ira D. Papel</i>	
<b>3.1 Introduction .....</b>	<b>82</b>
<b>3.2 Facial Proportions .....</b>	<b>82</b>
3.2.1 Standard of Reference .....	83
3.2.2 Golden Ratio .....	83
3.2.3 Facial Angles .....	84
3.2.4 The Face .....	85
<b>3.3 Analysis of Patients with Nasal Deformity .....</b>	<b>88</b>
<b>3.3.1 General Considerations .....</b>	<b>88</b>
<b>3.3.2 Nasal Deformity .....</b>	<b>89</b>
<b>3.4 Ethnic Variations .....</b>	<b>89</b>
The Caucasian Nose .....	89
The African Nose .....	89
The Asian Nose .....	89
<b>3.5 Summary .....</b>	<b>90</b>

<b>4</b>	<b>Physiology and Pathophysiology of Nasal Breathing .....</b>	<b>92</b>	
	<i>Gunter Mlynški</i>		
<b>4.1</b>	<b>Introduction .....</b>	<b>92</b>	
<b>4.2</b>	<b>Preconditions for the Respiratory Function of the Nose .....</b>	<b>92</b>	
<b>4.3</b>	<b>The Correlation between Shape and Function of the Nose .....</b>	<b>92</b>	
<b>4.3.1</b>	Inspiration .....	<b>92</b>	
<b>4.3.2</b>	Expiration .....	<b>94</b>	
<b>4.3.3</b>	General Remarks .....	<b>95</b>	
<b>4.4</b>	<b>The Problem of Septal Deviation with Compensatory Turbinate Hyperplasia in Terms of Flow Dynamics .....</b>	<b>95</b>	
		<b>4.7</b>	
<b>4.5</b>	<b>Inspiratory Nasal Wing Collapse .....</b>	<b>95</b>	
<b>4.6</b>	<b>Rhinological Functional Diagnostics .....</b>	<b>96</b>	
<b>4.6.1</b>	Rhinomanometry .....	<b>96</b>	
<b>4.6.2</b>	Rhinoresistometry .....	<b>97</b>	
<b>4.6.3</b>	Acoustic Rhinometry .....	<b>97</b>	
<b>4.6.4</b>	Long-Term Rhinoflowmetry .....	<b>98</b>	
<b>4.6.5</b>	Combination of Rhinoresistometry, Acoustic Rhinometry, and Long-Term Rhinoflowmetry .....	<b>98</b>	
<b>4.7</b>	<b>Concluding Remarks .....</b>	<b>99</b>	
<b>5</b>	<b>Preoperative Management .....</b>	<b>104</b>	
	<i>Hans Behrbohm</i>		
<b>5.1</b>	<b>Evaluation of the Face and External Nose .....</b>	<b>104</b>	
<b>5.1.1</b>	The First Impression .....	<b>104</b>	
<b>5.1.2</b>	The Preoperative Consultation .....	<b>104</b>	
<b>5.1.3</b>	Conducting the Consultation .....	<b>104</b>	
<b>5.2</b>	<b>Analysis, Clinical Geometry .....</b>	<b>105</b>	
<b>5.2.1</b>	Proportions and Symmetry .....	<b>105</b>	
<b>5.2.2</b>	The Face from the Front .....	<b>105</b>	
<b>5.2.3</b>	Skin and Connective-Tissue Type .....	<b>105</b>	
<b>5.2.4</b>	Profile Analysis .....	<b>106</b>	
<b>5.2.5</b>	Dentition and Profile .....	<b>107</b>	
<b>5.2.6</b>	The Nasal Base .....	<b>107</b>	
<b>5.3</b>	<b>Palpation .....</b>	<b>107</b>	
<b>5.3.1</b>	Manual Examination Techniques .....	<b>107</b>	
<b>5.4</b>	<b>Nasal Endoscopy .....</b>	<b>109</b>	
<b>5.4.1</b>	Principles of Nasal Endoscopy .....	<b>110</b>	
<b>5.4.2</b>	Technique .....	<b>111</b>	
<b>5.5</b>	<b>Tips on Photographing Parts of the Body .....</b>	<b>112</b>	
	<i>Dieter Jaeger and Hans Behrbohm</i>		
<b>5.5.1</b>	Standard Photographic Views .....	<b>112</b>	
<b>5.5.2</b>	The Lighting Setup .....	<b>112</b>	
<b>5.5.3</b>	Personal Recommendations .....	<b>113</b>	
<b>5.6</b>	<b>Informed Consent .....</b>	<b>113</b>	
<b>5.6.1</b>	Medical Ethics and Aesthetic Indication .....	<b>114</b>	
		<b>5.6.2</b>	
		<b>5.6.3</b>	
		<b>5.7</b>	
		<b>5.7.1</b>	
		<b>5.8</b>	
		<b>5.8.1</b>	
		<b>5.8.2</b>	
		<b>5.8.3</b>	
		<b>5.8.4</b>	
		<b>5.8.5</b>	
		<b>5.8.6</b>	
		<b>5.8.7</b>	
		<b>5.8.8</b>	
		<b>5.8.9</b>	
		<b>5.8.10</b>	
		<b>5.9</b>	
		<b>5.9.1</b>	
		<b>5.9.2</b>	
		<b>5.9.3</b>	
		<b>5.10</b>	
		<b>5.10.1</b>	
		<b>5.10.2</b>	
		<b>5.10.3</b>	
		<b>Aesthetic Surgery and Happiness .....</b>	<b>114</b>
		Personal Recommendations .....	<b>114</b>
		<b>Psychological Issues in Rhinoplasty .....</b>	<b>114</b>
		Potential Problem Patients .....	<b>114</b>
		<b>Preoperative Workup .....</b>	<b>116</b>
		Rhinological History .....	<b>116</b>
		Aesthetic History .....	<b>116</b>
		Evaluation of the External Nose .....	<b>116</b>
		Endoscopic Examination .....	<b>116</b>
		Diagnostic Imaging .....	<b>116</b>
		Laboratory Tests .....	<b>116</b>
		Function Testing .....	<b>116</b>
		Photographic Documentation .....	<b>116</b>
		Informed Consent .....	<b>116</b>
		Planning the Operation .....	<b>116</b>
		<b>Immediate Preoperative Preparations .....</b>	<b>116</b>
		Positioning .....	<b>116</b>
		Local Anesthesia .....	<b>116</b>
		Marking the Operative Site .....	<b>117</b>
		<b>Anesthesia for Rhinoplasty .....</b>	<b>117</b>
		<i>Mario Hensel</i>	
		General Anesthesia .....	<b>117</b>
		Intravenous Sedation (Twilight Anesthesia) .....	<b>119</b>
		Local Anesthesia .....	<b>119</b>
<b>6</b>	<b>Principles of Modern Septoplasty .....</b>	<b>122</b>	
	<i>Thomas Hildebrandt</i>		
<b>6.1</b>	<b>Introduction .....</b>	<b>122</b>	
<b>6.2</b>	<b>Indications .....</b>	<b>122</b>	
<b>6.3</b>	<b>Contraindications .....</b>	<b>122</b>	
<b>6.4</b>	<b>Preoperative Considerations .....</b>	<b>123</b>	
		<b>6.4.1</b>	
		<b>6.4.2</b>	
		<b>6.5</b>	
		<b>6.6</b>	
		Septum and Turbinates .....	<b>123</b>
		Structural Implications .....	<b>123</b>
		<b>Preoperative Analysis .....</b>	<b>124</b>
		<b>Surgical Technique .....</b>	<b>125</b>
<b>7</b>	<b>Structural Grafting via the External Rhinoplasty Approach .....</b>	<b>130</b>	
	<i>Dean M. Toriumi and Zrria L. White</i>		
<b>7.1</b>	<b>Introduction .....</b>	<b>130</b>	
<b>7.2</b>	<b>Indications .....</b>	<b>130</b>	
<b>7.3</b>	<b>Contraindications .....</b>	<b>130</b>	
<b>7.4</b>	<b>Alternative Techniques .....</b>	<b>130</b>	
<b>7.5</b>	<b>Preoperative Considerations .....</b>	<b>130</b>	
<b>7.6</b>	<b>Special Surgical Requirements .....</b>	<b>131</b>	
		<b>7.7</b>	
		<b>7.8</b>	
		<b>7.8.1</b>	
		<b>7.9</b>	
		<b>7.10</b>	
		<b>7.11</b>	
		<b>Preoperative Analysis .....</b>	<b>131</b>
		<b>Surgical Technique .....</b>	<b>132</b>
		Incisions: Nuances and Technique .....	<b>132</b>
		<b>Key Technical Points .....</b>	<b>141</b>
		<b>Postoperative Care .....</b>	<b>142</b>
		<b>Complications .....</b>	<b>142</b>

<b>8</b>	<b>Endonasal Tip Rhinoplasty Approaches and Techniques.....</b>	144			
	<i>Scott Shadfar and Stephen W. Perkins</i>				
8.1	<b>Introduction .....</b>	144	8.7.3	Bifid Tip.....	149
8.2	<b>Indications.....</b>	144	8.7.4	Trapezoid Tip.....	152
8.3	<b>Contraindications .....</b>	144	8.7.5	Asymmetrical Tip.....	152
8.4	<b>Preoperative Considerations.....</b>	144	<b>8.8</b>	<b>Postoperative Care.....</b>	152
8.5	<b>Preoperative Analysis.....</b>	145	<b>8.9</b>	<b>Complications.....</b>	152
8.6	<b>Surgical Technique.....</b>	145	8.9.1	Bossae Formation.....	152
8.7	<b>Case Studies .....</b>	148	8.9.2	Alar Retraction .....	153
8.7.1	Boxy Tip .....	148	8.9.3	Tip Asymmetry.....	153
8.7.2	Bulbous Tip .....	149	8.9.4	Improper Projection .....	154
			<b>8.10</b>	<b>Summary .....</b>	154
<b>9</b>	<b>Alar Reduction and Sculpture.....</b>	156			
	<i>J. Regan Thomas and M. Eugene Tardy, Jr.</i>				
9.1	<b>Introduction .....</b>	156	9.8.1	Internal Nostril Floor Reduction .....	159
9.2	<b>Indications.....</b>	156	9.8.2	Wedge Excision Nostril Floor and Sill.....	159
9.3	<b>Contraindications .....</b>	157	9.8.3	Alar Wedge Excision .....	159
9.4	<b>Alternative Techniques .....</b>	157	9.8.4	Alar Flap .....	159
9.5	<b>Preoperative Considerations.....</b>	157	9.8.5	Sliding Alar Flap .....	159
9.6	<b>Special Surgical Requirements.....</b>	157	9.8.6	Key Technical Points .....	162
9.7	<b>Preoperative Analysis.....</b>	157	<b>9.9</b>	<b>Postoperative Care .....</b>	162
9.8	<b>Graduated Surgical Techniques .....</b>	159	<b>9.10</b>	<b>Complications .....</b>	163
			<b>9.11</b>	<b>Conclusions .....</b>	163
<b>10</b>	<b>The Deviated Nose.....</b>	166			
	<i>Stephen S. Park and William Dougherty</i>				
10.1	<b>Introduction .....</b>	166	10.6.2	Middle Third Deviations.....	173
10.2	<b>Indications.....</b>	166	10.6.3	Tip Deviations .....	177
10.3	<b>Contraindications .....</b>	166	<b>10.7</b>	<b>Principles of Postoperative Care .....</b>	180
10.4	<b>Preoperative Considerations.....</b>	166	<b>10.8</b>	<b>Complications.....</b>	180
10.4.1	Age.....	167	<b>10.9</b>	<b>Conclusion .....</b>	180
10.5	<b>Preoperative Analysis and Diagnosis .....</b>	167	<b>10.10</b>	<b>Representative Cases .....</b>	181
10.5.1	Normal Anatomy and Diagnosis .....	167	10.10.1	Case 1: Mild Dorsal Deviation .....	181
10.5.2	Analysis of Aberrant Anatomy .....	168	10.10.2	Case 2: Severe Dorsal Deviation .....	181
10.6	<b>Surgical Correction .....</b>	171	10.10.3	Case 3: Fractured Dorsum and Twisted Tip .....	187
10.6.1	Upper Third Deviations .....	172	10.10.4	Case 4: Functional Obstruction from Deviated Dorsum .....	187
<b>11</b>	<b>The Functional Tension Nose, the Overprojected Nose.....</b>	194			
	<i>Hans Behrbohm</i>				
11.1	<b>Introduction .....</b>	194	11.4.6	Laboratory Tests .....	199
11.1.1	Definition of Terms .....	194	11.4.7	Postoperative Measures .....	199
11.1.2	Measurement of Overprojection .....	194	<b>11.5</b>	<b>Preoperative Analysis .....</b>	199
11.2	<b>Indications .....</b>	195	11.5.1	Principles of Surgery for the Overprojected Nose and Tension Nose .....	199
11.2.1	Functional Indications .....	195	11.5.2	Principal Causes of Overprojection .....	199
11.2.2	Aesthetic Indications .....	196	<b>11.6</b>	<b>Operative Strategy.....</b>	201
11.3	<b>Contraindications .....</b>	198	11.6.1	Central Role of the Septum .....	204
11.3.1	Functional Contraindications .....	198	11.6.2	Intranasal Septal Resection .....	205
11.3.2	Aesthetic Contraindications .....	198	11.6.3	Principles of Profile Correction and Hump Removal ..	206
11.4	<b>Preoperative Preparations and Prerequisites .....</b>	198	<b>11.7</b>	<b>Complications .....</b>	207
11.4.1	Inspection .....	198	11.7.1	Infection .....	207
11.4.2	Palpation .....	198	11.7.2	Bleeding .....	207
11.4.3	Function Studies .....	198	11.7.3	Dislocations.....	207
11.4.4	Informed Consent .....	198			
11.4.5	Photographic Documentation and Computer Simulation .....	198			

<b>12</b>	<b>The Saddle Nose—Causes and Pathogenesis, Approaches and Operative Techniques, Principles of Tissue Replacement in the Nose .....</b>	210
	<i>Hans Behrbohm</i>	
<b>12.1</b>	<b>Introduction .....</b>	210
<b>12.2</b>	<b>Indications.....</b>	210
<b>12.2.1</b>	Functional Indications .....	210
<b>12.2.2</b>	Aesthetic Indications .....	210
<b>12.3</b>	<b>Contraindications .....</b>	211
<b>12.4</b>	<b>Preoperative Preparations and Prerequisites... 211</b>	
<b>12.4.1</b>	History .....	211
<b>12.4.2</b>	Inspection .....	211
<b>12.4.3</b>	Nasal Endoscopy .....	213
<b>12.4.4</b>	Palpation .....	213
<b>12.4.5</b>	Laboratory Tests.....	213
<b>12.5</b>	<b>Preoperative Analysis..... 213</b>	
<b>12.5.1</b>	Type I Pathogenic Mechanism of Saddle Nose .....	213
<b>12.5.2</b>	Type II Pathogenic Mechanism of Saddle Nose ....	213
<b>12.5.3</b>	Type III Pathogenic Mechanism of Saddle Nose....	214
<b>12.6</b>	<b>Surgical Strategy .....</b>	214
<b>12.6.1</b>	Reconstruction for Minor Saddling of the Cartilaginous Dorsum with a Circumscribed Defect in the Cartilaginous Septum and Normal Tip Support .....	214
<b>12.6.2</b>	Reconstruction for Deep Saddling of the Cartilaginous Dorsum with Extensive Cartilage Losses or Septal Perforations and Adequate Tip Support .....	215
<b>12.6.3</b>	Harvesting the Donor Cartilage .....	215
<b>12.6.4</b>	Reconstruction of the Nasal Dorsum with Severe Loss of Tip Support .....	215
<b>12.7</b>	<b>Guidelines for Tissue Replacement in the Nose .....</b>	215
<b>12.7.1</b>	Graft Requirements.....	215
<b>12.7.2</b>	Synthetic Implants.....	216
<b>12.7.3</b>	Autologous Grafts .....	221
<b>12.7.4</b>	Allografts .....	222
<b>12.7.5</b>	Fibrin Glue .....	222
<b>12.8</b>	<b>Principles of Implantology in the Nose..... 222</b>	
<b>12.8.1</b>	Harvesting Graft Material .....	222
<b>12.8.2</b>	Preparing the Recipient Bed .....	223
<b>12.9</b>	<b>Postoperative Care .....</b>	223
<b>12.10</b>	<b>Complications .....</b>	223
<b>13</b>	<b>Rhinoplasty after Cleft Lip Repair..... 226</b>	
	<i>Wolfgang Gubisch</i>	
<b>13.1</b>	<b>Correction of Unilateral Cleft Lip Nasal Deformity .....</b>	226
<b>13.2</b>	<b>Surgical Anatomy..... 226</b>	
<b>13.3</b>	<b>Indication..... 226</b>	
<b>13.4</b>	<b>Surgical Principles .....</b>	226
<b>13.5</b>	<b>Operative Technique..... 226</b>	
<b>13.6</b>	<b>Septal Correction, Part 1..... 226</b>	
<b>13.6.1</b>	Correction of the ANS.....	227
<b>13.6.2</b>	Correction of the Bony Pyramid .....	227
<b>13.7</b>	<b>Septal Correction, Part 2..... 227</b>	
<b>13.7.1</b>	Tip Correction.....	227
<b>13.7.2</b>	Correction of the Alar Base .....	228
<b>13.8</b>	<b>Case Examples .....</b>	228
<b>13.8.1</b>	Case 1 .....	228
<b>13.8.2</b>	Case 2 .....	230
	<i>Hans Behrbohm</i>	
<b>13.9</b>	<b>Psychology, Motivation, Personal Background .. 230</b>	
<b>13.10</b>	<b>Discussion .....</b>	231
<b>14</b>	<b>Nasal Trauma..... 234</b>	
	<i>Oliver Kaschke</i>	
<b>14.1</b>	<b>Introduction .....</b>	234
<b>14.2</b>	<b>Trauma-Relevant Anatomy of the Nose .....</b>	234
<b>14.3</b>	<b>Classification of Nasal Trauma .....</b>	235
<b>14.3.1</b>	Isolated Central Nasal Fractures .....	235
<b>14.3.2</b>	Naso-orbito-ethmoid Fractures .....	236
<b>14.4</b>	<b>Diagnostics .....</b>	237
<b>14.4.1</b>	Inspection and Palpation.....	238
<b>14.4.2</b>	Intranasal Diagnostics .....	238
<b>14.4.3</b>	Imaging Diagnostics .....	239
<b>14.5</b>	<b>Management of Nasal Traumas .....</b>	240
<b>14.5.1</b>	Chronological Procedure .....	240
<b>14.5.2</b>	Anesthesia .....	241
<b>14.5.3</b>	Management of Isolated Central Nose Fractures...	241
<b>14.5.4</b>	Closed Repositioning Techniques.....	242
<b>14.5.5</b>	Open Repositioning Techniques.....	242
<b>14.5.6</b>	Management of Nasal Traumas in Children .....	243
<b>14.5.7</b>	Management of Naso-orbito-ethmoid Fractures ..	244
<b>14.5.8</b>	Management of Soft-Tissue Injuries to the Nose...	245
<b>14.6</b>	<b>Long-Term Complications following Nasal Traumas .....</b>	245
<b>15</b>	<b>Postoperative Care and Management..... 248</b>	
	<i>Oliver Kaschke</i>	
<b>15.1</b>	<b>Introduction .....</b>	248
<b>15.2</b>	<b>Intraoperative Management..... 248</b>	
<b>15.2.1</b>	Internal Dressing .....	248
<b>15.2.2</b>	External Dressing.....	249

<b>15.3 Postoperative Management .....</b>	250	<b>15.3.4 Measures during the First Postoperative Week ....</b>	252
15.3.1 First Postoperative Day.....	250	15.3.5 Measures after the First Postoperative Week.....	252
15.3.2 Early Postoperative Period.....	250	15.3.6 Pharmacological Therapy.....	253
15.3.3 Typical Reactions and Clinical Signs in the Early Postoperative Period.....	251	15.3.7 Late Postoperative Period.....	253
		15.3.8 Treatment Strategy during the Late Postoperative Period .....	254