is particularly important when the recommended agent is a new and/or infrequently employed dru

All rights reserved. No part of this publication may be translated into other languages, reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, recording, microcopying, or by any information storage and retrieval system, without permission in writing from the publisher.

© Copyright 1994 by S. Karger AG, P.O. Box, CH-4009 Basel (Switzerland) Printed in Switzerland on acid-free paper by Thür AG Offsetdruck, Pratteln ISBN 3-8055-5967-4

Contents

Preface XIX

Diagnostic Methods and Instrumentation

Neuroradiology
Contrast Media for IRI of Skull Base Lesions. M. Lemont, D. Baleriaux.1
Neuroradiology of Skull Base Tumors. G. Salamon, P. Peretti-Viton, N. Murayama, F. Grisoh, R. Sedan.6
Diagnostic Imaging of Skull Base Lesions: The Correlative Use of CT, IRI and Angiography. H. Henkes, H. Ch. Nahser, D. Kühne.18
Three-Dimensional CT-Based Imaging of the Skull Base. F. W. Zonneveld, J.J. van Overbeeke, J.M. Vaandrager, C. W. van Veelen, J.C. van der Meulen, C.A.F. Tulleken.23
Intraoperative CT Scanning during Skull Base Surgery. H. Okudera, S. Kobayashi, T. Takemae, K. Kyoshima, H. Gibo.26
CT Cisternography in the Diagnosis of Cysticerci Placed in Basal Cisterns. B.O. Colli, J.A. Assirati, Jr., H.R. Machado, A.C. dos Santos.29
A Proposed CT Grading System for Brain Edema and Intracranial Mass Effect. B. Borovich.38

Robotics
An Articulated Frameless Stereotactic Device in Open Cranium Surgery. E. Watanabe, Y. Mayanagi, K. Takakura.44
Computerized Tools for the Surgery of Skull Base Tumors. L. Klimek, R. Mosges, G. Laborde 49
Laser in Skull Base Surgery

Clinical Application of Holmium Laser in the Skull Base Made on the Experience of 40 Cases. O.J. Beck, F. Frank.59

Anesthesia

Fiberoptic Intubation of the Difficult Airway. A. Ovassapian.62
Anesthetic Points of View in Posterior Fossa Surgery. G. Cunitz.66
Anterior and Middle Skull Base: Anterior Cranial Fossa
Anatomy of the Anterior Skull Base
The Skull Base in Human Cyclopia: Its Contribution to the Study of Normal Development. P. McGrath.71
Endoneurosurgery: The Anatomical Basics. K.D.I. Resch, A. Perneczky.78

Craniosynostosis

3-D CT Scanning in the Management of Craniosynostosis. S.N. Bhagwati.81
A New Dimension in Pediatric Skull Base Surgery. N.L. Rogers, H.E. James.89
Some Neurosurgical Techniques for Treating Craniosynostosis. T. Iwata, M. Hayashi, H. Izumiyama, T. Abe, H. Doi, K. Matsumoto, K. Sato.95
Approaches to the Anterior Skull Base
Prognostic Findings in Surgery Involving the Anterior Cranial Base. G.S. Gussack, R. Van Tuyl 102
Otolaryngological Approaches to the Skull Base. N. Sekercioglu, F. Oz, D. Senocak.109
Recent Technical Evolutions in Transbasal Surgery of Ethmoid Tumors. V. Darrouzet, J.P. Bebear, D. Stoll, F. San-Gall, S.A. Siddiqui, J. Pinsolle.113
Bicoronal Approach in the Treatment of Frontal Mucocoeles and Tumors Involving Anterior
Cranial Base, Nasal Fossae and Paranasal Sinuses. A. Gandolfi, C. Zini, F. Piazza.117
Frontotemporal Approaches with Removal of the Orbital Rim and/or the Zygomatic Arch: Surgical Technique, Microsurgical Anatomy and Clinical Applications. M. Sindou, M Alaywan 119
Craniofacial Approaches for Tumors Involving the Anterior Half of the Skull Base. R. Delfini.128
Facial Splitting: Another Approach to the Anterior Skull Base. L. Clauser, C. Curioni.131
Tumors of the Anterior Skull Base
Our Experience in Anterior Craniofacial Resections. G. Cant', C.L. Solero, F. Mattavelli, M. Guzzo, P. Salvatori.134
Craniofacial Resection for Tumors of the Anterior Skull Base. C. Forni, G.P. Busca, M.E. Amasio 137
Our Experience with Tumors in the Anterior Skull Base Region. K.-D. Hamm, H. Pothe, J. Krtlger, N. Haberland 148
Surgical Results of Malignant Skull Base Tumors with Intracranial Extension. S. Nagahiro, M. Kochi, H. Seto, S. Uemura, U. Ushio.152

Contents VI

Glioblastoma Penetrating the Anterior Skull Base: Case Report and Review of the Literature. S. Brandner, E. Heiss, G. Gehrke 156

Skull Base Meningiomas

Morphology and Biology of Meningiomas. G.F. Walter 161
Peritumoral Edema and Sex Hormone Receptor Status in Intracranial Meningiomas. A. Brandis, S. Mirzai, M. Tatagiba, M Samti, H. Ostertag 165
Biological Behavior of Recurrent Meningiomas: Monoclonal Antibody 1G-67 and Ag-NOR Silver Staining Technique in Meningiomas. K. Kitz, H. Maier, K. Ross/er 169
Surgical Considerations on Skull Base Meningiomas. S. Kobayashi, H. Okudera, K. Kyoshima.173
PVA Microembolization of Skull Base Meningiomas. A.K. Wakhloo, R. Siekmann, F.D. Jiingling, V. van Velthoven, M. Schumacher 175
Skull Base Meningiomas. A. Hakuba, K. Ohata, A.S. Tokunboh, B.Y. Gi 179
Skull Base Meningiomas: Experience with 250 Cases. M Horvath, E. P sztor, S. Czir dk, A. Cs kay, I. la/dijk, J. Vajda.183
Advances in the Treatment of Supratentorial Meningiomas of the Skull Base by Microsurgical
G.A. Gabibov, S.V. Tanyashin, A.V. Kozlov.

Meningiomas of the Sphenoid Wing


Recurrent Meningiomas

Recurrence of Meningiomas. Y. Doron, B. Borovich.
Recurrences of Skull Base Meningiomas. G. Cantore.

Paranasal Sinuses


Results of Skull Base Surgery for Malignancy. D.F. Wengen, P.J. Donald, M. Bergermann.


Juvenile Angiofibroma


Surgical Management of Extensive Nasopharyngeal Angiofibroma. R.C. Deka.

Tumors Involving the Orbit: Technical Notes to the Frontotemporal-Orbitozygomatic Approach. B. Hammer, J. Premu, O. Gratzl, L. Rusag, R. Probst 258


Transsphenoidal-Transethmoidal Approach to Contralateral Orbital Lesions. B. Meyer, V. Rohde, W. Hassler, R. Unsold 267

Tumors of the Orbit


Transzygomatic Resection of 22 Large Orbital Tumors. B. Aarabi 278

Exophthalmus: Tumors and Pseudotumors of the Orbit and Frontal Skull Base — Differential Diagnosis, Therapy and Results. F. Hoppe, F.C. Brunner, J. Sold 281


Results Following Removal of Orbital Cavernous Hemangiomas. Ch. Mohr, J. Esser 296

Orbital Involvement in Wegener's Granulomatosis. G. Duncker, B. Nulle, R. Asmus, H. Koltze, R. Rochels 300

Optic Nerve Injury

Orbital Decompression in Graves' Disease via Medial External Approach: Indications, Surgical Technique and Results. F.X. Brunner, J. Sold 302

Optic Nerve Injury: A Prospective Study of 250 Patients. A.K. Mahapatra, D.A. Tandon ..305


Parasellar Region


Operative Approach and Prognosis of Perisellar Skull Base Destructing Tumors. R. Finsch ing,
Imaging Modalities in Lethal Midface Granuloma: How Accurate for Staging and Follow-Up?
K. Morsot-Dupuch, V. Raveau, J.M. Tubiana

Gliomas of the Chiasma and Third Ventricle Floor: Results of Surgical Treatment.
S.K. Gorelyshev, A.N. Konovalov, T.M. Vichert, A.G. Korshunov

Pilocytic Astrocytoma of the Neurohypophysis with the Inappropriate Secretion of ADH Syndrome. A. Pompili, A. Aversa, F. Caroli, M. Crecco, M.R. Nardone, E. Occhipinti, A. Rocco

Parasellar Meningiomas


Suprasellar Meningiomas: Cause of Regrowth and Complications. S. Mitani, T. Kawase, S. Toya

Contents VIII


Neuroradiology of the Sella

Analysis of Magnetic Resonance Signal Intensity Patterns in Extremely Firm Pituitary Adenomas. R. Nistor, M. Buchfelder, W.J. Huk, R. Fahlbusch

3-D-FT Thin-Section MRI of Prolactin-Secreting Microadenomas. N.J. Girard, T. Brue, V. Chabert-Orsini, Ch.A. Raybaud, P. Jaques, F. Grisol, M. Poncet, S. Cohen

Diagnostic Accuracy and Prognostic Value of Modern Sella Imaging in Cushing's Disease: An Analysis of 141 Cases. R. Nistor, M. Buchfelder, R. Fahlbusch, W.J. Huk

Pituitary Adenomas


Open Tip Rhinoplasty Approach and Transsphenoidal Surgery of Pituitary and Skull Base. J.R. Gilmore

Transsphenoidal Surgical Treatment for Cushing's Disease in Childhood and Adolescence. D. Pardal, R. Schillaci, A. Rabadán, H. Mendilaharzu, O. Bruno, E. Pardal

Treatment of Patients with Sleep Apnea Caused by Growth-Hormone-Secreting Pituitary Adenoma. J.P. Rock, D. Elskens, S. Mickelson

Clinicopathological Study of Gonadotropinomas. K. Takakura, A. Teramoto

Complications in 755 Transseptal-Transsphenoidal Surgeries. A. Rabadán, D. Pardal,
R. Schillaci, E. Pardal 385

Giant Pituitary Adenomas

Use of Endoscopes in Transsphenoidal Excision of Pituitary Macroadenomas. M.Z. Helal, H. Khalil 391
Transcranial and Transsphenoidal Approach to Large Pituitary Tumors. M. Loyo, G. Guinto, R. del Valle 395
Surgical Experience with Giant Pituitary Adenomas. J. Ste o, M. Malácek, M. Majercik 402

Craniopharyngiomas
Surgery of Craniopharyngiomas and Gliomas of the Chiasma and the Third Ventricle. A.N. Konovalov 408
Management of Craniopharyngioma: Some Observations. S.N. Bhagwatz 412
Surgical Strategies in Craniopharyngiomas. A. Hakuba, Y.G. Bak, V.K. Khosla, H.K. Rha, K. Ohata 418
Surgical Treatment of Craniopharyngiomas: An Evaluation of the Transsphenoidal and Pterional Approaches. G. Moira, C. Anale, G. Rossi 423
Transsphenoidal Microsurgery for Craniopharyngioma. J. Honegger, R. Fahlbusch, M. Buchfelder 426
Craniopharyngiomas. Z. Akar, G. Ozcinar, B. Canbaz, E. Sayin, C. Kuday, A.C. Sarioglu, M. Uzan 433
Surgical Treatment for Dysembryogenetic Tumors through the Transnasal-Transsphenoidal Approach. Y.K. Trunin, A.N. Shkarubo, V.N. Kornienko 440

Cavernous Sinus
The Lateral Sellar Compartment (Cavernous Sinus) from Galen to Dolenc. D. Parkinson 443

Contents IX

Sellar and Parasellar Region: Interventional Approach to the Cavernous Sinus.
R.T. Higashida, V.V. Halbach, Ch.F. Dowd, K. Fraser, T. Smith, G.B. Hieshima 447
Preoperative Balloon Occlusion Test for Cranial Base Surgery with Single Photon Emission
CT. S. Yamamoto, I. Sunada, Y. Akano, A. Hakuba 454

Transsphenoidal Resection of Cavernous Sinus Tumors. W.A. King, D.P. Becker 458

Results of Surgery for Benign Tumors of the Cavernous Sinus. M.D. Cusimano, L.N. Sekhar, S. Pomonis, Ch.N.P. Sen, W. Hirsch 464


Reconstruction of Cranial Nerves III through VI during Cavernous Sinus Surgery.
G. Lanzino, L.N. Sekhar, Chi. Sen, S. Pomonis 477

Meningiomas Involving the Cavernous Sinus

Surgery of Cavernous Sinus Meningiomas. M.D. Cusimano, L.N. Sekhar, S. Pomonis, Chi. Sen, W. Hirsch 482


Preliminary Experience in Surgery of Cavernous Sinus Meningiomas. C.L. Solero, S. Giombini, G. Lasio, S. Lodrini, F. Pluchino.491

Middle Cranial Fossa

Neuroradiology of the Middle Cranial Fossa

Computer-Assisted Surgery: An Aid to Orientation in Surgery of the Middle Cranial Fossa?

High-Resolution 3-D-CT of the Pterygopalatine Fossa. H. Schmalstieg, H. Becker 497

Approaches to the Middle Fossa

ENT Aspects of the Middle and Infratemporal Fossa: Facial Translocation Approach.
I.P. Janecka.501

Middle and Infratemporal Fossa: Maxillofacial Aspects. J.-E. Hausamen, F. W. Neukam 504

The Transzygomatic Approach to the Middle Fossa. G.J. Rubino, G.E. Rodts, Jr., M.C. Holland, D.P. Becker 513

Transzygomatic-Transmandibular Approach to the Pterygopalatine Fossa. S. Kim, K. Ohata, A. Hakuba, V.K. Khosla 518


Tumors of the Middle Cranial Fossa

Resection of Large Infratemporal Tumors Invading the Middle Cranial Fossa. G. Cantù,
C.L. Silero, F. Mattavelli, P. Salvatori, M. Guzzo, S. Podrecca.524
Quality of Life after Surgery of Meningeomas of the Middle Fossa. F. Weber,
Th. Zimmermann, J. Menzel, W. Koning, R. Lorenz 527
Reconstructive Surgery for Arachnoid Cyst of the Middle Fossa and Orbit. H. Nakagawa,
H. Yamamoto, K. Iwata, H. Aoyama 531
Osteoblastoma of the Temporal Bone and Orbit. Ch. Mohr, K. Metz, J. Heesen 535
Somatostatin Receptor Imaging for Temporal Paragangliomas: A Simple and Sensitive
Localization Technique. B.K.H. Pauw, D.J. Kwekkeboom, S.W.J. Lamberts, H. van Urk,
H. Y. lei, E.P. Krenning 539

Contents X

Postmortem Studies of the Human Temporal Bone with High-Resolution (9.4 T) MR
Microscopy. E.A.M. Beuls, J.P. Berg, J. Gelan, M Vandersteene, L. Vanormelingen,
P. Adriaensens, Y. Palmers 541
Treatment of Giant Middle Fossa Cholesteatomas. J. Mertens, M Rautenberg 544
Giant Cell Tumors: Experience in 4 Cases. A. El Ouahabi, L. Rifi, A. Aghzadi, F. Amrani,
H. Rafi, A. El Khamilichi 547
Immediate Microsurgical Reconstruction after Resection of a Recurrent Ameloblastoma
Involving the Skull Base. B. Hell, G. Gatzunis, J. Bier.551
Pitfalls in the Surgical Management of Osteonecrosis of the Temporal Bone. V.K. Anand,
O. Al-hefty 554
Aggressive Papillary Middle Ear Tumor: Case Report and Review of the Literature.
A. Mahran, A. Sepehrnia, S. Mirzai, H. Ostertag, M. Samii 558

Skull Base Trauma

Radiology of Skull Base Trauma. J.P. Haas, G. Kahle 563
Management of Fronto-Naso-Orbital Fractures: Diagnostic Evaluation and Treatment
Principles. K. W. Gratz, P.E. Haers, H.F. Sailer 572
Nasal Intubation in Maxillocranial Trauma Involving Cerebrospinal Fluid Fistulæ. W. Bahr,
P. Stoll.577
Traumatic Cerebrospinal Fluid Rhinorrhea. L.-S. Lin, Ch.-K. Chang, Ch.- U Tasi, W.- T. Ch.u,
Ch. - J. Shih.581
Orbitofrontal Injuries. W.-P. Sollmann, R.H. Reich, B. Haubitz, F. Brasse!, H. Dietz 586
Skull Base Trauma Followed by Diabetes insipidus. H. Seger, J. Honegger, R. Ntstor,
M. Farmand, W.J. Huk 594
Trauma of the Temporal Bone Causing Facial Palsy. D. Castro 597
Facial Palsy Secondary to Petrous Pyramid Trauma. V.G. Diamante 600

Skull Base Reconstruction
Modern Techniques in Reconstruction of Dura and Skull Base. G. Geyer 604
The Dura Sandwich — The Method of Choice to Repair Skull Base Dural Defects. A Summary. A. Ammar 613
Reconstruction of the Anterior Skull Base following a Craniofacial Combined Approach. H. Sakai, N. Nakamura, S. Kaneko 615
Surgical Reconstruction for Extensive Ethmoidal Tumor Resection. E. Rey, J.P. Chirossel, Ch. Tixier, J.G. Passagia, P. Mouret, R. Charachon 621
Posttraumatic Reconstruction of the Frontal Sinus: Results of 75 Consecutive Cases. F. De Ketelaere, Ch. Mohr, D. Schettler 624
Reconstruction of the Skull Base after Temporal Bone Resections for Cancer of the Middle Ear and External Auditory Meatus. R. Twar 628
Seven-Year Experience with Different TJ Ankylosis Operations. G. Santler, H. Karcher 631
Late Results after Reconstruction of the Sensory Branches of the Mandibular Nerve. C.P. Cornelius, M. Ehrenfeld, H. Wiethölter 639

Vascular Lesions

Vascular Lesions Involving the Skull Base. F. Watzinger, K Hollmann, B. Richling, W. Millesi, G. Schobel 647

Contents XI

Nasopharyngeal Hemorrhage and Skull Base Aneurysm. B. Azar-Ka, S. Horowitz, M. Fine, A. Radmehr 652
Aneurysm Clips: Use and Misuse. M.D. Heifetz 655
Coated and Noncoated Endovascular Prothesis (Stents) for Vessel Reconstruction: An Experimental Study. A.K. Wakhloo, F. Schellhammer, J. de Vries, R. Siekmann, M. Schumacher 658

Anterior Circulation

Modified Orbitocranial Approach for Unusual Cerebral Aneurysms of the Anterior Circulation. K. Ikeda, J. Yamashita, S. Higashi, K. Futami 662
Surgery of Carotid Cave Aneurysm with Special Reference to Microsurgical Anatomy of the Ophthalmic Artery. S. Kobayashi, M. Hokama, T. Toriyama, Y Tanaka, H. Okudera . . 666
Combined Use of Intraoperative DSA, Temporary Balloon Occlusion and Retrograde Suction
Petrous Carotid to Supraclinoid Carotid Saphenous Vein Graft. H. Ohnishi 678

Posterior Circulation

Interventional Neurovascular Approaches to the Basilar and Vertebral Arteries. R.T. Higashida, V.V. Halbach, Ch.F. Dowd, K. Fraser, T. Smith, G.B. Hieshima 686
Posterior Circulation Aneurysms — Surgical Approaches. R.P. Sengupta 690
Le Fort Osteotomy for Posterior Circulation Aneurysms. W.A.S. Taylor, D. Uttley, D.J. Archer 696
Orbitocranial and Orbitozygomatic Temporopolar Approaches for Basilar Tip and Basilar Superior Cerebellar Artery Aneurysms. K. Ikeda, J. Yamashita 699
Successful Clipping of a Middle Basilar Aneurysm by Transmaxillary Transclival Approach. Y.-H. Chiang, T.-L. Chiou, S.-I. Ma, M.-Y. Liu, Ch.-N. Tu 703
Surgical Excision of Giant Cerebellar AVMs using Preoperative Embolization. K. Mizoi, T. Yoshimoto, A. Takahashi 715

Posterior Cranial Base

Anatomy of the Posterior Fossa

Suboccipital Transmeatal Approach to Acoustic Neuromas: Anatomic and Surgical Techniques. J. Oppenheim, M.B. Camins, K. Brookler 742

Contents XII

Anatomical Landmarks of the Presigmoid Approach. J.A. Landeiro, L.C. Santos, A. Aversa, R. Monteiro 752

Neuroradiology of the Cerebellopontine Angle

Gadolinium Enhancement within the Internal Auditory Canal on MRI Scan by Nontumor Lesions. L.C. Andrews, V. Honrubia, R. Lufkin, R.F. Canalis, D.P. Becker 766

Approaches to the Posterior Fossa

Retrolabyrinthine Approach to a Petrous Apex Osteoma. N Sekercioglu, E. Sayin, F. Oz, A.R. Hekmat 784
Occipitotemporal Approach to Tumors Arising in the Region of the Posterior Foramen Iacerum, with or without Extension into the Adjacent Cranial Fossa, Petrous Bone and Neck. C. Zini, A. Gandolfi, F. Piazza 796
The Transcochlear Approach to Meningiomas and Cholesteatomas of the Cerebellopontine Angle. A. De la Cruz, D.E. Brackmann 798

Tumors of the Cerebellopontine Angle

Downloaded by: 54.70.40.11 - 11/20/2017 7:26:04 AM


Acoustic Neurinomas


Acoustic Neurinoma Surgery with Special Reference to Anatomical Correlation of the Individual Components of the 7th and 8th Nerves. Y. Tanaka, S. Kobayashi, T. Toriyama, H. Nagashima, H. Gibo 825

An Extended Middle Cranial Fossa Approach to Acoustic Neuroma. R. Shiobara, T Ohira, T. Kacaase, J. Kanzaki, S. Toys 829

Contents XIII

Surgical Management of High-Located Jugular Bulb in Acoustic Neurinoma via Retrosigmoid Approach: K-N. Shoo, M Tatagiba, M. Samli 832

Incidence of Acoustic Neuromas. M Tos, J. Thomsen, S. Charabi 836

Acoustic Neurinomas. D.E. Brackmann 839


Cystic Acoustic Neuromas. S. Charabi, M. Tos, J. Thomsen 847

Acoustic Neuromas Invading the Middle and Inner Ear. R. Charachon, B. Gratacap, J-P. Lavieille, Ch. Tixier.850

Intraoperative Diagnosis and Surgery of Large Acoustic Neuromas Influencing the Brainstem. V.P. Bersnev, G.S. Tigliiev, I.A. Nikitrrn, T.N. Fadeeva.853


Recurrence Rate of Acoustic Neurinomas Operated via the Enlarged Middle Cranial Fossa Approach. C. T. Haid, M.E. Wigand, S.R. Wolf, C.P. Christ 866
Gamma Knife Surgery in Acoustic Neurinomas. G. Norén 877

Facial Nerve in Acoustic Neurinoma Surgery

Hearing Preservation in Acoustic Neurinoma Surgery
Preconditions for Hearing Preservation in Acoustic Neurinoma Surgery. C. Matthies, M. Samii 902
W.S. Langheznrich, L.N. Sekhar, A. Goel, D. Weisz, C.B. McDonald 906

Trigeminal Neurinomas
Fifth Nerve Neurinomas. N. Altinors, N. Arda, A. Turker, E. $enveli, K. Birler, N. Oral, N. Çmar 930
Trigeminal Neurofibroms. J.P. Sheehy 934
Contents XIV

ne-Stage Excision of a Giant Trigeminal Neurinoma by Orbitozygomatic Infratemporal Approach: A Case Report. B. Oliver, R. Ramirez, B. Zurita, J. Molet, F. Bartumeus ..940

Tumors of the Petrous Apex

Cystic Lesions of the Petrous Apex: Differential Diagnosis. P.D. Phelps 944

Pediatric Petrous Pyramid Pathologies. V.G. Diamante 946

Cystic Lesions of the Petrous Apex. D.E. Brackmann 950

Resection of Cystic Lesions at the Petrous Apex. M.J. Gleeson 953

Vestibular Nerve Section

Retrolabyrinthine Vestibular Nerve Section. D.S. Brackmann 957

Posterior Fossa Vestibular Nerve Section with Simultaneous Decompression of the Endolymphatic Sac: A Preliminary Report. M. El Shennawy 960

Vascular Cross-Compression of the Vestibular Nerve in Patients with Menière's Disease: Ultrastructural Findings. V. Collette, M. Career, F.G. Fiorino, A. Bricolo, S. Turazzi, L. Pacini 962

Microvascular Decompression

Neurosurgical Treatment of Pain Related to Skull Base Lesions. G. Broggi 965

Microsurgical Vascular Decompression in Trigeminal and Glossopharyngeal Neuralgias. M. Sindou, P. Mertens 970

Trigeminal Neuralgia Treated by Microvascular Decompression. A Long-Term Follow-Up Study. R.D. Illingworth, N.D. Mendoza 974

Analysis of 1,033 Cases of Trigeminal Neuralgia Treated with Glycerin Injection by Puncturing the Foramen Ovale through Calculated Angles. G. Xu, L. Bo, Ch. Van, U. Kang 975


Microvascular Decompression for Hemifacial Spasm in Ex-Czechoslovakia. E. Zverina, D. Urgosik, L. Stejskal, P. Strnad 980

Jugular Foramen

The Imaging Assessment of Jugulotympanic Glomus Tumours. P.D. Phelps, G.A.S. Lloyd, A.D. Cheesman 983


‘Low-Risk’ and ‘High-Risk’ Paragangliomas - Light Microscopic and Immunohistological Features of Tympanojugular Tumors. Ch. Milewski 989

Combined Diagnostic and Conservation Surgery of Exceptional Jugular Foramen Tumors. R. Quester, J. Menzel, W. Thumfart, J. Gubitz 992
Glomus jugulare and other Foramen jugulare Tumors. V.G. Diamante 996
Surgical Management of Glomus jugulare Tumors with Intracranial Extension. J.D. Green, Jr.,
A. De la Cruz, M.A. Arriaga, C.D. Nguyen, W.E. Hitselberger, D.E. Brackmann 1006
Surgical Approaches to Tumors of the Jugular Foramen. L.H. Pitts, R.K. Jackler 1010
Jugular Foramen Neurilemomas, Schwannomas. E. Zverina, D. Urgosik 1017
Infratemporal Schwannomas. G.A. Ator, R. Weatherly, H.A. Jenkins, N.J. Coker 1020
Petroclival Meningiomas
Petrosal Approach: Anatomical Basis for Surgical Treatment of Petroclival Meningiomas: A
The Middle Fossa Transpetrous Approach for Petroclival Meningiomas. K.L. Horn,
Surgical Treatment of Petroclival Meningiomas: Experience with 16 Cases. G. Cantore,
R. Delfini, P. Ciappetta 1035

Contents XV

Petroclival Meningiomas: Report of Nine Cases. C. Bellotti, G. Panzarasa, G. Pappadà,
G. Oliver!, R. Sant 1038
Tentorial Meningiomas. D.F.B. Kirchhoff 1041

Clivus

Approaches to the Cilius

Surgical Anatomy and Clinical Application of the Transcondylar Approach to the Lower
Clivus. H. Bertalanffy, J. Gilsbach, W. Seeger, S. Toya 1045
Approach to Lateral Clivus and Mid- and Lower Basilar Artery via Petrous Apex Resection.
T. Orbay, S. Alp, H. Tosun, H. Alp, D. Kadioglu 1049
Combined Retro- and Preauricular Transpetrous-Transstentorial Approach to the Clivus.
G. Salar, L. Job, R. Mottaran, G.B. Costello, M Marcel/i, L. Peserico 1053
Simple Neurosurgical Approaches to the Clivus. A. Bricolo, S. Turazzi, A. Talacchi,
L. Cristofori, F. Sala, M Vitale 1055
A Combined Intradural Presigmoid-Transversarium-Transcondylar Approach to the
Whole Clivus and Anterior Craniospinal Region: An Anatomical Study. M. Ammirati,
J. Ma, J. Bloch, M. Cheatham, D. Maxwell, D.P. Becker 1065
Facial Swing for Access to Cranial Base. I.P. Janecka 1070
Midfacial Split as an Approach to Clival Lesions. I.P. Janecka 1073
Neurosurgical Applications of Le Fort I Type Osteotomy. H.R. van Loveren, P. Fernandez,
J.T. Keller 1076
Maxillotomy and Frontozygomatic Craniotomy for Skull Base Chondrosarcome.
S.R. Stapleton, D.J. Archer, D. Uttley 1081
Use of the Naso-Maxillo-Cheek Flap for Access to the Cranial Base and Clivus.
H.-P. Howaldt, A. Frydrych 1085

Surgery of Intracranial Chordomas. A.N. Konovalov 1089

Clivus and Cervicomedullary Lesions in Children. D.A. Bruce 1092

Craniocervical Junction

Approaches to the Craniocervical Junction
The Lateral Approach for Anterior Tumours of the Foramen magnum. G.P. Kratimenos, H.A. Crockard 1095

Chiari I Malformation

Symptomatic Chiari Malformation in Adults: A New Classification. P.K. Fil/ay, I.A. Awad, J.R. Little, J. Hahn 1110
Minor Symptom Chiari Malformation — A Progressive Disease. P. W. Carmel 1118
Surgical Treatment of Incidentally Discovered Hindbrain Herniation. U. Batzdorf 1120
Tumors of the Craniocervical Junction

Contents XVI

Meningiomas and Neurinomes of the Craniocervical Region. W.-P. S/or/mann, H. Dietz 1137
Basilar Impression: A Report of 42 Cases. S. Gou/iang 1143

Craniocervical Instability

Posterior Fusion Techniques in the Upper Cervical Spine (CO-C2). B. Jeanneret 1145
Stabilizing Surgery of the Craniocervical Junction. V. Seifert, D. Sto/ke 1 152
Management of Upper Cervical and Craniocervical Instability. G. Penkert 1157

Neurophysiology

Monitoring of Cranial Motor Nerves in Skull Base Operations. A.R. Møller 1161
Surgical Actions and BAEP Monitoring in Acoustic Neurinoma Removal. C. Matthies, M. Samii 1177
Intraoperative Monitoring with Transtympanic Electrocochleography. D. Hohmann 1183
Neurophysiologic Mapping of the Floor of the IVth Ventricle Using Direct Stimulation. C. Strauss, J. Romstock, R. Fahlbusch, C. Nimsky 1198

Facial Nerve

Computer-Assisted Facial Nerve Grading. V. Ga/ati, H. Scriba 1211
Facial Nerve and Infections of the Temporal Bone. M. El Shennawy 1214
Tumours of the Facial Nerve and Their Differential Diagnosis. P.D. Phelps, G.A.S. Lloyd, A.D. Cheesman 1216
Facial Nerve Reconstruction in Skull Base and Temporal Bone Surgery. V.C. Cousins, K. Siu, R.E. Hooper 1217
Complications in Skull Base Surgery

Complications in Skull Base Surgery: Vasospasm. J. Mendez 1220
CSF Fistulas in Skull Base Surgery. M. Portmann 1229
CSF Fistula in Skull Base Surgery. G. Maira, C. Anile, A. Mangiola, P. Palma, A. Vignati 1233
Skull Base Surgery Complicated by Pseudocerebrospinal Fluid Rhinorrhea. M.D. Cusimano, G.L. Rosseau, L.N. Sekhar, Chi. Sen, D.G. Wright 1239
The skull base pathologies, which are rarely confined to a limited area, could not be approached by only one single specialty. For a long time, different surgical disciplines as neuro-, ENT-, maxillofacial-, ophthalmo-, plastic and reconstructive surgery, tried to find separately solutions for the treatment of pathological entities. Pioneers of those specialties have introduced important new approaches for the skull base diseases. However, skull base surgery experienced a breakthrough after technical innovations (CT scan, IRI, selective angiography, etc.) and microsurgery have been combined by the consequent cooperation between all disciplines involved in the skull base.

An interdisciplinary cooperation for the skull base started at the University of Mainz almost 25 years ago. This combined effort increased our knowledge continuously and made us understand the benefit of such an activity to treat those skull base processes, which were designated as not accessible or not operable.

Since 1979, interdisciplinary courses with anatomical demonstrations by Johannes Lang and Pierre Rabischong have been organized in Hannover. In 1980, the International Skull Base Study Group was created with biennial congresses on skull base pathologies. Finally, in 1988, the International Skull Base Society was founded with the idea to prepare the first world-wide meeting considering colleagues from all disciplines who have already gained experience in this field.

The peak of this series of courses, national and international meetings, was reached at the First International Skull Base Congress in Hannover in June 1992, with more than 1,000 participants from 55 different countries and 863 contributions.

The high level of contributions to this meeting by internationally renowned specialists, the innovation of new techniques in diagnostics and surgical treatment have motivated us to publish this book. It gives a unique overview on all aspects involving the skull base
regarding anatomical, diagnostic and surgical management, as well as problems of brain protection and postoperative treatment.

The realization of this 1,296-page book with more than 300 contributions was only possible through the smooth cooperation of the authors and the publisher, as well as by the enormous proofreading work of Mrs. Nitsche and Dr. Klekamp. From the beginning of the project until the appearance of this book, the intensive teamwork between Mrs. Nitsche and the staff of S. Karger AG, Basel, Switzerland, needs a special acknowledgment. Many thanks also to my secretary, Ms. Malo, who helped me in the final stage of preparation.

M. Samii