

**JOURNAL OF NEUROLOGICAL SURGERY — PART B**

# Skull Base

**Journal of Neurological Surgery-Part B**

Volume 84

Journal of Neurological Surgery-Part B is published in 6 issues per year in February, April, June, August, October, and December.

ISSN (Print): 2193-6331

eISSN: 2193-634X

**Editors-in-Chief**

Michael J. Link, Mayo Clinic, Rochester, Minnesota  
Dennis Kraus, Centura Health, Denver, CO

The editor is not responsible for the advertisements and supplements contained in the journal.

**Publishers**

Georg Thieme Verlag KG,  
Rüdigerstraße 14, 70469 Stuttgart or  
P.O. Box 301120, 70451 Stuttgart  
phone +49 711 8931-0, fax +49 711 8931-298  
www.thieme.de/JNLS-B  
Web-App: www.thieme.de/eref-app

Editorial staff at the Georg Thieme Verlag is available via:  
Jessica.Bogensberger@thieme.de

V.i.S.d.P.: Martin Spencker, Rüdigerstraße 14, 70469 Stuttgart

**Advertising**

Thieme Media  
Pharmmedia Anzeigen- und Verlagsservice GmbH  
Christine Volpp, Rüdigerstraße 14, 70469 Stuttgart  
or P.O. Box 300880, 70448 Stuttgart  
phone +49 711 8931-603, fax +49 711 8931-569  
e-mail: Christine.Volpp@thieme-media.de

**Production management**

e-mail: mansi.agarwal@thieme.com

**Subscription information**

Subscribers are asked to inform the publisher immediately in case of address changes in order to ensure correct delivery of the journal.

phone: +49 711 8931-321, fax: +49 711 8931-422

e-mail: customerservice@thieme.com

The scientific text of this journal is available online through Thieme-connect, <http://www.thieme-connect.de>.

Access to Thieme-connect is free of charge for personal subscribers. For information concerning licenses and prices for institutional access, please contact:

**For customers in Germany, Austria, Switzerland**

Thieme Gruppe, Institutional Sales, Rüdigerstraße 14  
70469 Stuttgart, Deutschland  
phone: +49 711-8931-407, fax: +49 711-8931-794  
e-mail: esales@thieme.de

**For customers in Europe (excluding Germany, Austria and Switzerland), Africa, Asia (excluding South Asia), Australia**

Thieme Gruppe, Institutional Sales, Rüdigerstraße 14  
70469 Stuttgart, Germany  
phone: +49 711-8931-407, fax: +49 711-8931-794  
e-mail: esales\_row@thieme.de

**For customers in the US, Canada, Mexico, Central and South America**

Thieme Medical Publishers, Inc., Institutional Sales  
333 Seventh Avenue, New York, NY 10001  
United States  
phone: +1-800-782-3488 (Toll-free in US only)  
phone: +1-212-760-0888, fax: +1-212-947-0108  
e-mail: esales\_tny@thieme.com

Airfreight and mailing in the USA by The Sheridan Press, 450 Fame Avenue, Hanover, PA 17331.  
Postmaster: Send address changes to Journal of Neurological Surgery-Part B, Thieme Medical Publishers, Inc., 333 Seventh Avenue, New York, NY 10001.

All subscription orders are entered for the calendar year. The rate of subscription is invoiced in advance at the end of the year for the following year and becomes due for payment for the full calendar year. Subscriptions can be started anytime. Subscriptions are automatically extended each year unless notice of cancellation is received from the subscriber prior to September 30 of each year.

**For users in the USA**

Authorization of photocopy items for internal or personal use, or the internal or personal use of specific clients, is granted by Georg Thieme Verlag Stuttgart, New York for libraries and other users registered with the Copyright Clearance Center (CCC) Transactional Reporting Service; [www.copyright.com](http://www.copyright.com). For reprint information in the USA, please contact: [journals@thieme.com](mailto:journals@thieme.com)

**Product names**

Product names which are registered trademarks may not have been specifically designated as such in every case. In case where a product has been referred to by its registered trademark it cannot be concluded that the name used is in the public domain. The same applies to labels, names or other signs.

**Manuscripts**

Impact Factor (2022): 0.9

Manuscript submission exclusively via:

<http://mc.manuscriptcentral.com/jnls-b>

For details regarding manuscript submission please refer to [www.thieme.com/journal-authors](http://www.thieme.com/journal-authors)

In principle only papers will be accepted which have not been published previously, domestically or abroad. Furthermore, manuscripts may not be offered to other publications at the same time as they are under consideration for this journal. The corresponding author will receive a PDF-file for private use. Authors may choose to allow, for a fee, free general access to their papers online.

**Illustrations**

Unfortunately, we cannot accept images already published in books, journals, or electronic products of other publishers. The reason: It is almost impossible to obtain the necessary rights of use even with payment of licensing fees. Therefore, please do not pay any licensing fees (e.g. to "RightsLink"/Copyright

Clearance Center). Standard license contracts from "Creative Commons" are unfortunately also insufficient for our purposes. Contact us with any questions regarding the use of images.

**Important note**

Medicine is an ever-changing science undergoing continual development. Research and clinical experience are continually expanding our knowledge, in particular our knowledge of appropriate treatment and drug therapy. Insofar as this journal mentions any dosage or application, readers may rest assured that the authors, editors and publishers have made reasonable effort to ensure that such references are in accordance with the state of knowledge at the time of production of the journal. Nevertheless, this does not involve, imply, or express any guarantee or responsibility on the part of the publishers in respect of any dosage instructions and forms of application stated in the journal. Every user is requested to examine carefully the manufacturers' leaflets accompanying each drug and to check, if necessary in consultation with a physician or specialist, whether the dosage schedules mentioned therein or the contraindications stated by the manufacturers differ from the statements made in the present journal. Such examination is particularly important with drugs that are either rarely used or have been newly released on the market. Every dosage schedule or every form of application used is entirely at the user's own risk and responsibility. The authors and publishers request every user to report to the publishers any discrepancies or inaccuracies noticed.

**Copyright & Ownership**

Unless otherwise stated: © 2023. Thieme. All rights reserved.

The *Journal of Neurological Surgery-Part B* is owned by Thieme, Georg Thieme Verlag KG, Rüdigerstraße 14, 70469 Stuttgart, Germany

This journal, including all individual contributions and illustrations published therein, is legally protected by copyright for the duration of the copyright period. Any use, exploitation or commercialization outside the narrow limits set by copyright legislation, without the publisher's consent, is illegal and liable to criminal prosecution. This applies in particular to photocopy reproduction, copyright, cyclostyling, mimeographing or duplication of any kind, translating, preparation of microfilms, and electronic data processing and storage (CD-Rom, DVD, USB memory stick, databases, cloud-based service, ebook and other forms of electronic publishing) as well as making it available to the public (e.g., internet, intranet or other wired or wireless data networks), in particular by displaying on stationary or mobile visual display units, monitors, smart phones, tablets or other devices by download (e.g., e-pub, PDF, App) or retrieval in any other form.

**Printed in United States**

Typesetting: Thomson Digital, Noida, India

Printer: The Sheridan Press, Hanover, Pennsylvania, United States