Société Royale Belge d'Oto-Rhino-Laryngologie et de Chirurgie Cervico-Faciale
Koninklijke Belgische Vereniging voor Oto-Rhino-Laryngologie, Gelaat- en Halschirurgie

B-ENT

A publication of the Royal Belgian Society for ENT and Head and Neck Surgery

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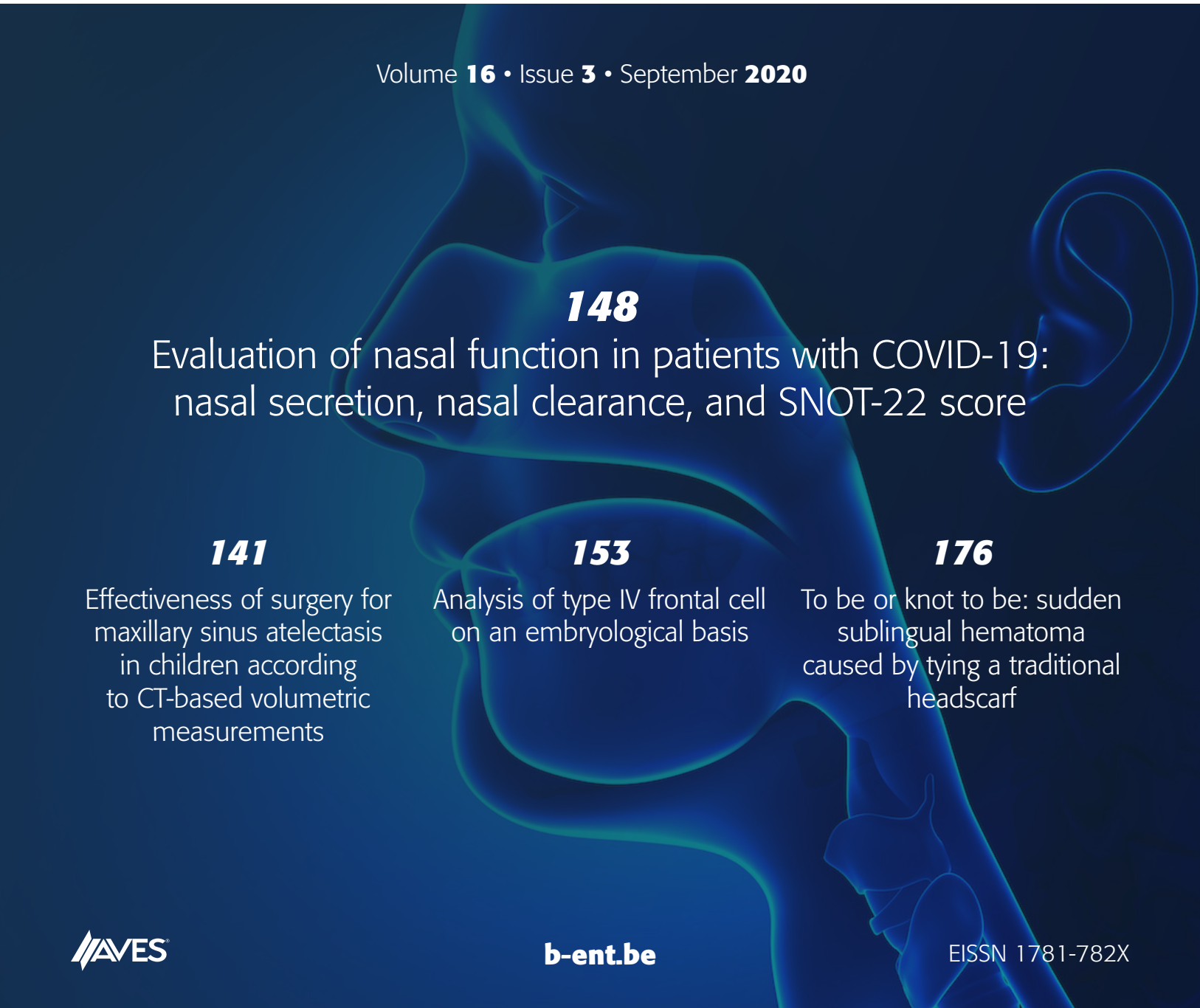

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B-ENT
A publication of the Royal Belgian Society for ENT and Head and Neck Surgery

AIMS AND SCOPE

B-ENT is an international, scientific, open access periodical published in accordance with independent, unbiased, and double-blinded peer-review principles. The journal is the official online-only publication of the Royal Belgian Society of Oto-rhino-laryngology, Head and Neck Surgery and it is published quarterly in March, June, September, and December. The publication language of the journal is English.

Throughout its history, the Royal Belgian Society of Oto-rhino-laryngology, Head and Neck Surgery, the home society of B-ENT, aims to disseminate both the scientific and the clinical knowledge of otorhinolaryngology field primarily in Belgium and its regions. In accordance with this aim, publishing a scientific journal has become the number one objective of the Society. Accordingly, B-ENT contributes to the scientific memory of Belgium considering its deep-rooted history.

The history of B-ENT traces back to 1890s in when the articles of the founders of the Society were published in the Bulletins of the "Société Belge d'Otologie et Laryngologie". In 1929, the title of the journal had been changed to "Journal Belge d'Oto-Rhino-Laryngologie" and in 1932 the title changed to "Bulletin". When the Bulletin stopped publication in the Second World War, a new journal Acta Oto-Rhino-Laryngologica Belgica was created in 1945. The first issue of Acta Oto-Rhino-Laryngologica Belgica is published in 1946 and it started to reach more of the country via university and library subscriptions. After 59 years, B-ENT was created as the continuation of Acta Oto-Rhino-Laryngologica Belgica and it has been continuing publication since 2005.

The aim of B-ENT is to publish original research papers of the highest scientific and clinical value in otorhinolaryngology, head and neck surgery and their related fields. The journal also publishes reviews, rare case report that include a concise review of the literature, protocol papers of innovative clinical trials in the field, clinical pearls, interesting images in ENT-HNS, letters to the editors, and papers presented at the meetings of the Royal Belgian Society of Otorhinolaryngology, Head and Neck Surgery.

The target audience of the journal includes healthcare professionals, physicians, and researchers who are interested or working in otorhinolaryngology, head and neck surgery fields.

B-ENT is currently indexed in Web of Science-Science Citation Index Expanded and Scopus.

The editorial and publication processes of the journal are shaped in accordance with the guidelines of the International Committee of Medical Journal Editors (ICMJE), World Association of Medical Editors (WAME), Council of Science Editors (CSE), Committee on Publication Ethics (COPE), European Association of Science Editors (EASE), and National Information Standards Organization (NISO). The journal is in conformity with the Principles of Transparency and Best Practice in Scholarly Publishing (doaj.org/bestpractice).

Processing and publication are free of charge with the journal. No fees are requested from the authors at any point throughout the evaluation and publication process. All manuscripts must be submitted via the online submission system, which is available at https://www.b-ent.be. The journal guidelines, technical information, and the required forms are available on the journal's web page.

All expenses of the journal are covered by the Royal Belgian Society for ENT and Head and Neck Surgery. Potential advertisers should contact the Editorial Office. Advertisement images are published only upon the Editor-in-Chief's approval.

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INSTRUCTIONS FOR AUTHORS

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Originality, high scientific quality, and citation potential are the most important criteria for a manuscript to be accepted for publication. Manuscripts submitted for evaluation should not have been previously presented or already published in an electronic or printed medium. The journal should be informed of manuscripts that have been submitted to another journal for evaluation and rejected for publication. The submission of previous reviewer reports will expedite the evaluation process. Manuscripts that have been presented in a meeting should be submitted with detailed information on the organization, including the name, date, and location of the organization.

PEER REVIEW PROCESS

Manuscripts submitted to B-ENT will go through a double-blind peer-review process. Each submission will be reviewed by at least two external, independent peer reviewers who are experts in their fields in order to ensure an unbiased evaluation process. The editorial board will invite an external and independent editor to manage the evaluation processes of manuscripts submitted by editors or by the editorial board members of the journal. The Editor in Chief is the final authority in the decision-making process for all submissions.

ETHICAL PROCEDURES

An approval of research protocols by the Ethics Committee in accordance with international agreements (World Medical Association Declaration of Helsinki "Ethical Principles for Medical Research Involving Human Subjects," amended in October 2013, www.wma.net) is required for experimental, clinical, and drug studies and for some case reports. If required, ethics committee reports or an equivalent official document will be requested from the authors. For manuscripts concerning experimental research on humans, a statement should be included that shows that written informed consent of patients and volunteers was obtained following a detailed explanation of the procedures that they may undergo.

For studies carried out on animals, an approval of research protocols by an Animal Ethics Committee in accordance with international principles is required. The authors should also clearly state the measures taken to prevent pain and suffering of the animals in the Methods section.

Information on patient consent, the name of the ethics committee, and the ethics committee approval number should also be stated in the Methods section of the manuscript.

It is the authors' responsibility to protect the patients' anonymity carefully. For photographs that may reveal the identity of the patients, signed releases of the patient or their legal representative should be enclosed, and the publication approval must be provided in the Methods section.

PLAGIARISM

B-ENT is extremely sensitive about plagiarism. All submissions are screened by a similarity detection software (iThenticate by CrossCheck) at any point during the peer-review and/or production process. Even if you are the author of the phrases or sentences, the text should not have unacceptable similarity with the previously published data.

When you are discussing others' (or your own) previous work, please make sure that you cite the material correctly in every instance.

In the event of alleged or suspected research misconduct, e.g., plagiarism, citation manipulation, and data falsification/fabrication, the Editorial Board will follow and act following COPE guidelines.

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Each person listed as an author should fulfill the authorship criteria recommended by the International Committee of Medical Journal Editors (ICMJE - www.icmje.org). The ICMJE recommends that authorship is based on the following four criteria:

1. Substantial contributions to the conception or design of the work; or the acquisition, analysis, or interpretation of data for the work; AND

2. Drafting the work or revising it critically for important intellectual content; AND

3. Final approval of the version to be published; AND

4. Agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

In addition to being accountable for the parts of the work he/she has done, an author should be able to identify which co-authors are responsible for specific other parts of the work. Also, authors should have confidence in the integrity of the contributions of their co-authors.

All those designated as authors should meet all four criteria for authorship, and all who meet the four criteria should be identified as authors. Those who do not meet all four criteria should be acknowledged in the title page of the manuscript.

B-ENT requires corresponding authors to submit a signed and scanned version of the Copyright Agreement and Acknowledgement of Authorship form (available for download https://www.b-ent.be) during the initial submission process to act appropriately on authorship rights and to prevent ghost or honorary authorship.

If the editorial board suspects a case of "gift authorship," the submission will be rejected without further review. As part of the submission of the manuscript, the corresponding author should also send a short statement declaring that he/she accepts to undertake all the responsibility for authorship during the submission and review stages of the manuscript.

ECLARATION OF INTEREST

B-ENT requires and encourages the authors and the individuals involved in the evaluation process of submitted manuscripts to disclose any existing or potential conflicts of interests, including financial, consultant, and institutional, that might lead to potential bias or a conflict of interest. Any financial grants or other support received for a submitted study from individuals or institutions should be disclosed to the Editorial Board. To disclose a potential conflict of interest, the ICMJE Potential Conflict of Interest Disclosure Form should be filled in and submitted by all contributing authors. The journal's Editorial Board resolves cases of a potential conflict of interest of the editors, authors, or reviewers within the scope of COPE and ICMJE guidelines.

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MANUSCRIPT PREPARATION

The manuscripts should be prepared in accordance with ICMJE-Recommendations for the Conduct, Reporting, Editing, and Publication of Scholarly Work in Medical Journals (updated in December 2018 - http://www.icmje.org/icmje-recommendations.pdf). Authors are required to prepare manuscripts in accordance with the CONSORT guidelines for randomized research studies, STROBE guidelines for observational original research studies, STARD guidelines for studies on diagnostic accuracy, PRISMA guidelines for systematic reviews and meta-analysis, ARRIVE guidelines for experimental animal studies, and TREND guidelines for non-randomized public behavior.

Manuscripts can only be submitted through the journal's online manuscript submission and evaluation system, available at https://www.b-ent.be. Manuscripts submitted via any other medium and submissions by anyone other than one of the authors will not be evaluated.

Manuscripts submitted to the journal will first go through a technical evaluation process where the editorial office staff will ensure that the manuscript has been prepared and submitted in accordance with the journal's guidelines. Submissions that do not conform to the journal's guidelines will be returned to the submitting author with technical correction requests.

Authors are required to submit the following:

- Copyright Agreement and Acknowledgement of Authorship Form, and
- CMJE Potential Conflict of Interest Disclosure Form (should be filled in by all contributing authors) during the initial submission. These forms are available for download at https://www.b-ent.be.

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Preparation of the Manuscript

Title page: A separate title page should be submitted with all submissions and this page should include:

- The full title of the manuscript as well as a short title (running head) of no more than 50 characters,
- Name(s), affiliations, highest academic degree(s), and ORCID IDs of the author(s),
- Grant information and detailed information on the other sources of support,
- Name, address, telephone (including the mobile phone number), and email address of the corresponding author,
- Acknowledgment of the individuals who contributed to the preparation of the manuscript but who do not fulfill the authorship criteria.

Abstract: An abstract should be submitted with all submissions except for Letters to the Editor. The abstract of Original Articles should be structured with subheadings (Objective, Methods, Results and Conclusion). Please check Table 1 below for word count specifications.

Keywords: Each submission must be accompanied by a minimum of three to a maximum of five keywords for subject indexing at the end of the abstract. The keywords should be listed in full without abbreviations. The keywords should be selected from the National Library of Medicine, Medical Subject Headings database (https://www.nlm.nih.gov/mesh/MBrowser.html).

Main Points: All submissions except letters to the editor should be accompanied by 3 to 5 "main points" which should emphasize the most noteworthy results of the study and underline the principle message that is addressed to the reader. This section should be structured as itemized to give a general overview of the article. Since "Main Points" targeting the experts and specialists of the field, each item should be written as plain and straightforward as possible

Manuscript Types

Original Articles: This is the most important type of article since it provides new information based on original research. Acceptance of original papers will be based upon the originality and importance of the investigation. The main text of original articles should be structured with Introduction, Methods, Results, and Discussion subheadings. Please check Table 1 for the limitations for Original Articles.

Clinical Trials

B-ENT adopts the ICMJE's clinical trial registration policy, which requires that clinical trials must be registered in a publicly accessible registry that is a primary register of the WHO International Trials Registry Platform (ICTRP) or in ClinicalTrials.gov.

Instructions for the clinical trials are listed below.

- Clinical trial registry is only required for the prospective research projects that study the relationship between a health-related intervention and an outcome by assigning people.
- To have their manuscript evaluated in the journal, author should register their research to a public registry at or before the time of first patient enrollment.
- Based on most up to date ICMJE recommendations, B-ENT accepts public registries that include minimum acceptable 24-item trial registration dataset.
- Authors are required to state a data sharing plan for the clinical trial registration. Please see details under "Data Sharing" section.
- For further details, please check ICMJE Clinical Trial Policy at
- http://www.icmje.org/recommendations/browse/publishing-and-editorial-issues/clinical-trial-registration.html

Data Sharing

As of 1 January 2019, a data sharing statement is required for the registration of clinical trials. Authors are required to provide a data sharing statement for the articles that reports the results of a clinical trial. The data sharing statement should indicate the items below according to the ICMJE data sharing policy:

- Whether individual deidentified participant data will be shared
- What data in particular will be shared
- Whether additional, related documents will be available
- When the data will be available and for how long
- By what access criteria will be shared

Authors are recommended to check the ICMJE data sharing examples at http://www.icmje.org/recommendations/browse/publishing-and-editorial-issues/clinical-trial-registration.html

While submitting a clinical trial to B-ENT;

- Authors are required to make registration to a publicly accessible registry according to ICMJE recommendations and the instructions above.
- The name of the registry and the registration number should be provided in the Title Page during the initial submission.
- Data sharing statement should also be stated in the Title Page even the authors do not plan to share it.

Statistical analysis to support conclusions is usually necessary. Statistical analyses must be conducted in accordance with international statistical reporting standards (Altman DG, Gore SM, Gardner MJ, Pocock SJ. Statistical guidelines for contributors to medical journals. Br Med J 1983: 7; 1489-93). Information on statistical analyses should

be provided with a separate subheading under the Materials and Methods section and the statistical software that was used during the process must be specified.

Units should be prepared in accordance with the International System of Units (SI).

Editorial Comments: Invited brief editorial comments on selected articles are published in B-ENT. Editorials should not be longer than 1000 words excluding references. Editorial comments aim to provide a brief critical commentary by reviewers with expertise or with high reputation in the topic of the research article published in the journal. Authors are selected and invited by the journal to provide such comments. Abstract, Keywords, and Tables, Figures, Images, and other media are not included.

Review Articles: Reviews prepared by authors who have extensive knowledge on a particular field and whose scientific background has been translated into a high volume of publications with a high citation potential are welcomed. These authors may even be invited by the journal. Reviews should describe, discuss, and evaluate the current level of knowledge of a topic in clinical practice and should guide future studies. The subheadings of the review articles should be planned by the authors. However, each review article should include an "Introduction" and a "Conclusion" section. Please check Table 1 for the limitations for Review Articles.

Case Reports: Case reports can only be considered under the conditions of being really exceptional and containing clinical, diagnostic and/or therapeutic elements of highest importance and relevance.. The text should include Introduction, Case Presentation, and Discussion subheadings with an unstructured abstract. Please check Table 1 for the limitations for Case Reports.

Letters to the Editor: This type of manuscript discusses important parts, overlooked aspects, or lacking parts of a previously published article. Articles on subjects within the scope of the journal that might attract the readers' attention, particularly educative cases, may also be submitted in the form of a "Letter to the Editor." Readers can also present their comments on the published manuscripts in the form of a "Letter to the Editor." Abstract, Keywords, and Tables, Figures, Images, and other media should not be included. The text should be unstructured. The manuscript that is being commented on must be properly cited within this manuscript.

Tables
Tables should be included in the main document, presented after the reference list, and they should be numbered consecutively in the order they are referred to within the main text. A descriptive title must be placed above the tables. Abbreviations used in the tables should be defined below the tables by footnotes (even if they are defined within the main text). Tables should be created using the "insert table" command of the word processing software and they should be arranged clearly to provide easy reading. Data presented in the tables should not be a repetition of the data presented within the main text but should be supporting the main text.

Figures and Figure Legends
Figures, graphics, and photographs should be submitted as separate files (in TIFF or JPEG format) through the submission system. The files should not be embedded in a Word document or the main document. When there are figure subunits, the subunits should not be merged to form a single image. Each subunit should be submitted separately through the submission system. Images should not be labeled (a, b, c, etc.) to indicate figure subunits. Thick and thin arrows, arrowheads, stars, asterisks, and similar marks can be used on the images to support figure legends. Like the rest of the submission, the figures too should be blind. Any information within the images that may indicate an individual or institution should be blinded. The minimum resolution of each submitted figure should be 300 DPI. To prevent delays in the evaluation process, all submitted figures should be clear in resolution and large in size (minimum dimensions: 100 × 100 mm). Figure legends should be listed at the end of the main document.

All acronyms and abbreviations used in the manuscript should be defined at first use, both in the abstract and in the main text. The abbreviation should be provided in parentheses following the definition.

When a drug, product, hardware, or software program is mentioned within the main text, product information, including the name of the product, the producer of the product, and city and the country of the company (including the state if in USA), should be provided in parentheses in the following format: "Discovery St PET/CT scanner (General Electric, Milwaukee, WI, USA)"

Table 1. Limitations for each manuscript type

Type of manuscript	Word limit	Abstract word limit	Reference limit	Table limit	Figure limit
Original Article	4000	250 (Structured)	35	6	5 or total of 10 images
Review Article	5000	250	50	6	10 or total of 15 images
Case Report	1200	200	15	No tables	4 or total of 8 images
Letter to the Editor	400	No abstract	5	No tables	No media

All references, tables, and figures should be referred to within the main text, and they should be numbered consecutively in the order they are referred to within the main text.

Limitations, drawbacks, and the shortcomings of original articles should be mentioned in the Discussion section before the conclusion paragraph.

References
Both in-text citations and the references must be prepared according to the Vancouver style.

While citing publications, preference should be given to the latest, most up-to-date publications. Authors are responsible for the accuracy of references. If an ahead-of-print publication is cited, the DOI number should be provided. Journal titles should be abbreviated in accordance with the journal abbreviations in Index Medicus/MEDLINE/PubMed. When there are six or fewer authors, all authors should be listed. If there are seven or more authors, the first three authors should be listed followed by "et al." In the main text of the manuscript, references should be cited using Arabic numbers in parentheses. The reference styles for different types of publications are presented in the following examples.

Journal Article: Vanmaele H, De Brouwer J, Borgers G, Germonpre P, Watelet JB. Profiling acute acoustic trauma in Belgian defense forces. B-ENT 2019; 15: 247-55.

Book Section: Suh KN, Keystone JS. Malaria and babesiosis. Gorbach SL, Barlett JG, Blacklow NR, editors. Infectious Diseases. Philadelphia: Lippincott Williams; 2004.p.2290-308.

Books with a Single Author: Sweetman SC. Martindale the complete drug reference. 34th ed. London: Pharmaceutical Press; 2005.

Editor(s) as Author: Huizing EH, de Groot JAM, editors. Functional reconstructive nasal surgery. Stuttgart-New York: Thieme; 2003.

Conference Proceedings: Bengisson S. Sothemin BG. Enforcement of data protection, privacy and security in medical informatics. In: Lun KC, Degoulet P, Piemme TE, Rienhoff O, editors. MEDINFO 92.

Proceedings of the 7th World Congress on Medical Informatics; 1992 Sept 6-10; Geneva, Switzerland. Amsterdam: North-Holland; 1992. pp.1561-5.

Scientific or Technical Report: Cusick M, Chew EY, Hoogwerf B, Agrón E, Wu L, Lindley A, et al. Early Treatment Diabetic Retinopathy Study Research Group. Risk factors for renal replacement therapy in the Early Treatment Diabetic Retinopathy Study (ETDRS), Early Treatment Diabetic Retinopathy Study Kidney Int: 2004. Report No: 26.

Theses/Dissertation: Kay JG. Intracellular cytokine trafficking and phagocytosis in macrophages [dissertation]. St Lucia, Qld: University of Queensland; 2007.

Epub Ahead of Print Articles: Cai L, Yeh BM, Westphalen AC, Roberts JP, Wang ZJ. Adult living donor liver imaging. Diagn Interv Radiol. 2016 Feb 24. doi: 10.5152/dir.2016.15323. [Epub ahead of print].

Manuscripts Published in Electronic Format: Morse SS. Factors in the emergence of infectious diseases. Emerg Infect Dis (serial online) 1995 Jan-Mar (cited 1996 June 5): 1(1): (24 screens). Available from: URL: http:/ www.cdc.gov/ncidodlElD/cid.htm.

REVISIONS
When submitting a revised version of a paper, the author must submit a detailed "Response to the reviewers" that states point by point how each issue raised by the reviewers has been covered and where it can be found (each reviewer's comment, followed by the author's reply and line numbers where the changes have been made) as well as an annotated copy of the main document. Revised manuscripts must be submitted within 30 days from the date of the decision letter. If the revised version of the manuscript is not submitted within the allocated time, the revision option may be canceled. If the submitting author(s) believe that additional time is required, they should request this extension before the initial 30-day period is over.

Accepted manuscripts are copy-edited for grammar, punctuation, and format. Once the publication process of a manuscript is completed, it is published online on the journal's webpage as an ahead-of-print publication before it is included in its scheduled issue. A PDF proof of the accepted manuscript is sent to the corresponding author and their publication approval is requested within 2 days of their receipt of the proof.

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EDITORIAL

Dear colleagues,

The year 2020 went away and makes room for 2021.

2020 was a difficult year mainly due to the impact of the pandemic.

The pandemic is still a major health problem with significant impact on our social functioning, our productivity and our mental health.

Some of us were severely affected by the virus. Others were at the first line to treat a great number of patients in great difficulty where others suffered to be confined, to see their wages reduced dramatically because of the absence of the consultations or surgeries.

The year 2021 appears as a promising new year.

We have a lot of expectations concerning the results of the vaccine. We hope that a great part of the population will accept to be vaccinated in order to obtain a global immunization of the population. However, vaccination is not the end of our problems.

We will continue to wear the masks, to respect the social distancing, to wash our hands regularly and we are still likely to transmit the virus if we are infected.

But the life will change and could be different with a slow return to a normal one.

So, we can have positive thinking. This COVID-19 period has not only devastating effects. It can give us the opportunity to have more free time, to do more at home, to do more sport outside, to read to study... We must promote spontaneity, exchanges, favouriting the protection of the nature, free time, and relationship.

We must remain optimistic and creative to find new ways of life, to change our behaviours and to discover the value of the proximity, spontaneity, friendship, and empathy to the others.

With this editorial Olivier and I want to give you positive energy to realize a lot of your projects for this upcoming new year.

Alone we are alone and isolated. Together we will be stronger to build a more human society.

Philippe Eloy, MD, PhD
CHU UCL Namur
Editor-in-Chief B-ENT

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EDITORIAL II

ENDONASAL SURGERY OF THE MAXILLARY SINUS, WHAT CAN WE DO?

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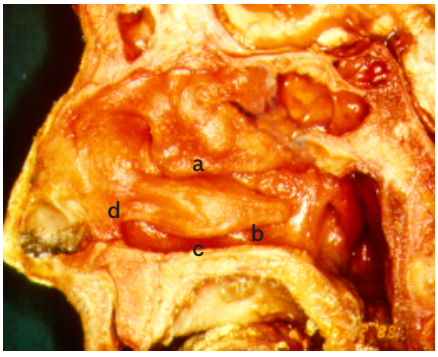

- The maxillary sinus is an air-filled cavity embedded in the maxillary bone.
- It is connected to the nasal cavity by an opening: the main maxillary ostium allowing aeration and drainage of the air and secretions.
- There are 4 walls: the anterolateral one, from the anterior nasal spine to the zygomatic process, the posterolateral one, the roof of the maxillary sinus, in connection with the orbital floor and the medial wall in continuity with the palatine bone.
- The maxillary sinus has also 4 processes: the frontal process of the maxilla attached to the frontal bone medially, the zygomatic process attached to the zygoma laterally, the palatine bone with a vertical plate and a horizontal plate (2/3 of the hard palate) and the alveolar process with 8 teeth on each side.
- The surgery of the maxillary sinus was performed in the past according to the Caldwell and Luc technique. This was a radical surgery necessitating a sublabial approach, a trephine of the anterior wall of the maxillary sinus, a complete extirpation of the mucosa and an inferior antrostomy.

This procedure was performed a million of time by our veterans in case of maxillary sinusitis. However this procedure was not without sequel such as numbness of the cheek, hypoesthesia of the teeth and a risk of a development of mucocele many years later.

- With the development of the rigid telescopes endonasal approaches were described. These approaches allowed to do a more conservative procedure , for the majority of them, with less morbidity and quicker rehabilitation.

We can cite 4 procedures: the middle meatal antrostomy, the inferior meatal antrostomy, the prelacrimal approach and the medial maxillectomy.

The middle meatal antrostomy

This procedure results of the development of the nasal endoscopy and a more precise knowledge of the physiology of the paranasal sinus cavities.

- Actually, we know that 90% of persistent or chronic sinusitis of the maxillary sinus are associated to an obstruction of the main ostium. All the secretions converge to this ostium. The middle meatal antrostomy is defined as a widening (plasty) of the natural (main) ostium of the maxillary sinus. This procedure improves the ventilation and drainage of the maxillary sinus.
- The procedure can be done under local anaesthesia or a general anaesthesia.
- The meatotomy can be small (1cm of diameter) or very large. The limits are then anteriorly the lacrimal pathway, inferiorly the inferior turbinate, posteriorly the palatine bone and superiorly the bulla ethmoidalis.
- The procedure can be performed as a functional surgery in case of a rhinogenic maxillary sinusitis or as a gateway to the maxillary sinus in case of foreign body, fungus ball or antrochoanal polyp.
- We can do the antrostomy from forward to backward or reversely with the back-biting forceps; we can also use the microdebrider to get more precise limits.

This procedure has very few complications if performed accurately; potential complications include stenosis of the neo-ostium, epistaxis due to a laceration of a branch of the sphenopalatine artery or stenosis of the lacrimal duct.

The Inferior Meatal antrostomy

This procedure was very popular at the beginning of the era of the endonasal endoscopic surgery. Indeed it was easy to do it with the headlight or with the microscope. It was also very popular when we did the Caldwell Luc procedure as the latter required an inferior opening into the nose. This procedure is less common nowadays but the procedure allows ventilation of the maxillary sinus but not its drainage. All the secretions still converge towards the natural ostium.

However, some authors continue to recommend to do it in order to make possible suction of the maxillary secretion or to check the maxillary cavity after removal of an antrochoanal polyp, fungus ball, allergic mucin or foreign body.

One pitfall is the stenosis of the Hasner valve with consequent epiphora.

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The prelacrimal approach

The prelacrimal approach was more recently described.

This approach gives an optimal access to the maxillary sinus, the anterior wall of the maxillary sinus and then on the prelacrimal recess.

This recess is not accessible via an inferior or a middle antrostomy and is frequently the cause of recurrence in case of antrochoanal implanted on the anterior wall of in case of massive fungus ball.

This approach is applicable in the teenagers and adults.

It avoids the hypoesthesia of the check associated to the Caldwell Luc procedure and has no impact of the growth of the skeleton in children. It has 4 major indications:

The fungus ball of the maxillary sinus which cannot be completely resected via a middle or inferior antrostomy. A second is the recurrence of the antrochoanal polyp implanted on the anterior wall of the maxillary sinus. The third is the resection of an odontogenic cyst. The fourth is the resection of an inverted papilloma which cannot be resected completely with another approach.

The procedure starts with an incision of the nasal mucosa in front of the head of the inferior turbinate followed by a partial resection of the bony lamella of the turbinate in order to widen the access. An osteotomy is then performed just behind the process of the maxilla. The dissection must be done subperiosteally and medialize the Hasner valve. All the intersinus wall can be resected. At the end a stich fixes in a right position the head of the inferior turbinate.

The medial maxillectomy

This is the more radical surgery we can perform endonasally; It consists of a resection of all the intersinus wall;

The procedure is indicated for resection of tumor such as an inverted papilloma, or to get access to the infratemporal fossa in case of juvenile angiofibroma.

The procedure is standardized and comprises different steps;

A dacryocystorhinostomy as the lacrimal pathway will be sacrificed at the end of the procedure.

A debulking of the middle meatus with a middle antrostomy to resect a significant part of the tumour.

A ligation of the sphenopalatine artery to decrease the risk of bleeding during the next steps of the surgery.

A total inferior turbinectomy.

Lastly osteotomies allowing the resection of the intersinunasal wall.

Therefore the surgical limits are anteriorly the anterior wall of the maxillary sinus, the ethmoid superiorly, the floor of the nasal cavity inferiorly and posteriorly the palatine ball.

During the early postoperative period the patient presents with a lot of crust; After a few months this decreases dramatically.

Conclusion

This is an overview of the procedures we can do endonasally with an endoscopic guidance and dedicate to the maxillary sinus.
These approaches can be associated one to the other.

These approaches are recognized to be associated with less morbidity compared to the procedure performed before the era of the endonasal endoscopic surgery.