Skull base section

March 25th 2020.

Dear colleagues,

We are all currently facing the COVID-19 pandemic, a worldwide major sanitary crisis. Some of us are more exposed and impacted in their practice and personal life: these colleagues are in our thoughts and we express our full support to them.

The EANS Skull-base Section Board would like to warn you about the risks that neurosurgeons are currently facing in their practice. We are drastically reducing our elective surgeries, but we could be exposed to the COVID-19 during emergency procedures. In particular, a **higher risk of virus transmission could be present during trans-sphenoidal approaches.** In this regard, some important recommendations were recently broadcasted in the surgical community and are available by following the links on the next page.

Before this crisis has reached our countries, the new EANS Skull-base Section Board was working on a quarterly newsletter. In particular, Dr Abeillon and her colleagues from Lyon, France discussed the **role of the Neurosurgeon in the management of Graves' orbitopathy** whereas Dr idoya Zazpe from Pamplona, Spain, provided interesting **highlights from the 30th Annual Meeting of the North American Skull Base Society (NASBS)** hold in San Antonio, Texas during last February.

Despite the activities of the Board have been obviously slowed down, we keep on working and you will find these and other reports in the upcoming newsletter which will be released in the near future. The EANS Skull-base Section Board is developing many other new activities, such as establishing online case discussions and webinars, publishing consensus papers, organizing hand-on courses and setting up an European collaboration network for adult craniopharyngiomas. You will be informed on due time.

More than ever, stay safe and brave.

Michaël Bruneau
EANS Skull base section chair

PRECAUTIONS FOR ENDOSCOPIC TRANSNASAL SKULL BASE SURGERY DURING THE COVID-19 PANDEMIC

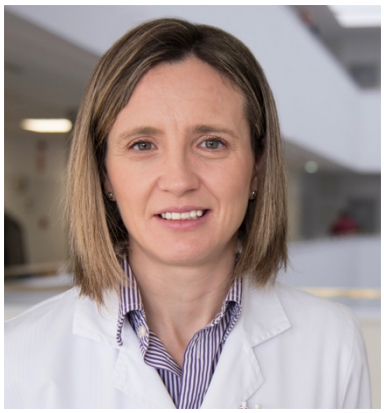
https://www.entnet.org/sites/default/files/uploads/AboutUs/_files/covid-19_endosb_lettertoeditor_neurosurgery.pdf

https://www.enttoday.org/article/otolaryngologists-may-contract-covid-19-during-surgery/

COVID-19 INFORMATIONS

https://www.aans.org/COVID-19-Update/COVID-19-Information-Hub

https://www.cns.org/covid-19



The **30th Annual Meeting of the North American Skull Base Society (NASBS)** was held at La Cantera Resort in San Antonio (Texas) during February 7-9.

The meeting theme was **"Rapid Evolution in the Healthcare Ecosystem: Becoming Frontiers"**. As described by Dr. Ricardo Carrau, current NASBS President, brought the opportunity to discuss technological, societal and economic changes affecting the way we deliver care to our patients and how our frontier horizon changes faster than our ability to adapt to these changes.

Program Co-Chairs were Drs. Daniel M. Prevedello and Adam Zanation and the Meeting included keynote lectures, live dissections (Rhoton room), 3D anatomical reviews, round tables, expert debates, video sessions, poster exhibition and proffered paper sessions.

There was a Pre-Meeting Hands-On Dissection Course (February 5-6) chaired by Paul Gardner and Dr. Arturo Solares. It was designed to cover modern "minimally invasive" corridors for multi-specialty access to skull base lesions, including endoscopic endonasal, transorbital and endoscopic otological approaches.

Furthermore, the program included special day symposiums: The Acoustic Neuroma Education Day which provided a comprehensive review of the state of the art in acoustic neuroma biology, treatment and patient outcomes and The Orbit as a Surgical Corridor and Target.

During the General Sessions, there took place honored speakers lectures, data review about NASBS magazine "Skull Base" and the delivery of four Travel scholarships.
A station for hands-on training for the endoscopic control of an internal carotid artery injury on a cadaveric model was also available during the meeting.

As attendant I was surprised for the growing preponderance of the transorbital approaches, which are not yet so common in practice in my case. Some of the most valuable sessions were the Rhoton Room live dissections in which different approaches were carried out by one or two surgical teams. After a 3D anatomy review focused on each specific approach, the surgeons performed the dissection while step by step explaining how-to-do-it and their tips and pearls.
I also found very useful and practical the competitions organized among different hospitals skull base multidisciplinary teams. The same clinical case was previously delivered to the teams and each one had to argument a given approach (not necessarily their choice) in basis of literature data. For example, a case of craniopharyngioma was exposed and one team had to defend the transcranial approach while the other did the same about transcranial. At the

end, audience voted for the best argumentation. This debate team competition was carried out in a tone of humor that turned out really refreshing.

In summary, this 3-day meeting covered a full update in skull base pathology from a very practical point of view in a relaxed and familiar atmosphere.


Romain Manet Emmanuel Jouanneau

Lyon, France

What is the role of the Neurosurgeon in the management of Graves' orbitopathy ?

Juliette ABEILLON - DU PAYRAT[1, 2], Kim THIA SOUI TCHONG[2, 3], Caroline TILIKETE[3], Françoise BORSON-CHAZOT[1], Emmanuel JOUANNEAU[4], Romain MANET[4]

1 Department of Endocrinology, Hôpital L. Pradel, Lyon University Hospital, FRANCE
2 Lyon EUGOGO expert center
3 Department of Neuro-ophthalmology, Hôpital Neurologique P. Wertheimer, Lyon University Hospital, FRANCE
4 Department of Neurosurgery B, skull base unit, Hôpital Neurologique P. Wertheimer, Lyon University Hospital, FRANCE

Graves' orbitopathy (GO) is the main extrathyroidal manifestation of Graves' disease. One third of patients with Graves' disease have overt clinical GO, occurring in 70% of cases before or simultaneously with Graves' hyperthyroidism. 5% of thyroid-associated ophthalmopathy occurs in patients without Grave's disease [1].

GO is thought to result from an interplay of genetic and environmental factors that is presently unclear. Its pathophysiology is believed to originate from an activation of T cells that recognize antigenic epitopes (TSHr and IGF1r) shared by tissues contained in the orbital space, resulting in an inflammatory infiltration of orbital tissue and production of cytokines (Interferon, IL1, TNNFB, TGFB) which promotes I) proliferation of fibroblasts, II) adipogenesis through differentiation of preadipocyte fibroblasts into adipocytes and III) an increased production of glycosaminoglycans. This results in enlargement of muscles and expansion of orbital fat.

The mismatch between the orbital container and orbital contents leads to the development of clinical manifestations including exophthalmos, lid retraction, conjunctival inflammation, and extra-ocular muscle dysfunction. Very severe forms are rare (4-8% of GO)

but are sight-threatening including severe corneal issues such as corneal breakdown and dysthyroid optic neuropathy (DON).

The natural history of Graves' disease has been described according to Rundle's curve: an initial active inflammatory phase, followed by a plateau phase, and ending with a spontaneous resolution phase resulting in an inactive sequelae phase [2].

DON results from the compression of the optic nerve by the enlarged oculomotor muscles and/or fat tissue inflammation at the orbital apex, or from stretching of the optic nerve because of severe exophthalmos. The diagnosis is made in a patient with impaired visual acuity and/or impaired visual field, dyschromatopsia (early warning sign), papilledema, or afferent pupillary defects.

There has been no consensus on management of GO for a long time, due to the scarcity of clinical data. To improve treatment and quality of life of patients with GO, and to define consensus guidelines through standardised assessment, education and collaborative research, a EUropean Group on Grave's Orbitopathy (EUGOGO: www.eugogo.eu) was founded in 1999, bringing together expert clinicians and scientists from 9 European expert centers.

Guidelines recommend that patients with GO should be referred to multidisciplinary expert centers (except for the mildest cases). Their management should be based on the EUGOGO guidelines, which were up-dated in 2016 [3] (see Fig.1). All patients should be managed incorporating control of risk factors for progression (smoking and thyroid dysfunction), and with local measures (artificial tears, ointments and dark glasses). Additional treatment depends on the assessment of the activity and severity of GO and its impact on the patient's quality of life. In mild GO, a watchful strategy is usually proposed, as the natural history of Graves' disease generally leads to a spontaneous improvement. A 6 months course of antioxidant treatment using selenium has demonstrated an improvement in mild manifestations and efficiency in preventing progression to more severe forms [4]. Moderate-to-severe and active GO remain the most challenging conditions. In these cases, intravenous high-dose glucocorticoids (IV-GCs) are proposed as first line therapy [5]. In case of failure, possible second tier therapies include radiotherapy, and immunomodulatory treatments, such as rituximab or cyclosporine. Novel immunomodulatory treatments have recently emerged, such as Teprotumumab and Tocilizumab, and these have shown promising results.

Surgical management of GO is indicated in two different situations:

- As a *rescue treatment in severe active GO.* The most frequent indication is DON that is unresponsive to high dose IV-GCs. As visual function can be quickly compromised, appropriate and rapid management of DON must be achieved. High dose IV-GCs has been reported to permanently restore visual function in about 40% of patients who were thus spared from surgical decompression [6]. The EUGOGO protocol for management of DON was based on a single available RCT [7] that compared, in a small population (n=15), the results of surgery (n=6) vs intensive intravenous glucocorticoids (IV-GCs; n=9). This study showed a slight

superiority of IV-GCs over surgery in the management of DON. Therefore, surgery (apical decompression) should be proposed in the case of IV-GCs failure (> 60% of the cases). However, to date, no data can exclude the absence of a negative impact of delayed surgical management in cases of rapidly evolving DON. Endoscopic endonasal decompression of the orbital apex is particularly efficient in DON, improving visual function in about 70% of cases [8]. Severe corneal exposure related to exophthalmos, complicated with corneal breakdown, may also require prompt surgical decompression.

- As a *rehabilitative treatment in moderate-to-severe and inactive GO,* with the aim of reducing exophthalmos, decreasing intraocular tension and relieving pain. As exophthalmos is a direct consequence of inflammation of the orbital tissues, surgical orbital decompression must not be performed during active GO in the absence of sight-threatening conditions, and should be considered only in the case of persistent exophthalmos after the end of the inflammatory phase. Two RCTs [9, 10], involving small patient cohorts, compared different surgical techniques in rehabilitative decompressive surgery. The results suggested that the efficiency of decompression is proportional to the extent of bony removal. All other data are based on retrospective studies that included many biases. Overall, orbital decompression should involve at least 2 walls; it then provides approximately 5-6mm reduction of exophthalmos.

The reported rate of complications after surgical orbital decompression in GO ranges from 0 to 20%. The most common complication is new on-set or worsened diplopia (up to 20%). Other reported complications depend on the surgical technique employed, and include facial paraesthesia, entropion, CSF leak, conjunctivitis, and chronic sinusitis. No deaths have been reported.

Overall, surgical management of GO is still reliant on weak evidence [11]. Further studies are therefore needed to provide more robust data and to clarify the optimal timing and techniques of orbital decompression that should be proposed.

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Figure 1: Management of GO according to EUGOGO guidelines [3]
* 2nd tier therapy: radiotherapy, rituximab, cyclosporin