VOCAL ASSESSMENT :
WHAT WE CAN MEASURE, WHAT WE REALLY NEED

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Since the 1980s, numerous publications in the scientific literature have focused on measures of patient's voice through questionnaires, more or less standardized perceptual measures, various acoustic measurements, and aerodynamic measurements. Several attempts have been made to combine different measures and several consensus meetings have been held without reaching a real consensus between researchers and clinicians. These include the consensus meeting organized by Ingo Titze in Denver in 1995 (1) and the ELS basic protocol : in 2000, Ph Dejonckere on behalf of the Committee on Phoniatrics of the European Laryngological Society, presented a "basic" protocol recommending the combined use of acoustic (GRBAS-I scale) and aerodynamic perturbation measures (Maximum Phonatory Time, Oral Airflow) (2). But the clinical use of all these indicators remains uncertain and very few publications are based on this protocol.

We therefore decided to reconsider the question and to evaluate the possibilities of proposing an update of this guideline in 2017. It is clear that the complexity of the problem will prevent us from achieving a consensus based on evidence and we will limit ourselves to proposing a kind of framework in which future clinical research could be carried out. Firstly we decided to refocus our work on the simplest pathophysiological model, which is that of unilateral laryngeal immobilizations (UVFP) outside a neurological context. In the case of UVFP, dysphonia is most often related mainly to glottal geometry with an audible air leak and its acoustic consequences. On the other hand the surgical treatment options in particular have the only objective of reducing this glottal leakage on the basis of a fairly simple model (medialization). Thus vocal assessment of patients pre / post medialization surgery could be beneficial of a potential common protocol.

This session will present the main difficulties encountered when considering the construction of a protocol of measures.

In particular the question of the perceptual analysis of the voice as Gold Standard will be questioned. Indeed, numerous studies have shown intra intra-individual variability as well as the complexity of detailed analytical judgments of dysphonia (Breathiness, Roughness). It seems that the notion of Global (G) rank is a confounding factor since the same grade can be affected by listeners for very different voices in terms of breathiness or Roughness. On the other hand, the question of the comparison of acoustic, aerodynamic and self-evaluation measurements with perceptual analysis will also be questioned. On the contrary, it seems to us that the dimensions explored by the different measures are relatively independent and that the differences make it possible to better interpret the case of the patient. For example, the questionnaires explore the disability felt by the patient and it is normal that the correlation with the judgment of outside professionals is relatively low. This weakness is actually useful information ! The same applies to objective measures which, if the methodology is correct, give different but useful information. For example, aerodynamic measurements give indirect but precise information on the geometry of the glottis during phonation. The fact that the noise produced by this leak is different from one patient to another gives information on the management of the voice by the patient, which is also useful in terms of assessment.

Antoine Giovanni will chair the session

Lise Crevier.Buchman will come back on Videolaryngostroboscopy to indicate which elements can be interesting in assessment as VLS in terms of biomechanics and glottic function
Joana Révis will present the Speech Therapist point of view about the correlations between perceptual analysis, questionnaires and objective measurements
Gauthier Desuter will present the results of a survey among surgeons concerning the measurement considered as useful and will give his opinion on what a surgeon really need
John Rubin & Berit Schneider-Sticker will give an overview on acoustic measurements, techniques, comprehensivity and reliability
Alexia Mattei will present true clinical cases and the results of analyzes performed by the labs of the panelists concerning a common set of voice samples (perceptual analysis, acoustics)

Then a discussion with the audience will be open about the revisited ELS protocol focused on what surgeons and speech therapists really need as simply to assess and compare results of surgeries or speech therapies. According to the Desuter's survey among surgeons and the results of a preliminary study on our data base, the basic protocol could be a shortened version of the ELS protocol and probably include at least
- Analysis of the patient complaint with the VHI
- Max Phonatory Time
- Perceptual judgement of the quality of the voice (on the basis of the recording of a sample of the voice)
- And optionally when available
  - An aerodynamic measurement such as oral airflow
  - An acoustic analysis based upon a spectrogram and or SNR (with caution)

Ref
(1) Titze IR. Workshop on Acoustic Voice Analysis ; Summary Statement. 1995. National Center for Voice and Speech (Denver, USA) 36p
(2) Dejonckere P, Bradley P, Clemente P, Cornut G, Crevier-Buchman L, Friedrich G, Van de Heyning P, Remacle M, Woisard V. A basic protocol for functional assessment of voice pathology. Eur Arch Otorhinolaryngol 2001, 258 : 77-82