



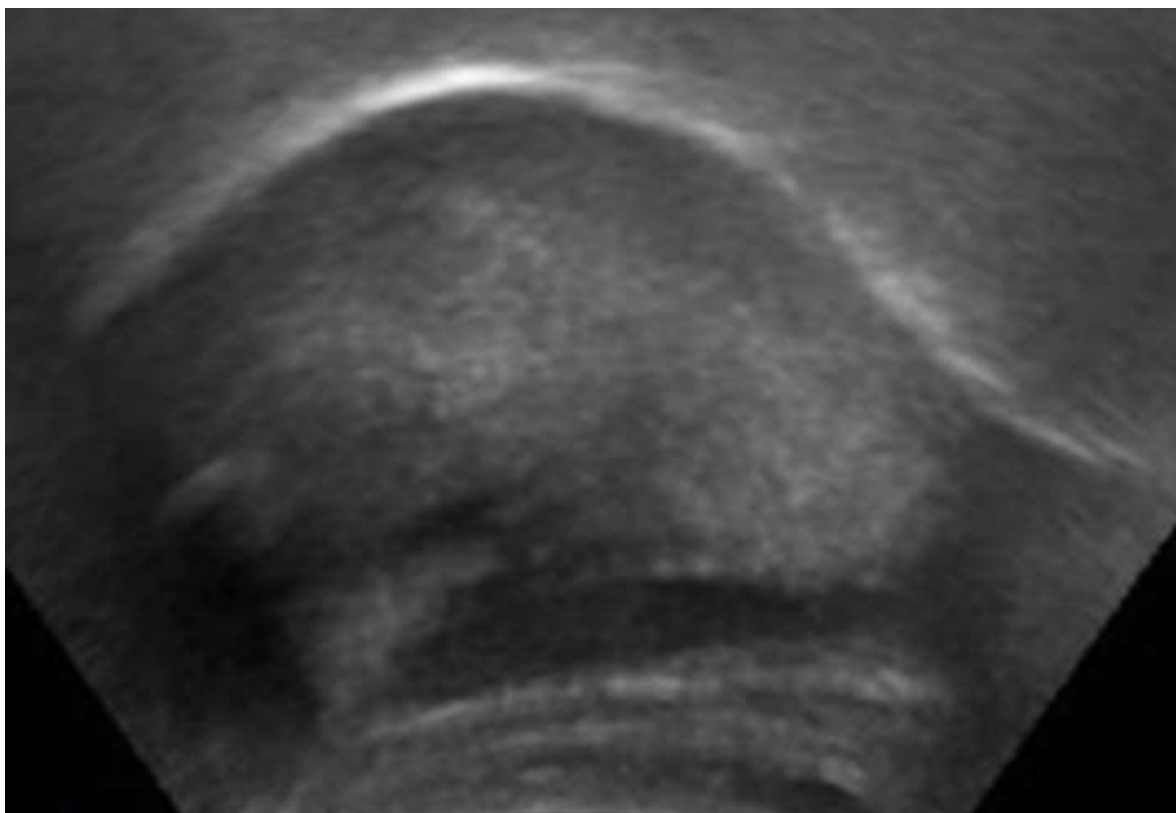
Atelier échographie

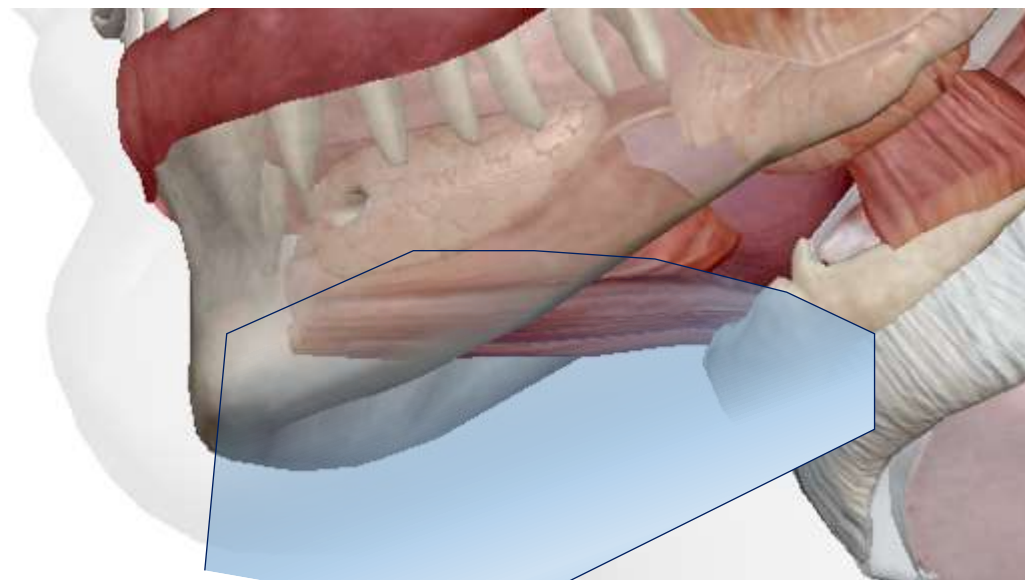
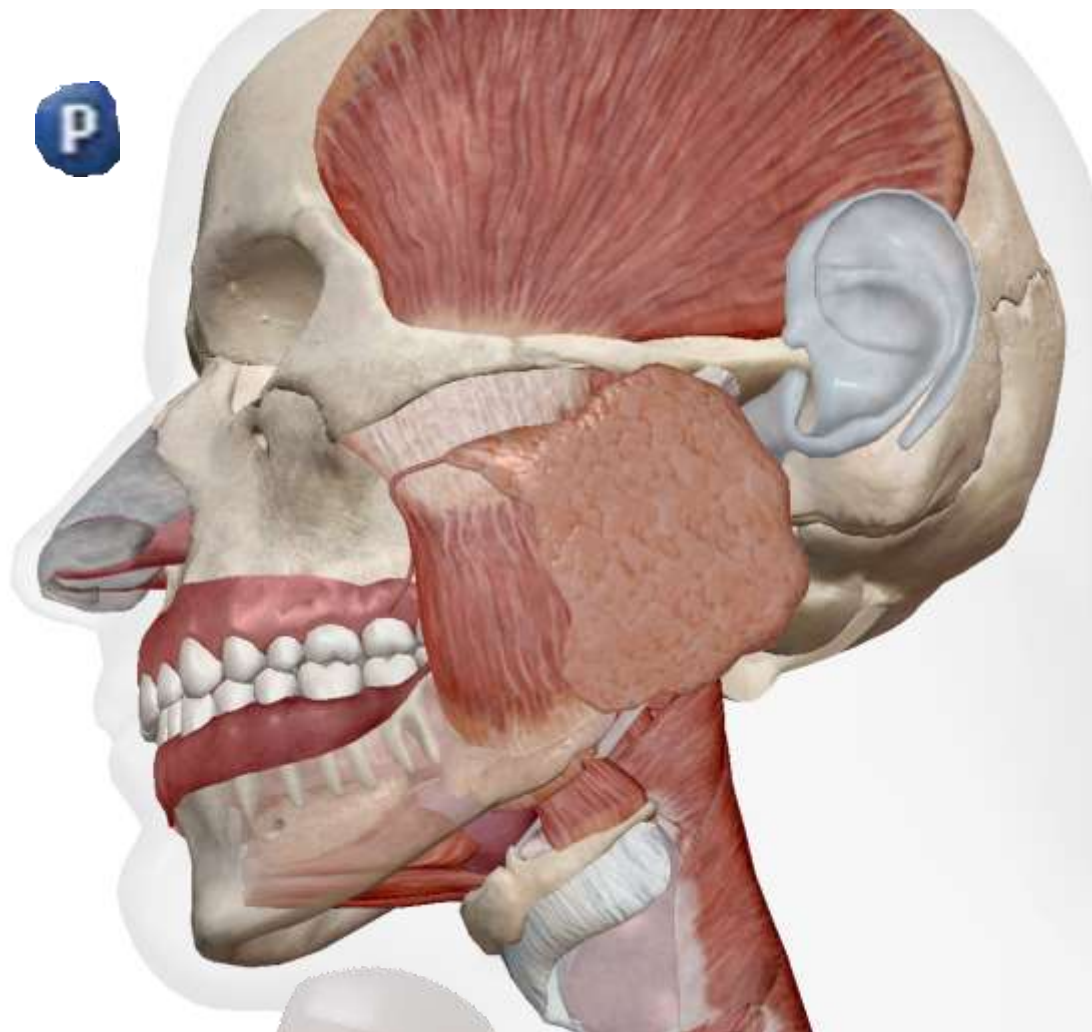
Déglutition/phonation

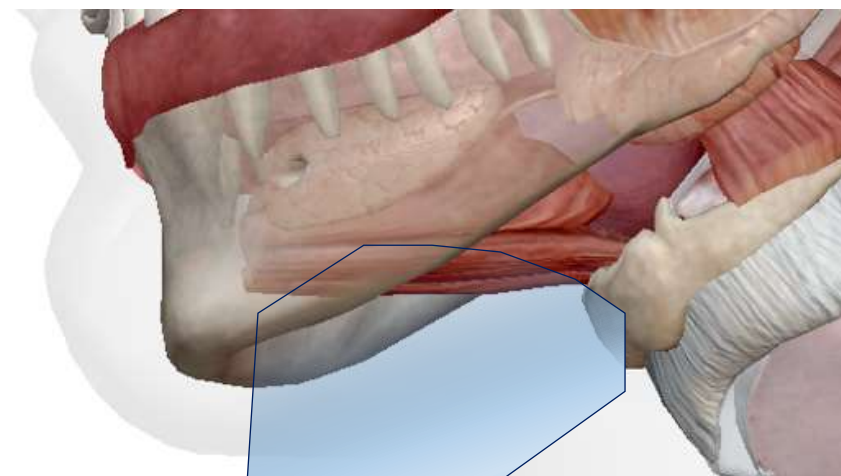
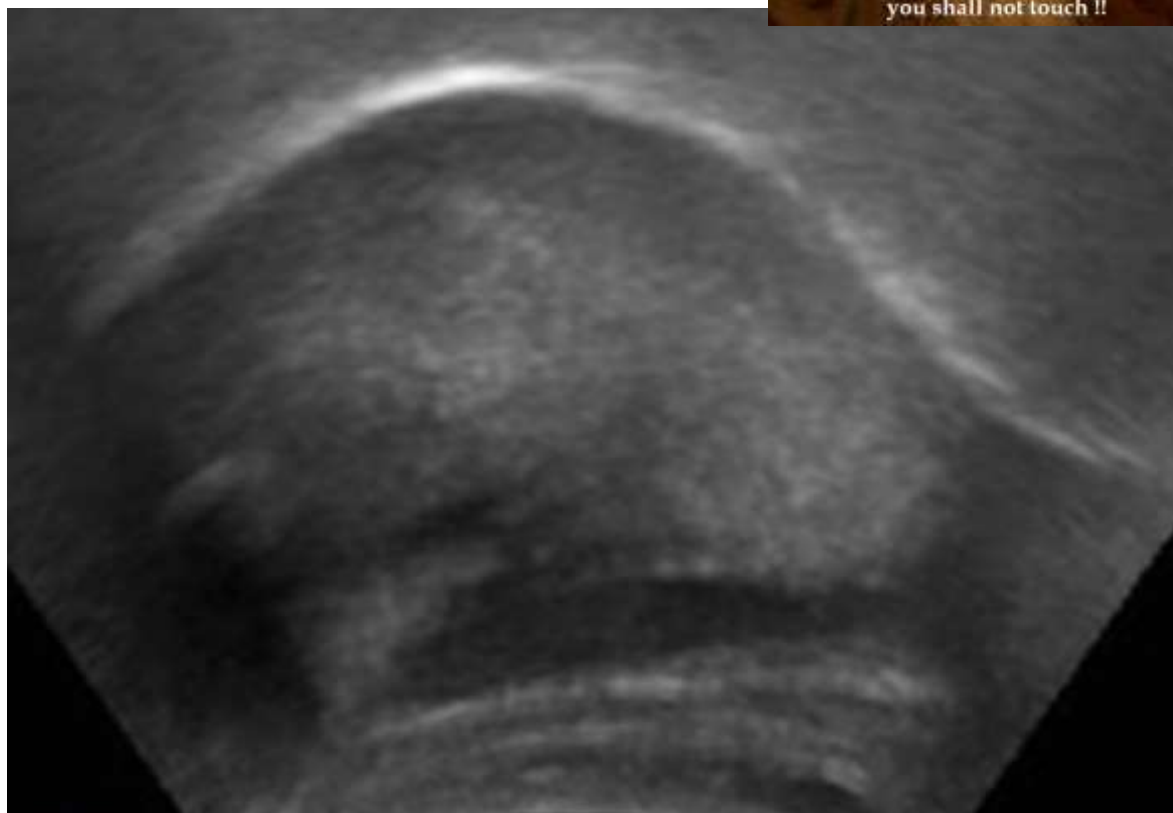
Liens d'intérêt





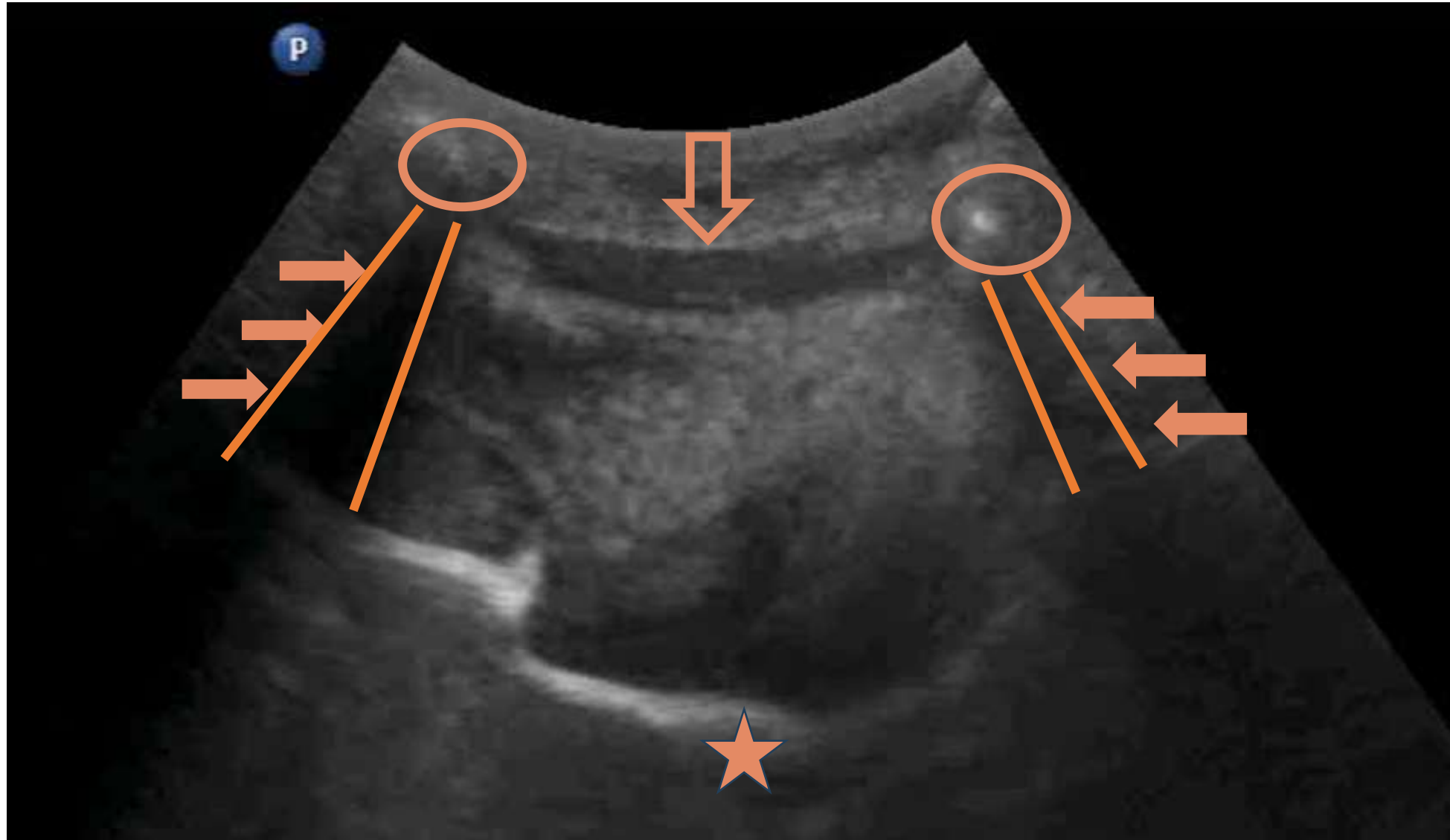








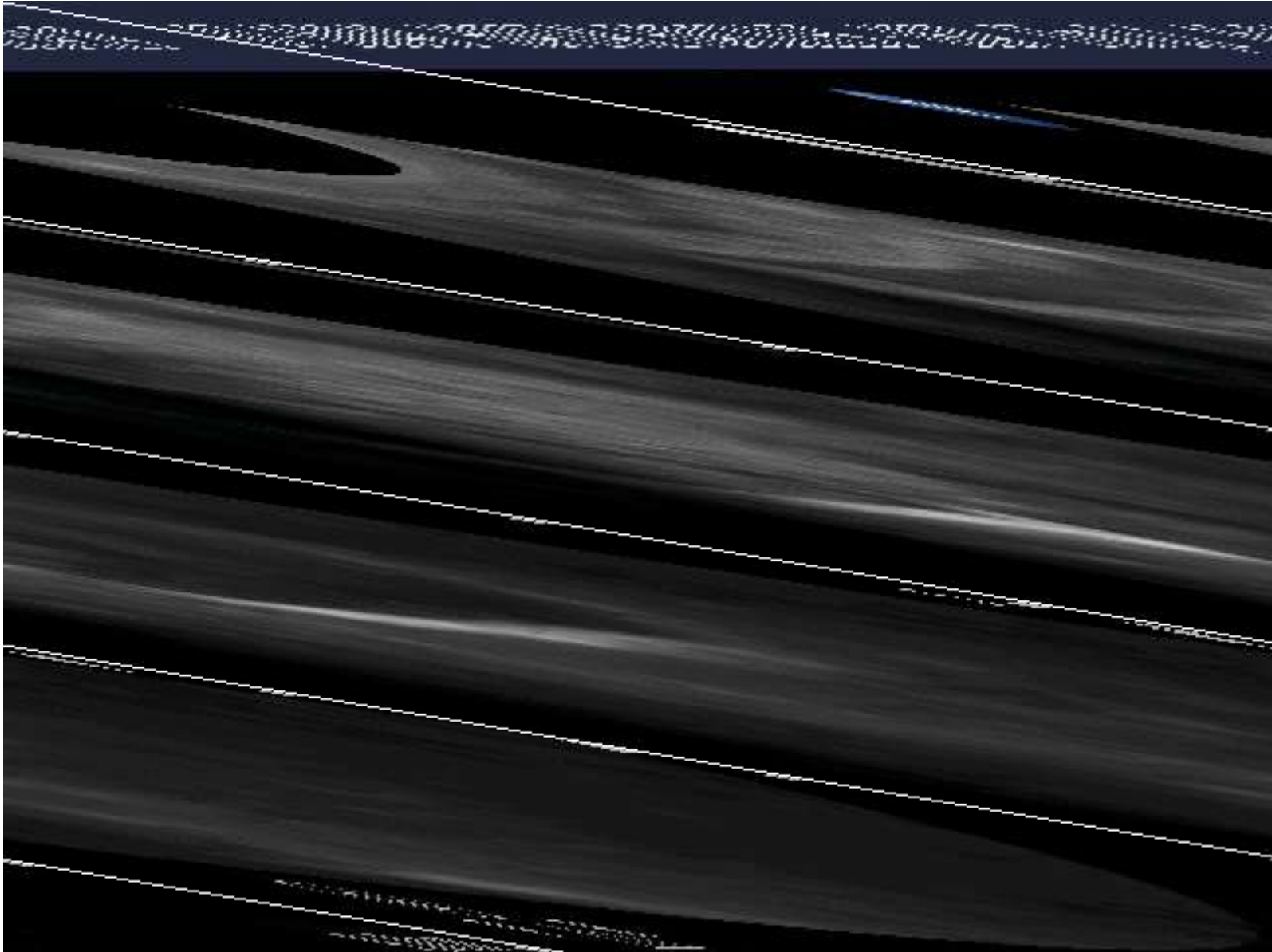
A



P



À vous de jouer !





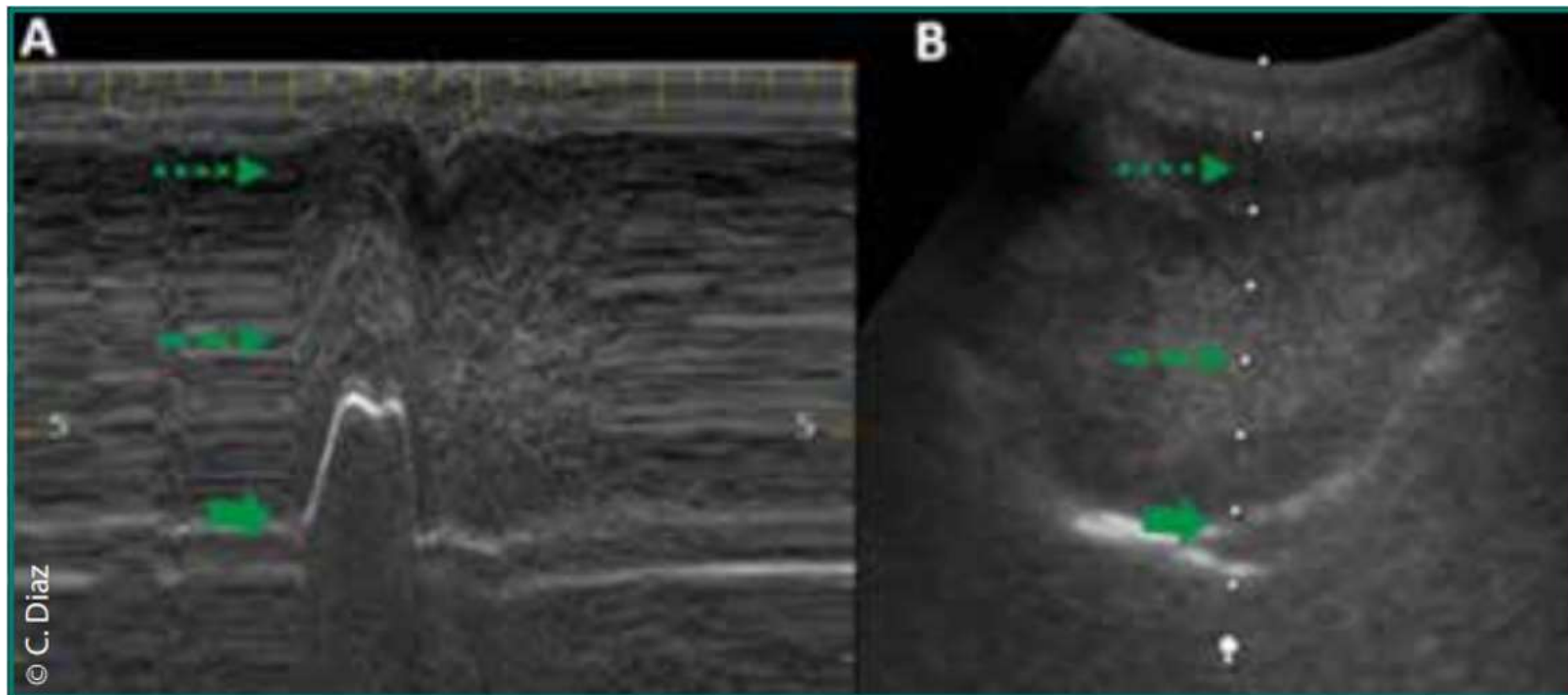
- Analyse qualitative et quantitative
- Mouvement linguale
- Muscle génio-hyoïdien
- Distance mandibule-hyoïdes



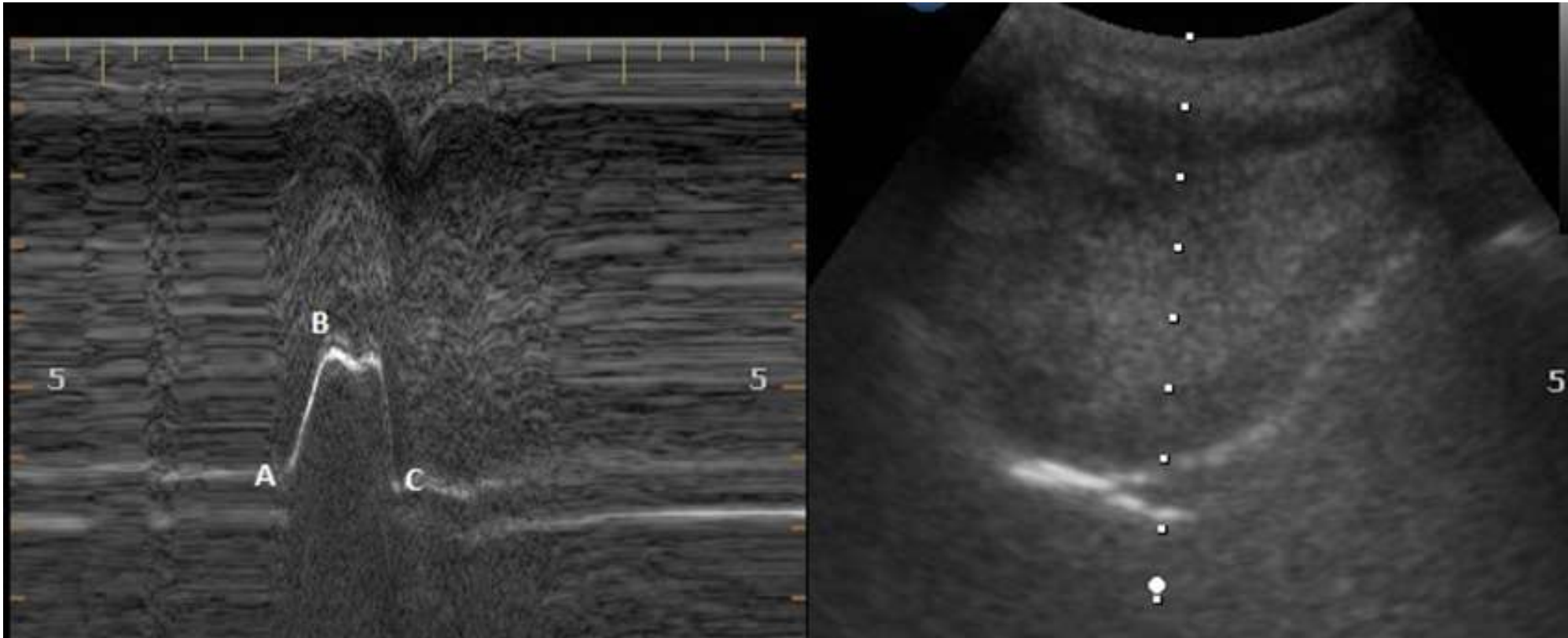
Analyse qualitative



Amplitude linguale – analyse quantitative



Amplitude linguale – Mode TM



A-B : quantité/amplitude

A-C : durée

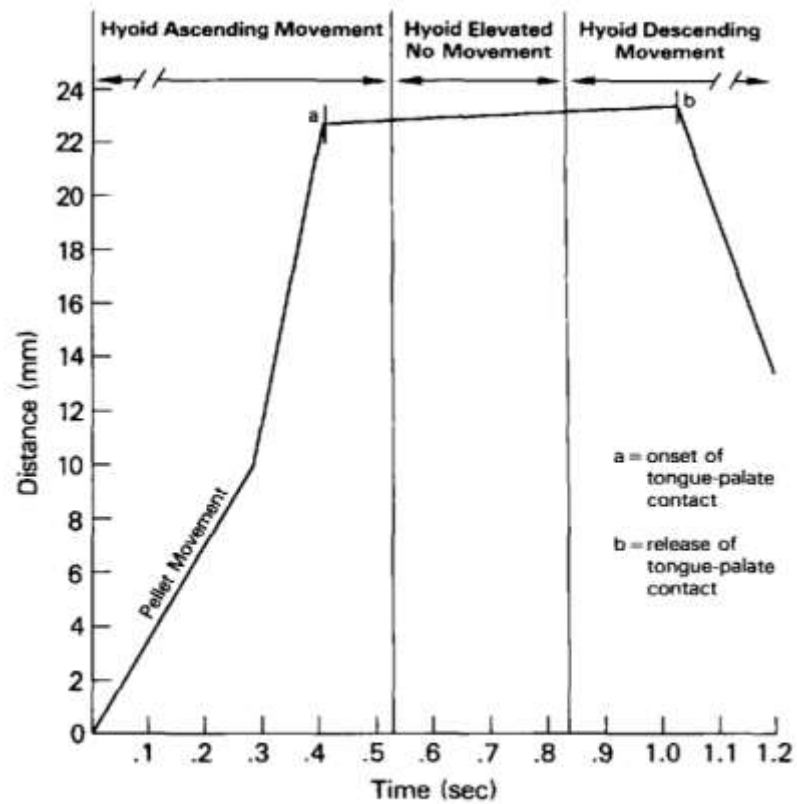


Fig. 3. Tongue pellet displacement and hyoid timing in average of 24 swallows. Distance moved indicates amount, not direction of movement.

M. Stone and T.H. Shawker: Ultrasound Swallowing: Tongue Movement

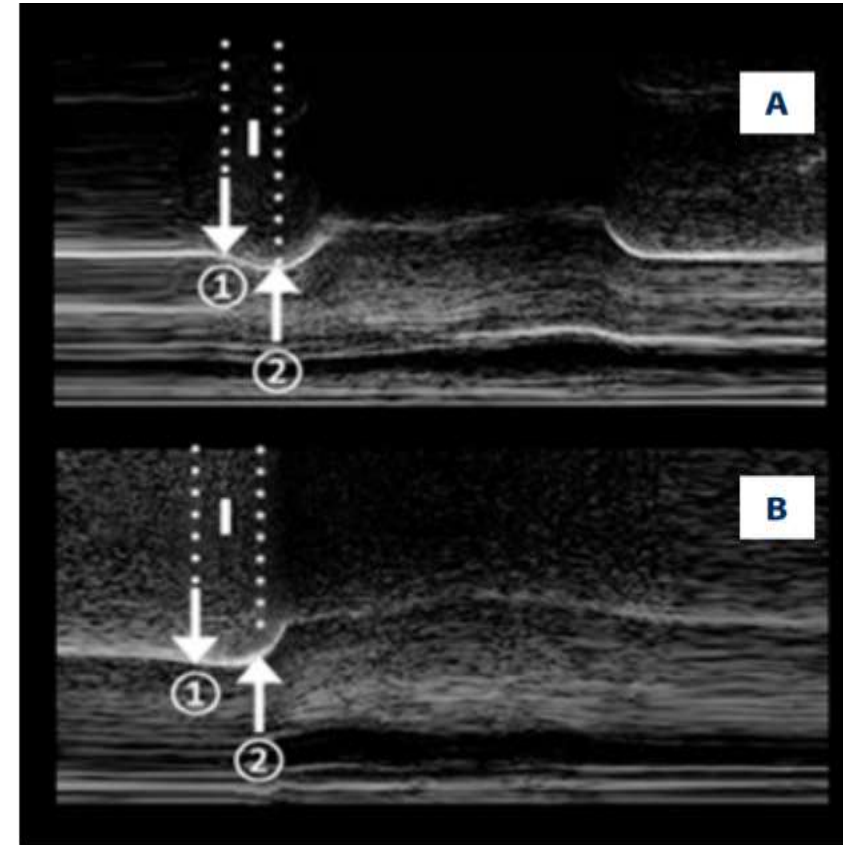
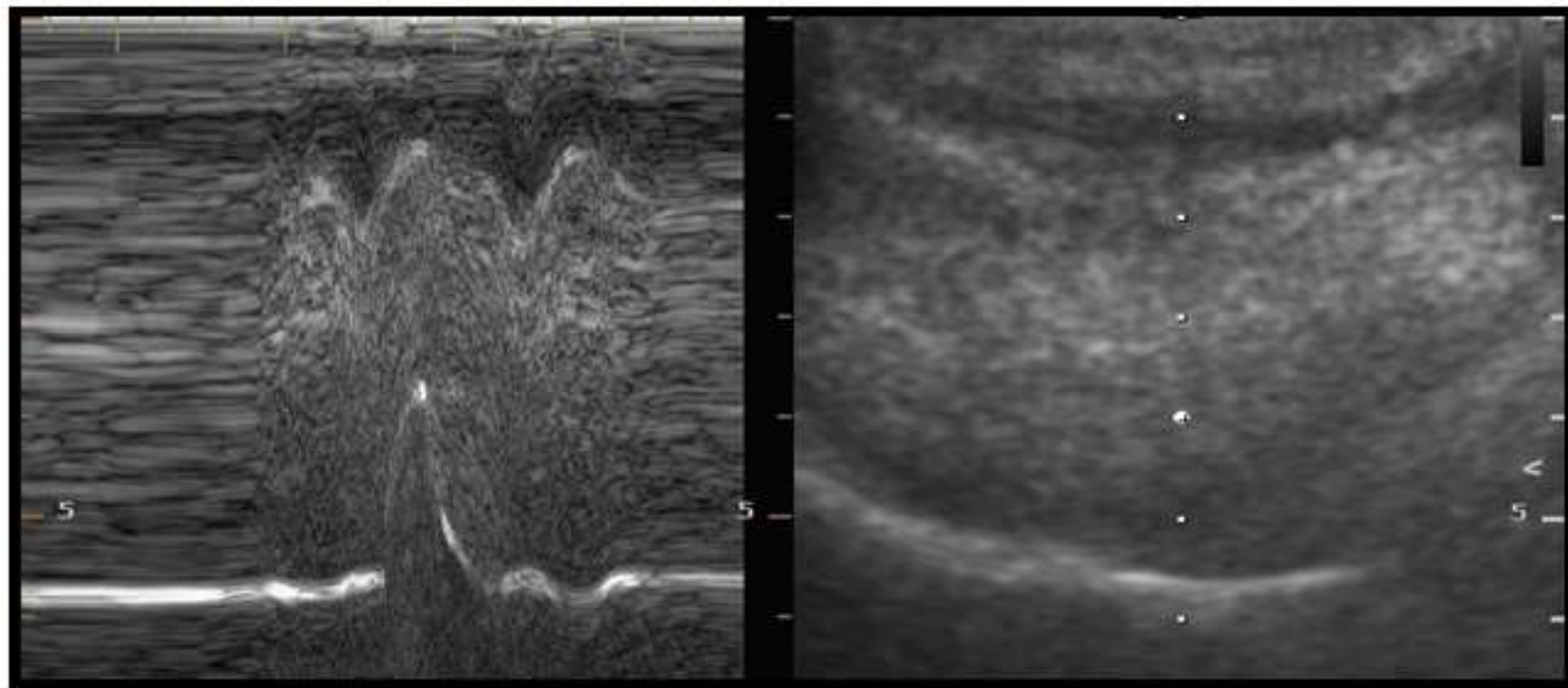
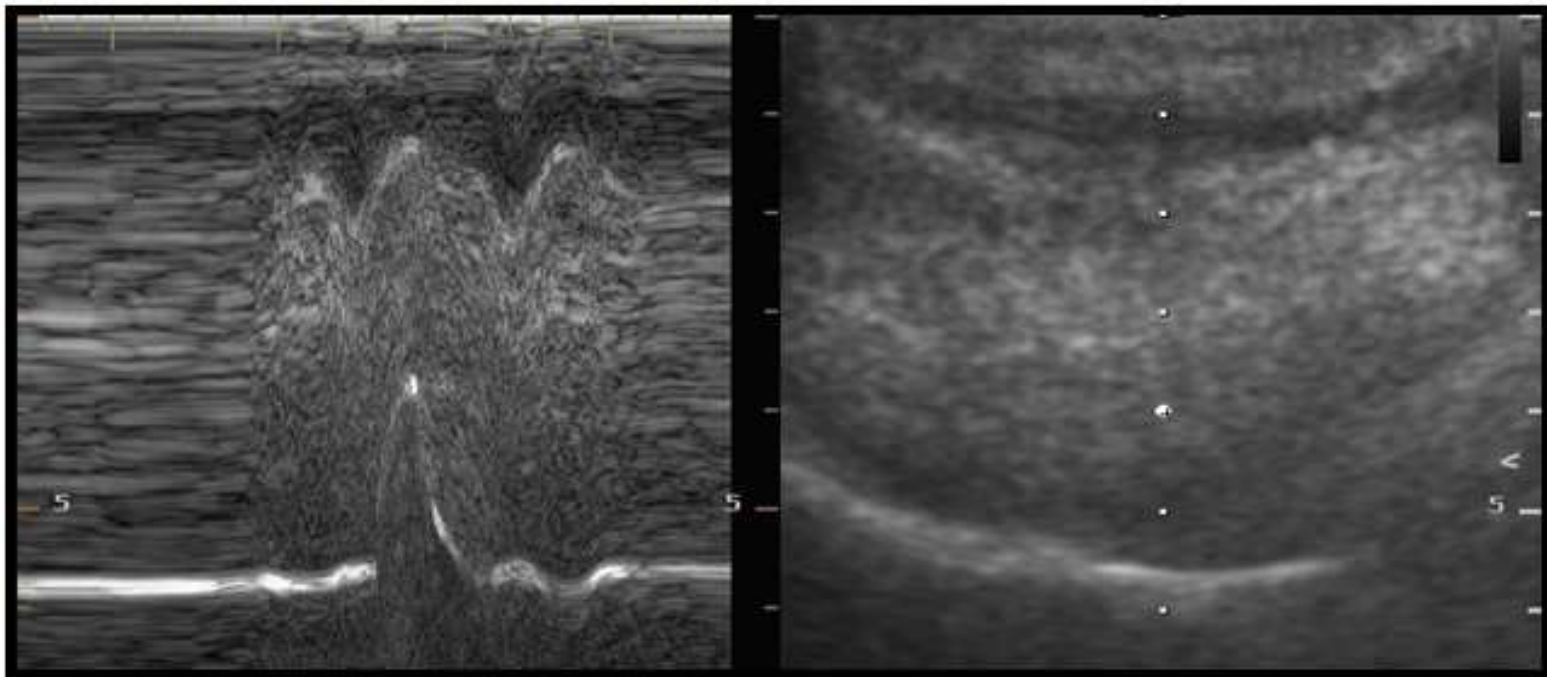
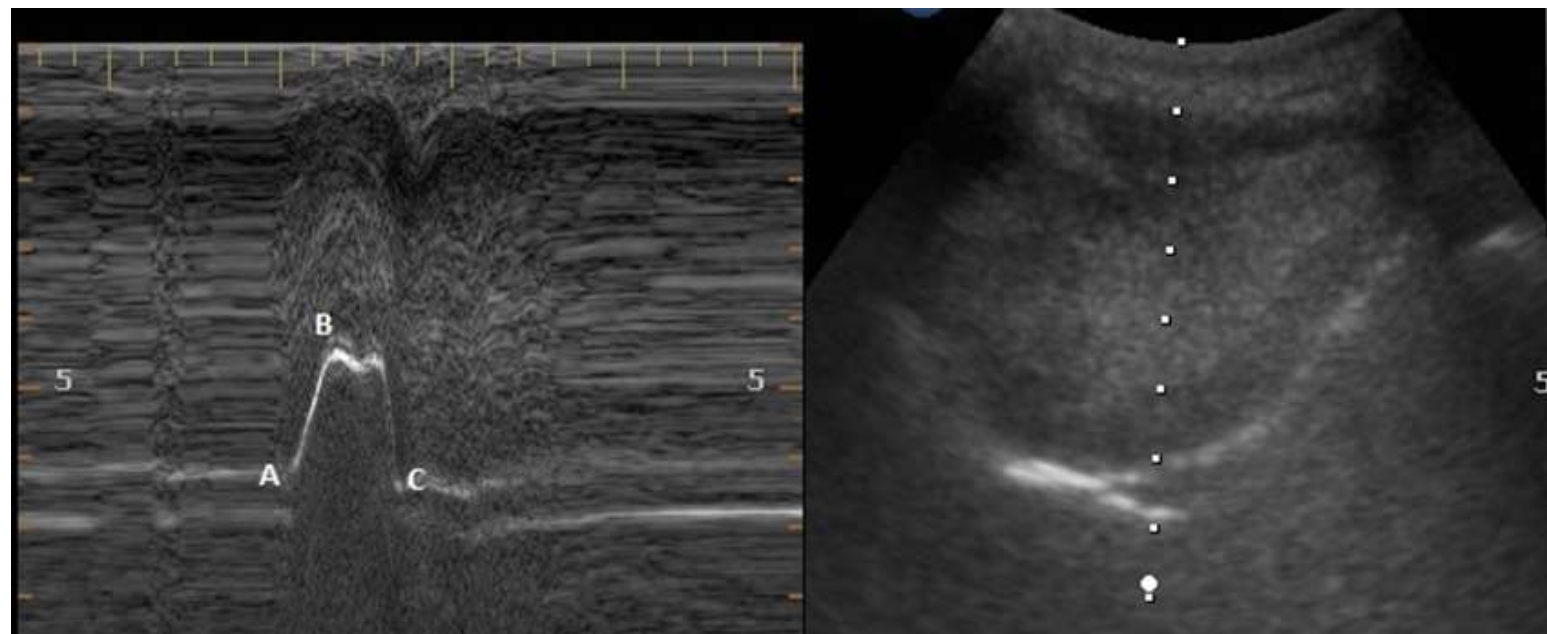
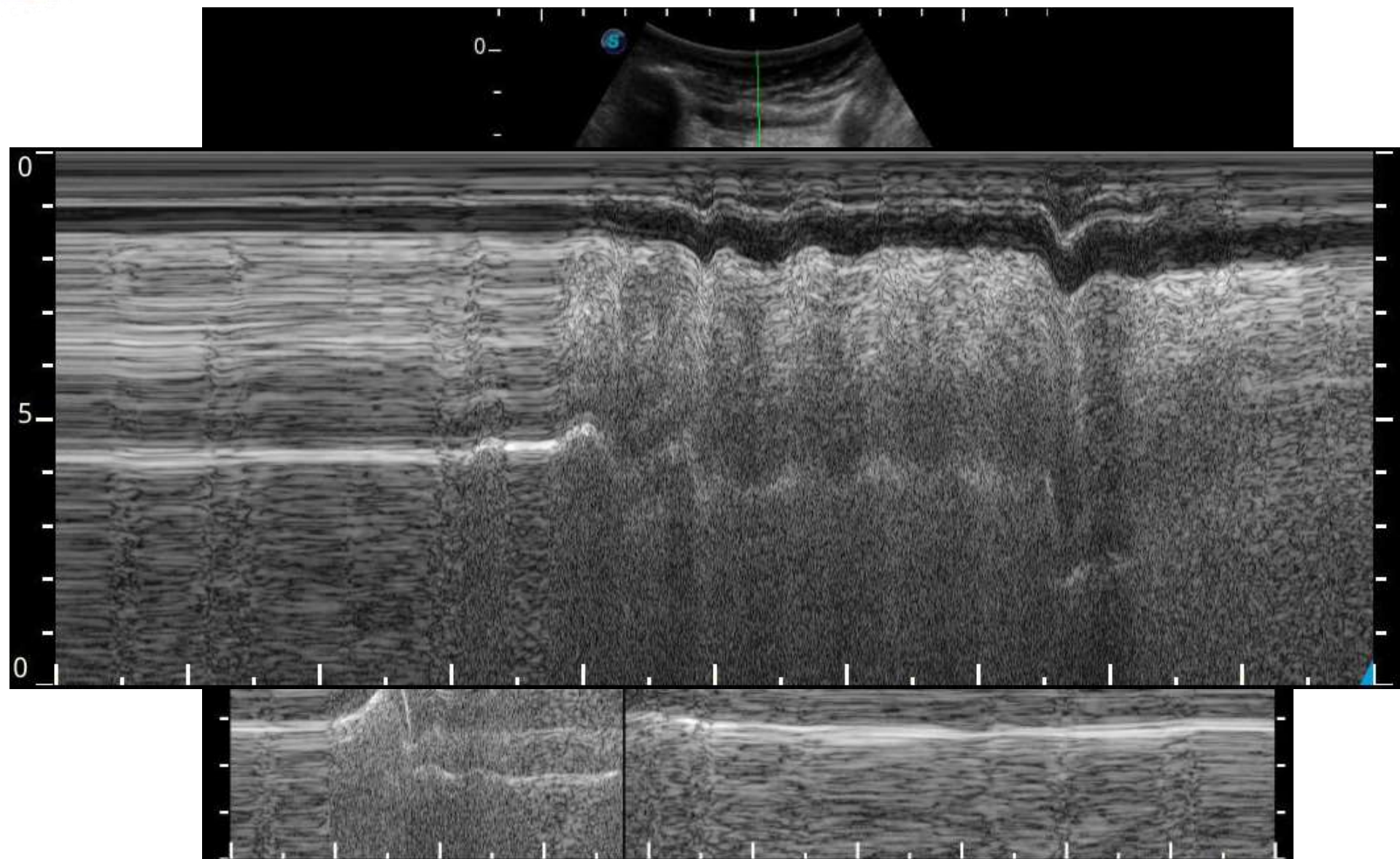


Figure 3. M-mode ultrasound tracings with phase I, indicated by arrows, demonstrate characteristic type 1 (A) and type 2 (B) phase I movements.







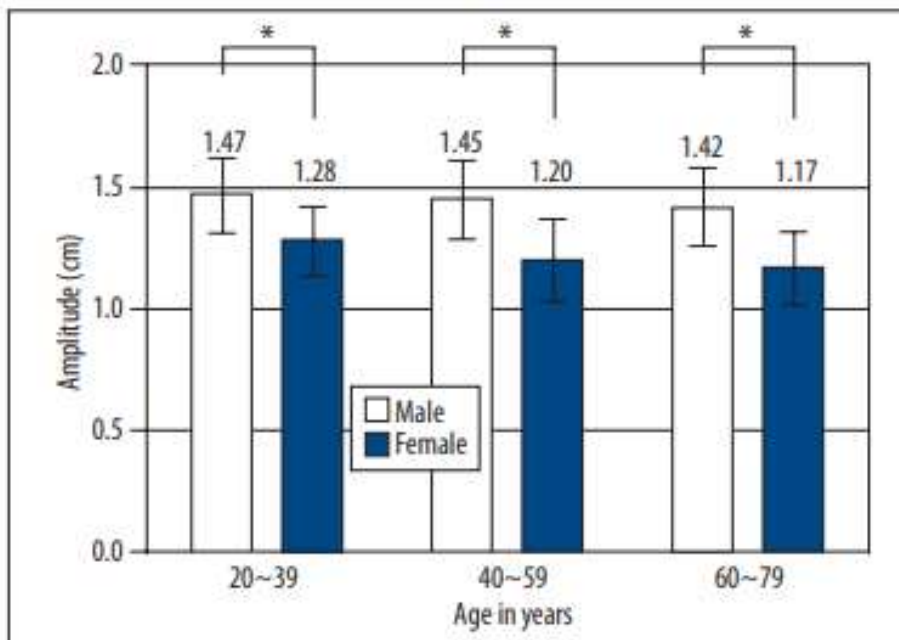


Figure 8. Age and sex comparison of tongue swallow-related radial displacement during phase IIa.

Durée :

- Augmentation avec âge non significative
- Hommes > Femmes

Amplitude :

- Décroissance avec âge non significative
- Hommes > Femmes

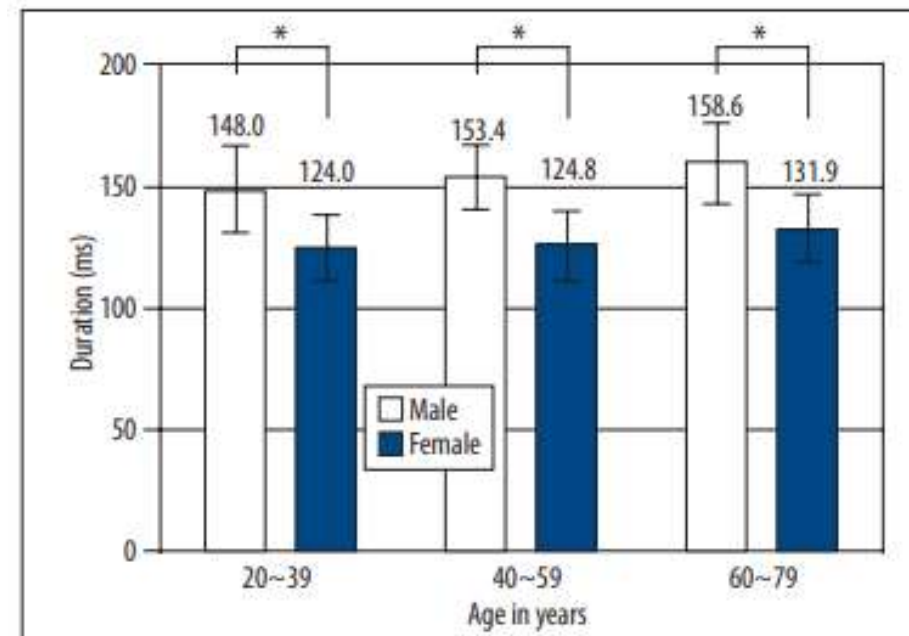
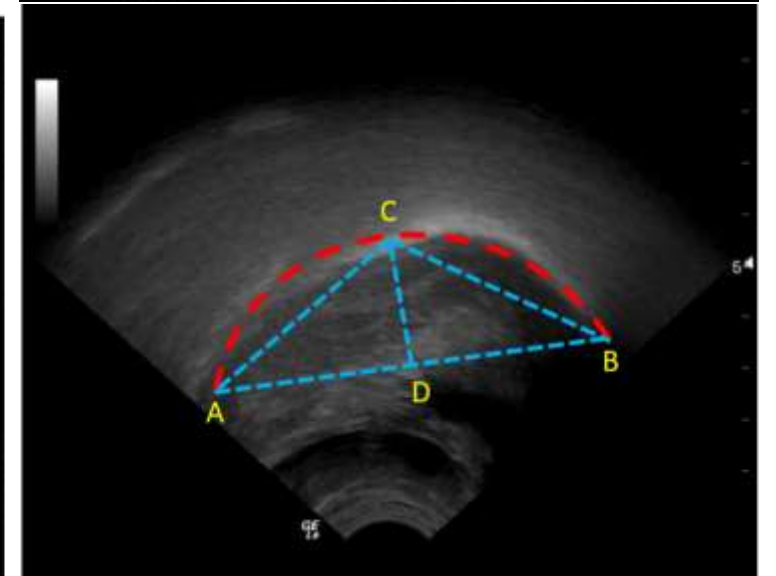
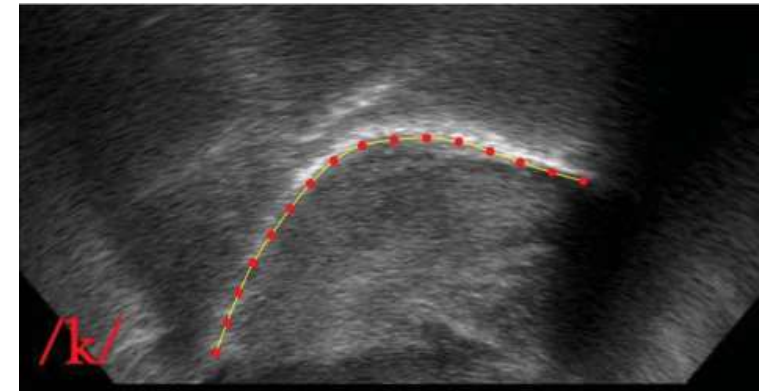
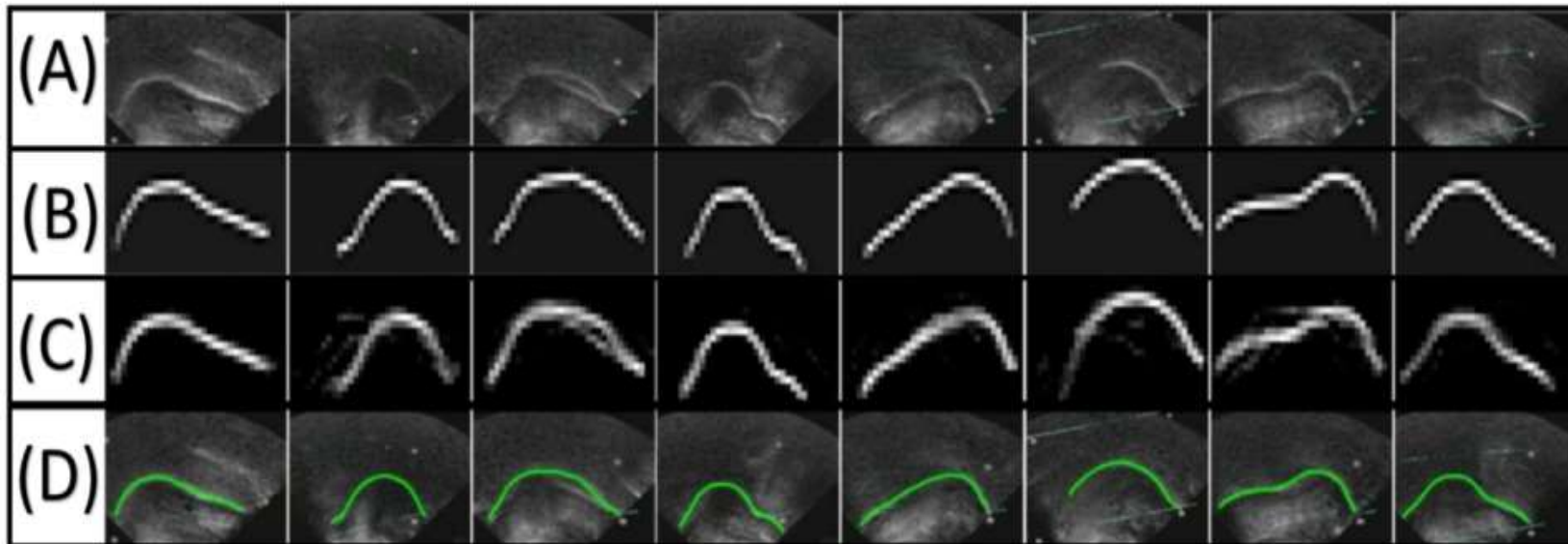


Figure 9. Age and sex comparison of the duration of tongue movement during swallowing during phase IIa.

Phonation

- Asymétrie et courbure de la forme de la langue
 - Reconstruction
 - Suivi d'un schéma de 16 points
- Utilisation en rééducation comme feedback



Autres applications?



Contents lists available at ScienceDirect

Clinical Neurophysiology

journal homepage: www.elsevier.com/locate/clinph

Tongue thickness evaluation using ultrasonography can predict swallowing function in amyotrophic lateral sclerosis patients

Masahiro Nakamori^{a,b}, Naohisa Hosomi^{a,*}, Sachiko Takaki^b, Masaya Oda^b, Aya Hiraoka^c, Mineka Yoshikawa^c, Hayato Matsushima^a, Kazuhide Ochi^a, Kazuhiro Tsuga^c, Hirofumi Maruyama^a, Yuishin Izumi^{b,d}, Masayasu Matsumoto^a

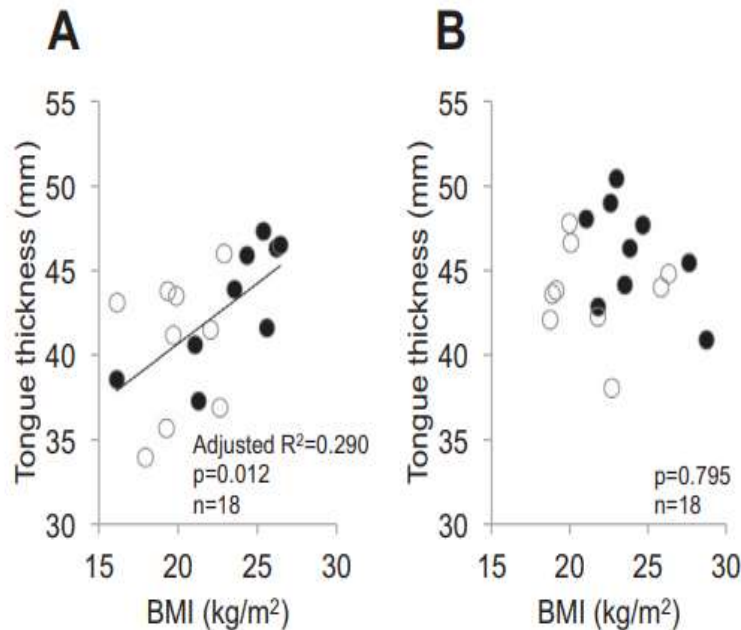
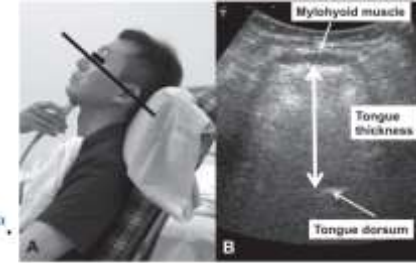


Fig. 2. Distribution of tongue thickness by body mass index (BMI). (A) In the ALS patients, BMI was linearly associated with tongue thickness (adjusted $R^2 = 0.290$, $p = 0.012$, $n = 18$; univariate analysis). (B) In the healthy subjects, there was no association between tongue thickness and BMI ($p = 0.795$). ○, female; ●, male.

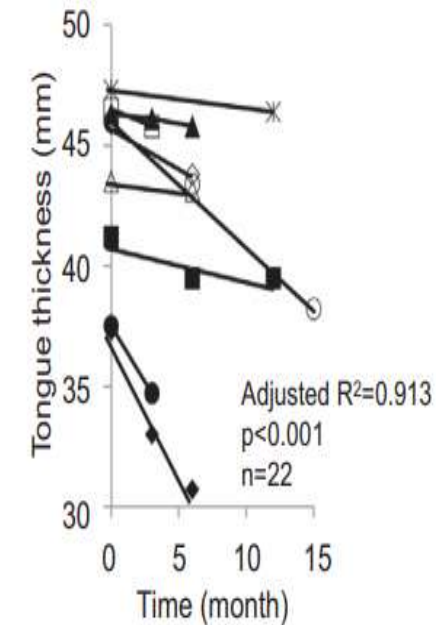


Fig. 3. Repeated evaluation of tongue thickness. The tongue thickness of nine subjects was measured two or three times within 15 months of the first measurement. Tongue thickness was significantly predicted by ALS diagnosis and time using a univariate split-plot approach (adjusted $R^2 = 0.913$, $F_{9,21} = 25.6$, $p < 0.001$).

Autres applications ? (2)



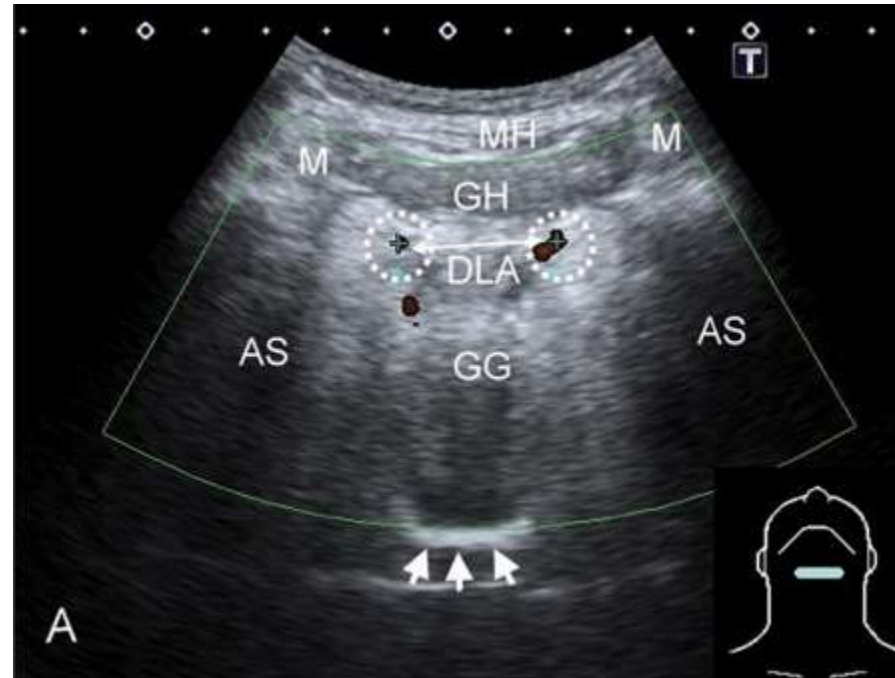
EUROPEAN RESPIRATORY *journal*

FLAGSHIP SCIENTIFIC JOURNAL OF ERS

Submental and neck ultrasonography measurements in patients with obstructive sleep apnea

Flaminio Mormile, Luca Viglietta, Annelisa Mastrobattista, Andrea Smargiassi, Marcello Bosi, Salvatore Valente

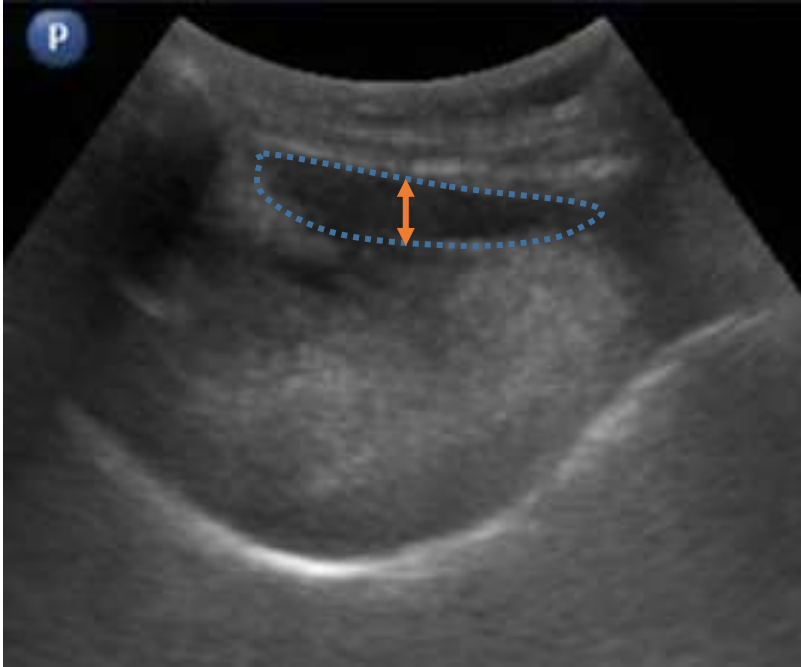
European Respiratory Journal 2016 48: PA2313; DOI: 10.1183/13993003.congress-2016.PA2313



- Analyse qualitative et quantitative
- Mouvement linguale
- Muscle génio-hyoïdien
- Distance mandibule-hyoïdes



Génio-hyoïdien



- Surface
- Epaisseur

→ Les répéter durant la déglutition

Reproductibilité –muscle génio-hyoidien

Table 2. Retest reliability (Tester 1).

	ICC	95% CI	<i>p</i> Value
GM length at rest	0.834	0.491–0.955	0.000
GM length at maximum contraction	0.970	0.884–0.993	0.000
GM contraction ratio	0.950	0.791–0.990	0.000
GM area at rest	0.869	0.580–0.965	0.000

GM, geniohyoid muscle.

Table 3. Intertester reliability (Testers 1–3).

	ICC	95% CI	<i>p</i> Value
GM length at rest	0.658	0.304–0.889	0.000
GM length at maximum contraction	0.869	0.665–0.965	0.000
GM contraction ratio	0.677	0.327–0.904	0.000
GM area at rest	0.880	0.627–0.970	0.000

GM, geniohyoid muscle.

G-H (2)

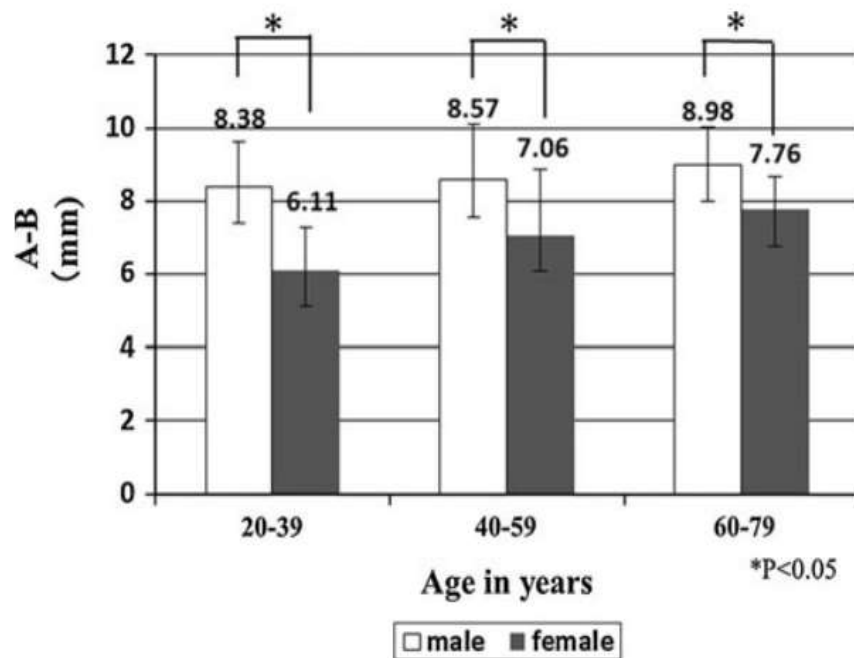


Fig. 4 Range of movement in the 3 groups. A-B contractional moving distance of the geniohyoid muscle

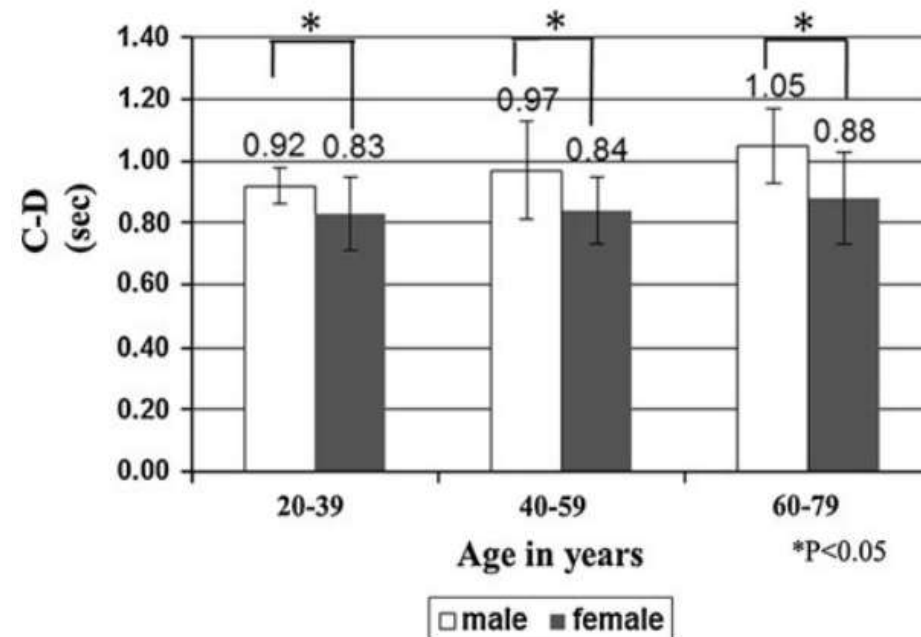


Fig. 5 Swallowing durations in the 3 groups. C-D duration of movement of the geniohyoid muscle

Aucune modification avec l'âge

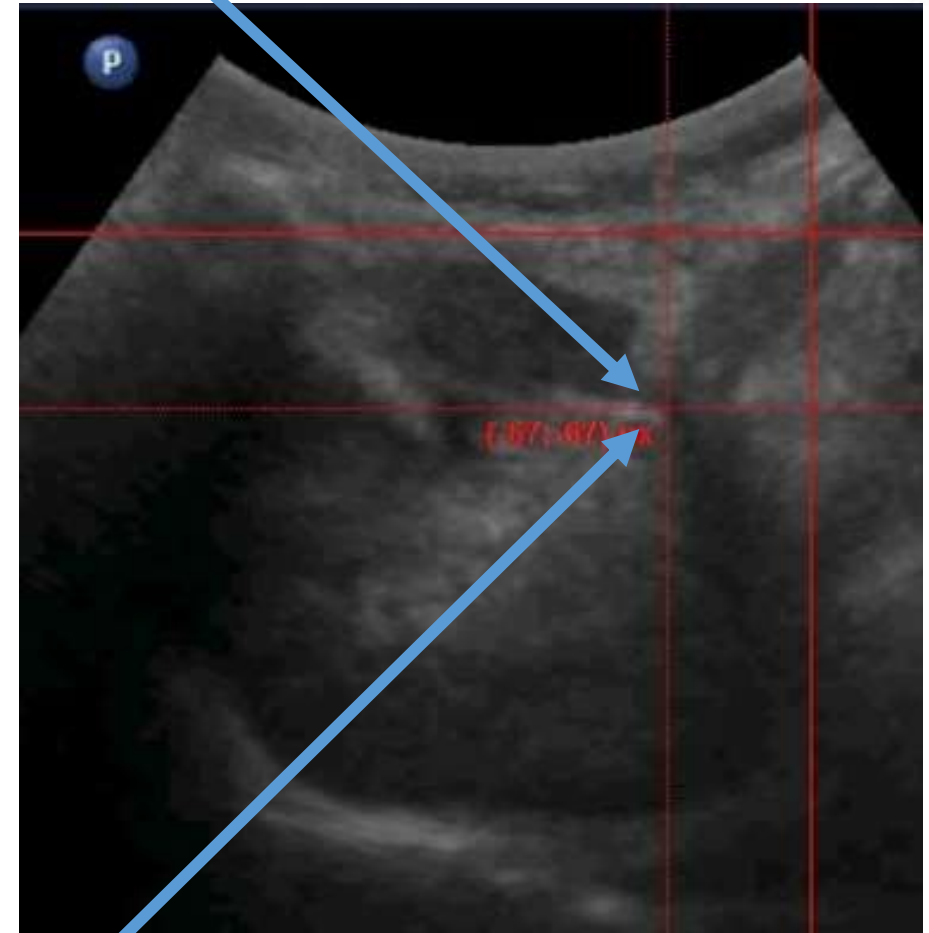
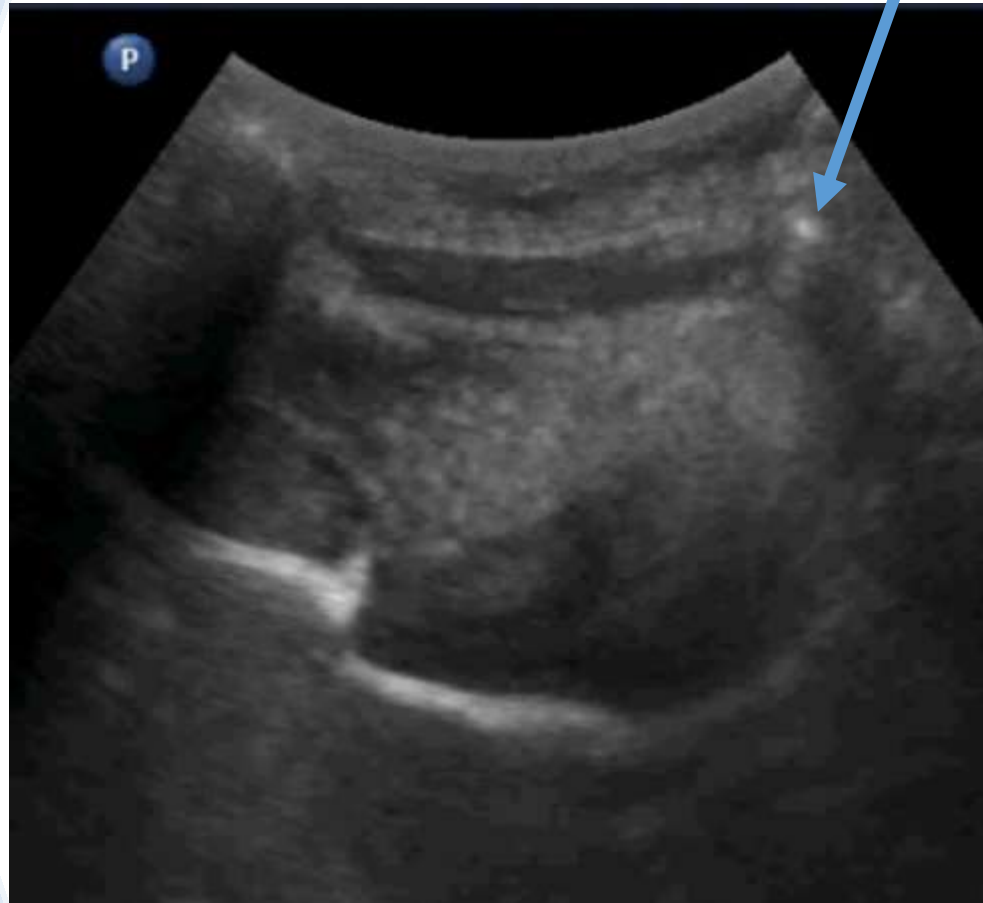
Durée et quantité du mouvement supérieure chez l'homme

- Analyse qualitative et quantitative
- Mouvement linguale
- Muscle génio-hyoïdien
- Distance mandibule-hyoïdes



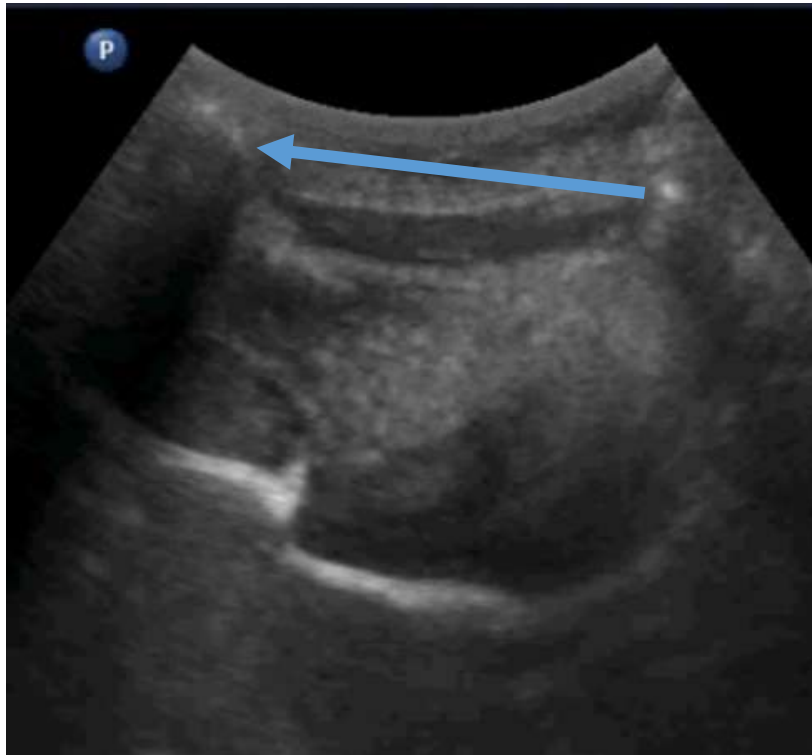
Méthode 1

Position de repos ($X_0; Y_0$)



Nouvelle position ($X_1; Y_1$)

Méthode 2

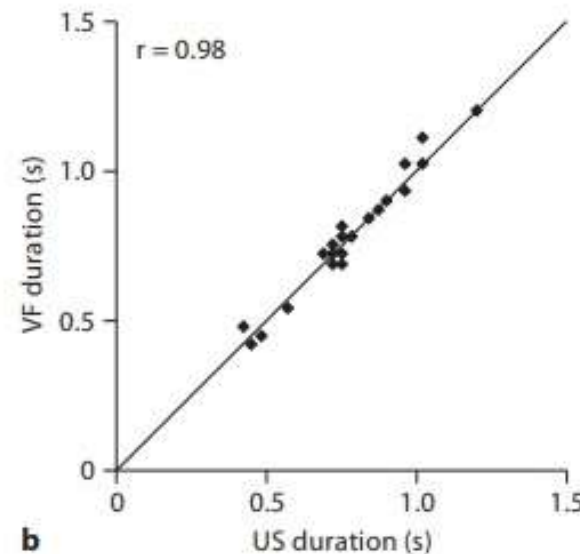
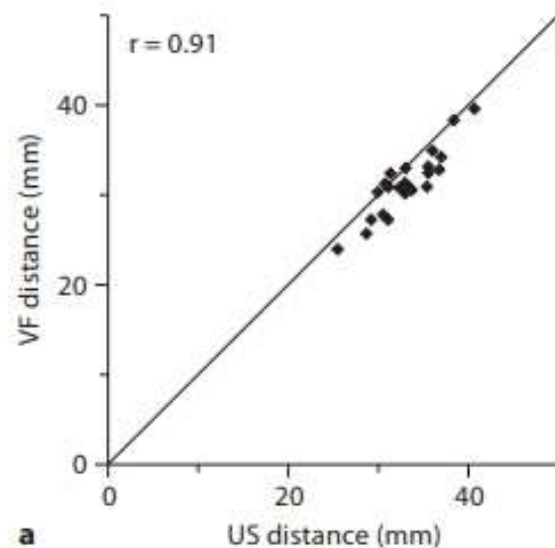


Hyoid-Larynx approximation

ULTRASONOGRAPHIC EVALUATION OF HYOID-LARYNX APPROXIMATION IN DYSPHAGIC STROKE PATIENTS

YA-LING HUANG,^{*} SHIH-FU HSIEH,^{*†} YEUN-CHUNG CHANG,[‡] HSIANG-CHEN CHEN,^{*} and TYNG-GUEY WANG^{*}

	Resting distance (cm)	Shortest distance (cm)	Approximation distance (cm)
Ultrasound	3.48 ± 0.53	2.04 ± 0.35	1.41 ± 0.35
VFSS	2.00 ± 0.41	1.13 ± 0.24	0.88 ± 0.44
<i>p</i> -value [*]	$p < 0.001$	$p < 0.001$	$p = 0.008$



VFSS vs US:
 $P < 0,0001$

Intra- and Inter-rater Reliability for Analysis of Hyoid Displacement Measured with Sonography

Phoebe R. Macrae, BSLT(Hons),^{1,2} Sebastian H. Doeltgen, PhD,^{1,2,3} Richard D. Jones, PhD,^{1,2,4,5} Maggie-Lee Huckabee, PhD^{1,2}

TABLE 1
Single-Measure Intraclass Correlation Coefficients (ICCs) for Interrater Reliability

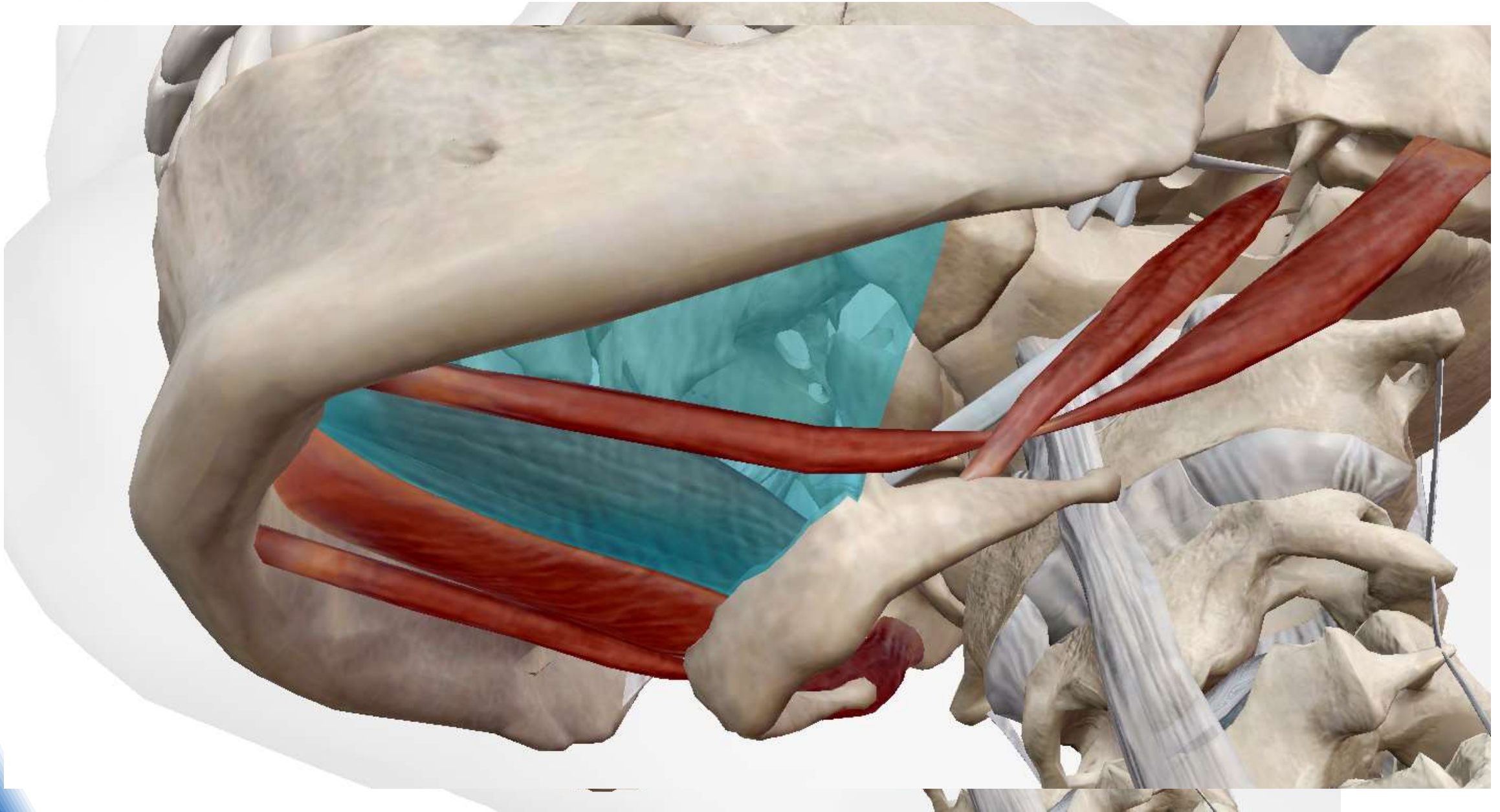
		ICC	95% CI	<i>p</i> Value
Distance between hyoid and mandible	At rest	0.86	0.76–0.93	<0.001
	Maximal displacement	0.86	0.69–0.94	<0.001
Change in hyoid displacement	% Change	0.70	0.45–0.85	<0.001
	Absolute change	0.64	0.40–0.81	<0.001

TABLE 2
Single-Measure Intraclass Correlation Coefficients (ICCs) for Intrarater Reliability

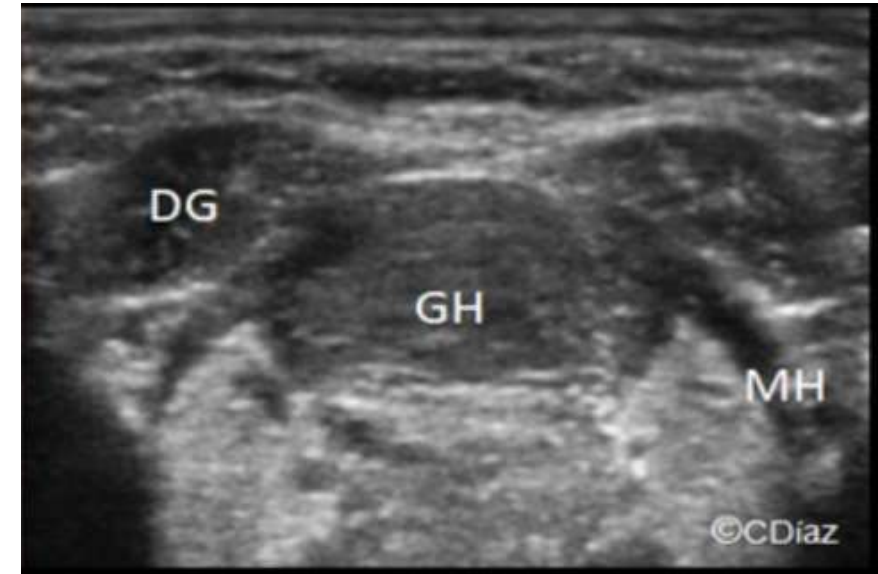
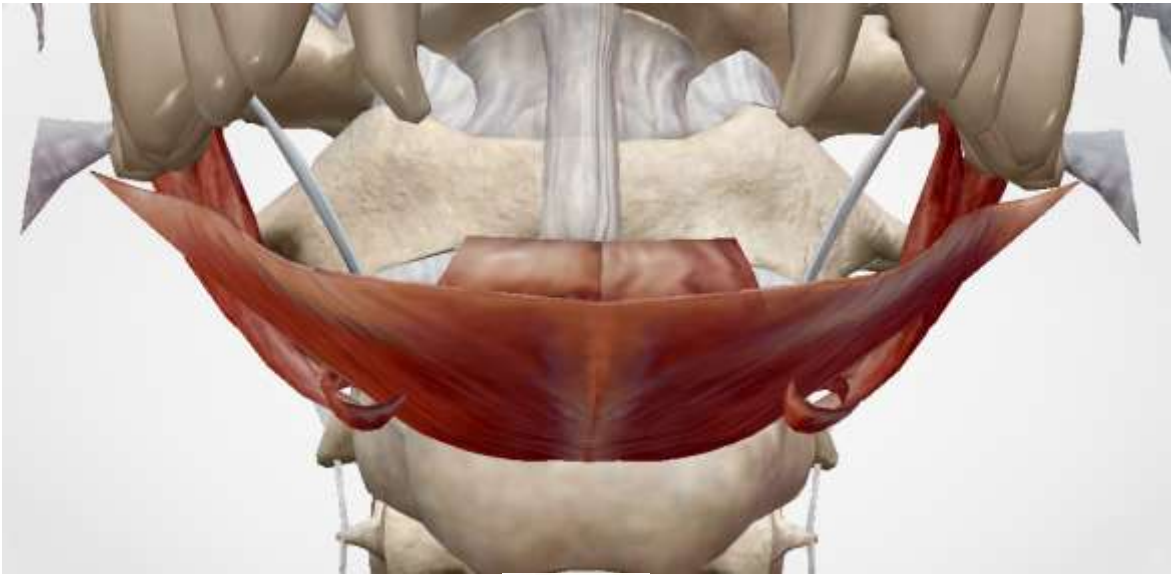
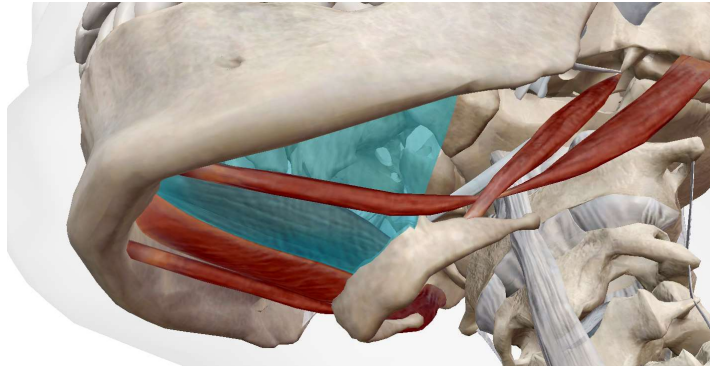
		ICC	95% CI	<i>p</i> Value
Distance between hyoid and mandible	At rest	0.95	0.89–0.98	<0.001
	Maximal displacement	0.98	0.96–0.99	<0.001
Change in hyoid displacement	% Change	0.93	0.85–0.97	<0.001
	Absolute change	0.90	0.80–0.96	<0.001



Muscles supra-hyôïdiens



Muscles supra-hyoidiens (2)

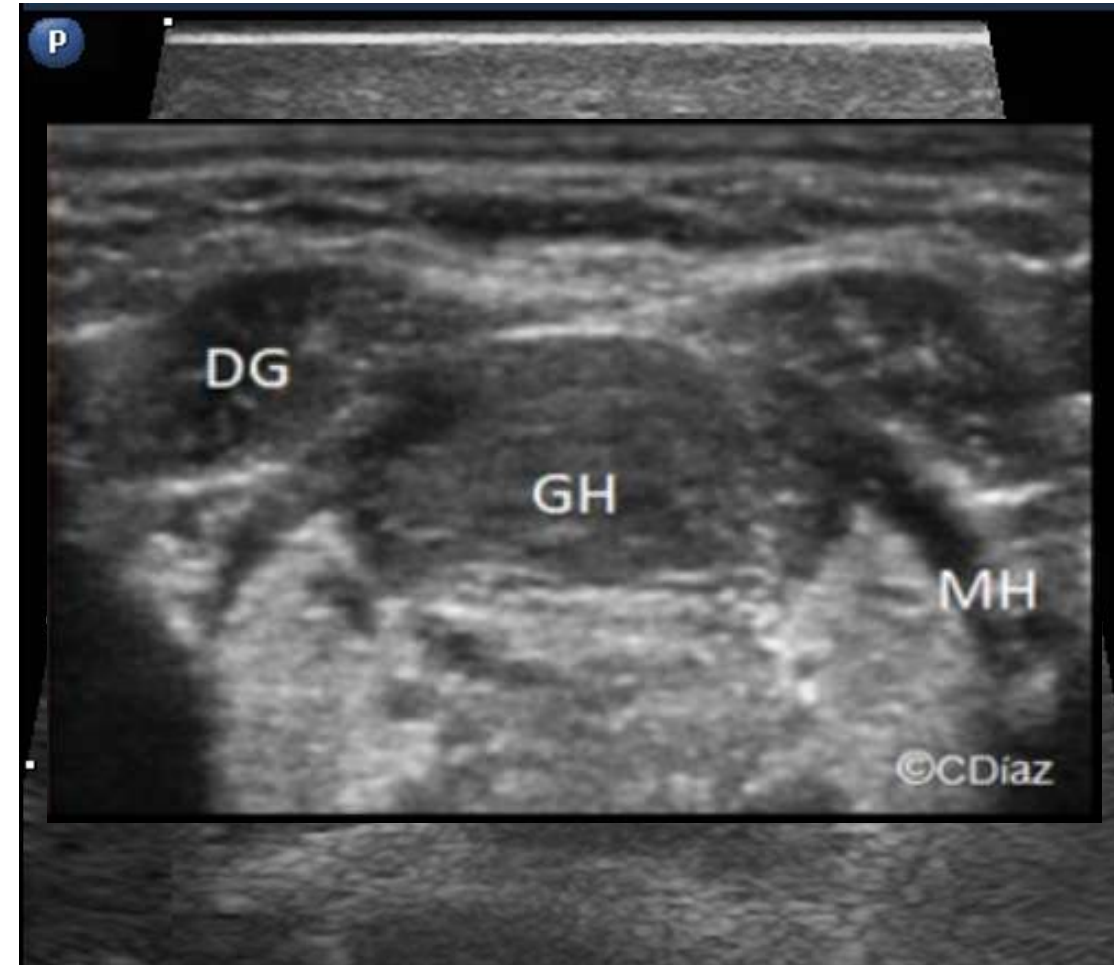
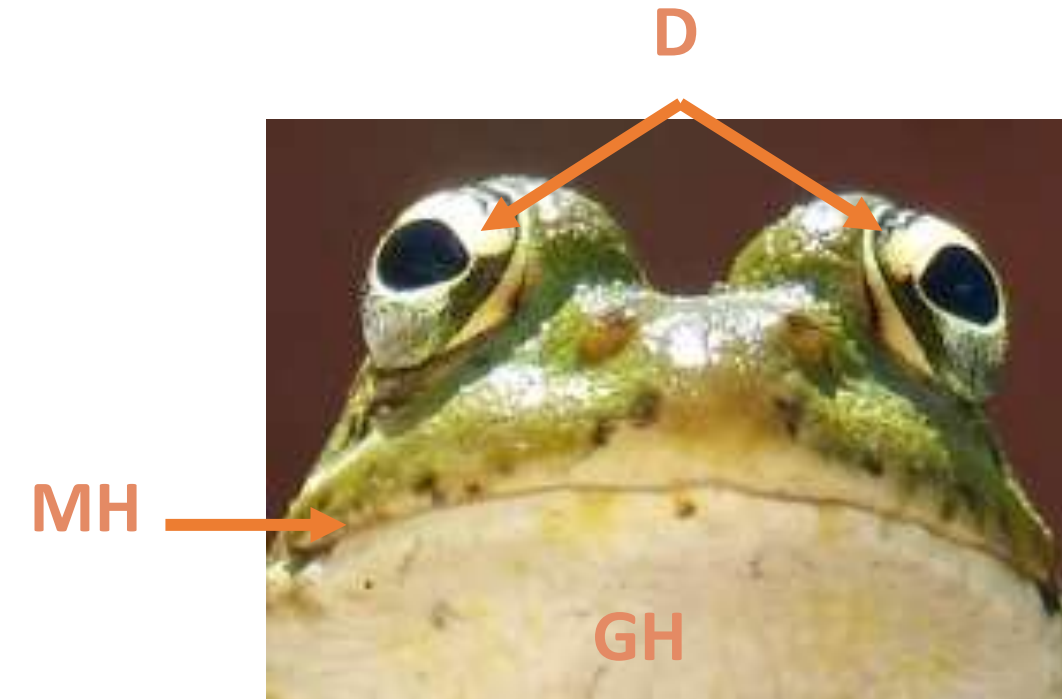


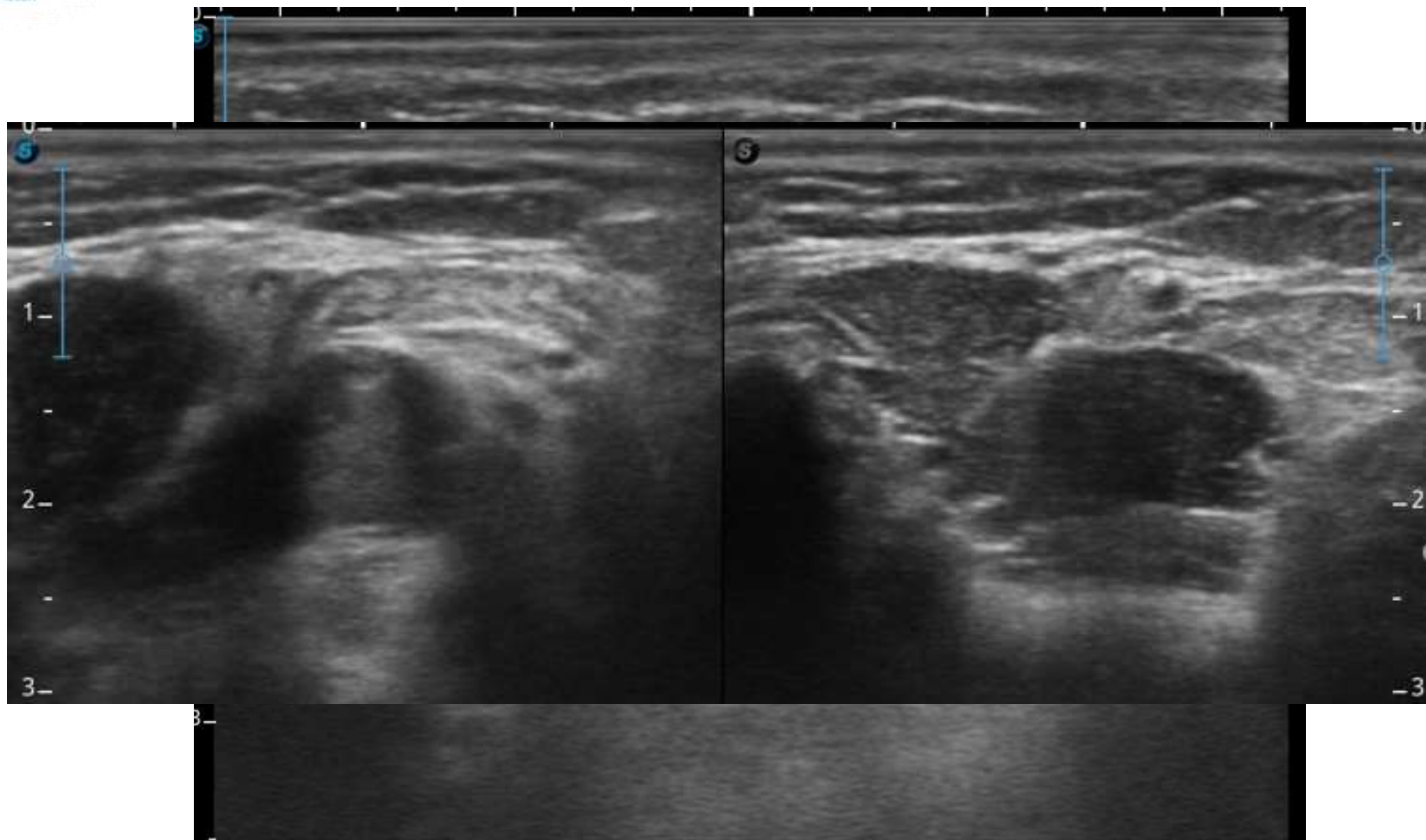


Muscles supra-hyoldiens



Muscles supra-hyôïdiens





Cross-Sectional Area of the Anterior Belly of the Digastric Muscle: Comparison of MRI and Ultrasound Measures

Phoebe R. Macrae · Richard D. Jones ·
Daniel J. Myall · Tracy R. Melzer ·
Maggie-Lee Huckabee

J Neurol (2013) 260:1295–1303
DOI 10.1007/s00415-012-6793-y

ORIGINAL COMMUNICATION

Oral muscles are progressively affected in Duchenne muscular dystrophy: implications for dysphagia treatment

Lenie van den Engel-Hoek · Corrie E. Erasmus · Jan C. M. Hendriks ·
Alexander C. H. Geurts · Willemijn M. Klein · Sigrid Pillen · Lillian T. Sie ·
Bert J. M. de Swart · Imelda J. M. de Groot

THE MASS OF GENIOHYOID MUSCLE IS ASSOCIATED WITH MAXIMUM TONGUE PRESSURE AND TONGUE AREA IN PATIENTS WITH SARCOPENIC DYSPHAGIA

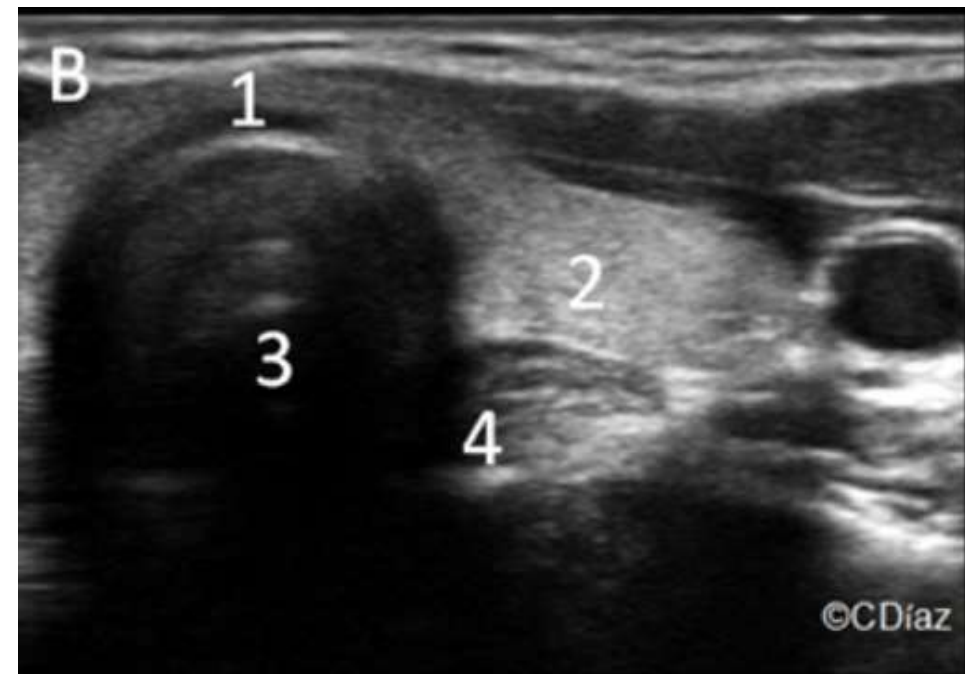
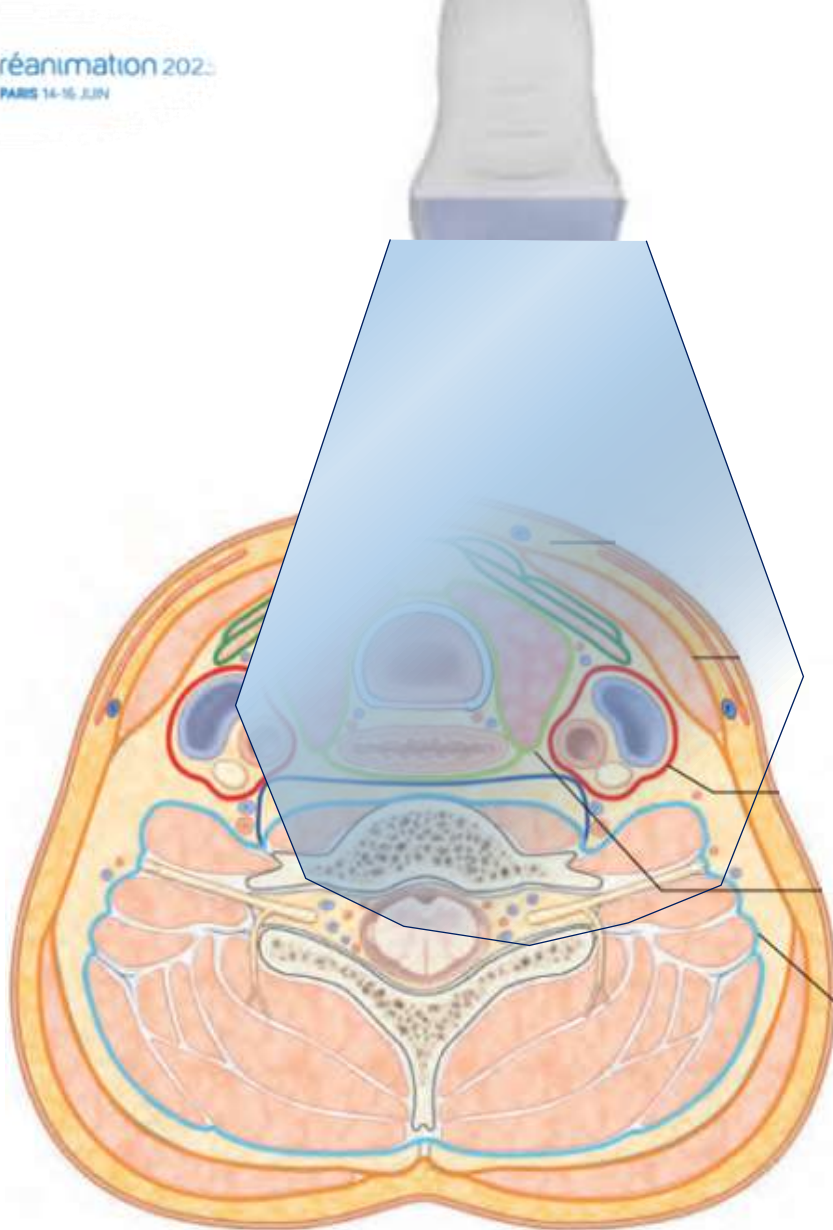
T. MORI¹, H. WAKABAYASHI², N. OGAWA³, I. FUJISHIMA⁴, F. OSHIMA⁵, M. ITODA⁶, K. KUNIEDA^{4,7},
T. SHIGEMATSU^{4,8}, S. NISHIOKA⁹, H. TOHARA³, M. YAMADA¹⁰, S. OGAWA¹¹

Ultrasonographic evaluation of geniohyoid muscle mass in perioperative patients

Sayako SHIMIZU¹⁾, Kozo HANAYAMA¹⁾, Rui NAKATO²⁾,
Takefumi SUGIYAMA¹⁾, Akio TSUBAHARA¹⁾



SSO





Ultrasound analysis of the upper esophageal sphincter during swallowing in the healthy subject

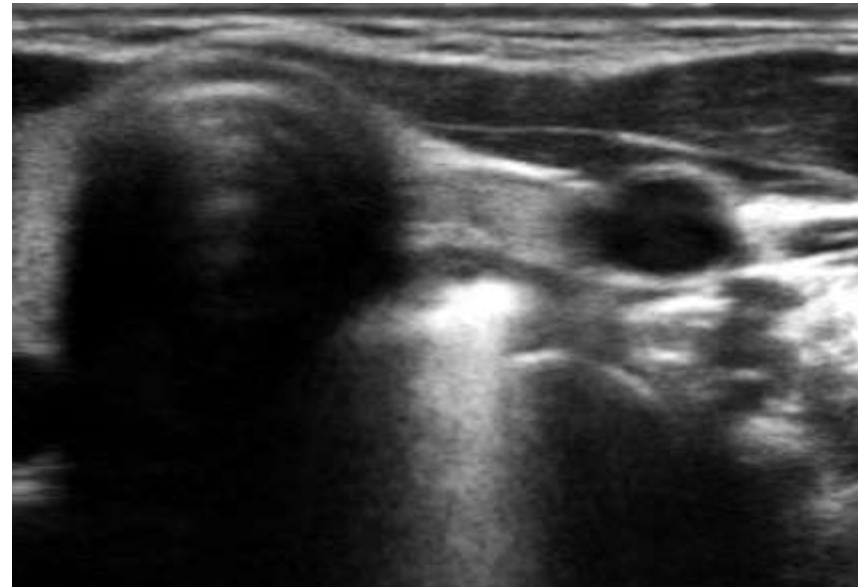
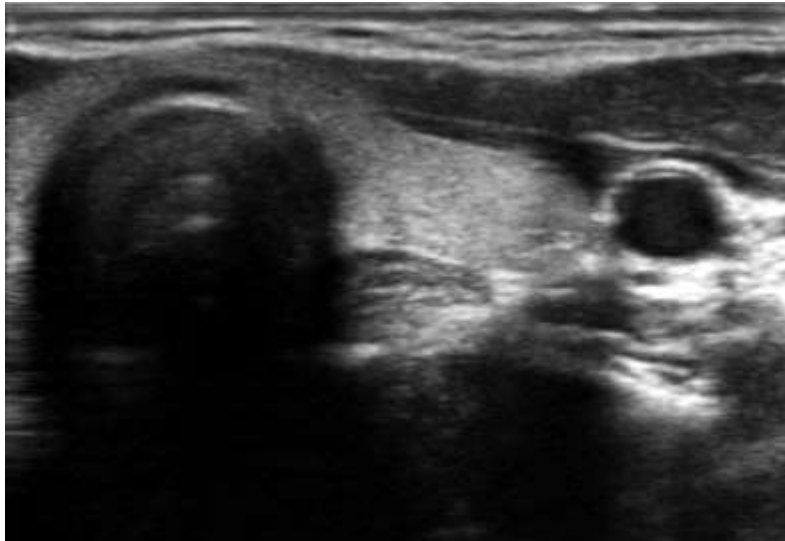
S. Morinière^{a,*,b}, K. Hammoudi^{a,b}, F. Marmouset^a, D. Bakhos^a,
P. Beutter^a, F. Patat^b

Mean diameter	Total population
Closed UES (cm)	0.78 ± 0.13
Open UES: inner diameter (cm)	0.95 ± 0.15
Open UES: outer diameter (cm)	1.41 ± 0.16

Displacement	Total population
Anterior (cm)	0.42 ± 0.12
Lateral (cm)	0.35 ± 0.18

Men	Women	<i>P</i>
0.46 ± 0.12	0.40 ± 0.12	0.07
0.44 ± 0.15	0.29 ± 0.18	0.04

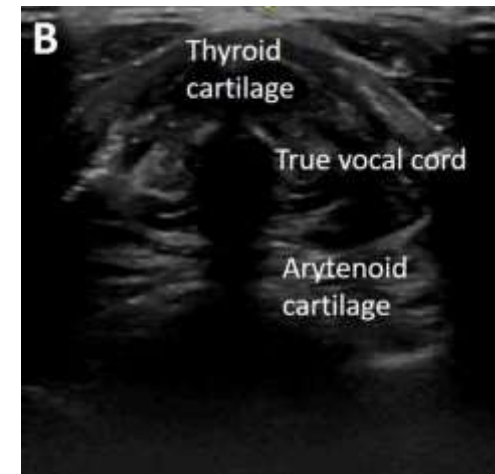
SSO durant déglutition





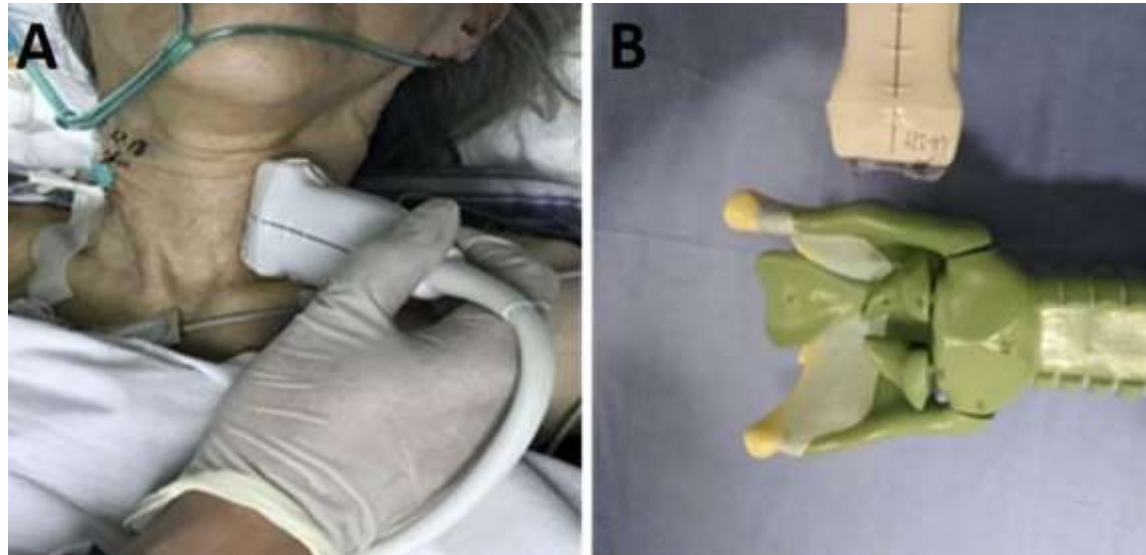
Cordes vocales - méthode

- Patient en (légère) hyperextension cervicale
- Sonde : perpendiculaire au cervicales
 - évaluation cranio-caudal à partir de l'hyoïde
- Plus facile à voir chez les femmes et chez les jeunes
 - Très faible taux de visualisation (17%)
- Pas de différence entre sexe mais impact de l'obésité
 - Peu valide dans les suites de chirurgie de la thyroïde et para-thyroïde



Cordes vocales – méthode 2

- Deuxième méthode :
 - Evaluation de l'aryténoïde
 - La combinaison de deux méthodes a augmenté taux visualisation jusqu'à 96%



Cordes vocales



En synthèse

- Non invasive, non irradiante, économique
- Réel intérêt dans la rééducation de la déglutition
- Peu de données sur les performances diagnostiques

En synthèse



Analyse qualitative et quantitative :

- Amplitude linguale
- Muscle géniohyoïdien
- Mouvement hyoïdien/larynx

Analyse qualitative et quantitative :

- Muscles supra-hyoïdiens
Au repos et durant la déglutition



- States sinus piriforme et vallécules
- SSO



MERCI DE VOTRE ATTENTION

