

# Prévention des troubles musculo-squelettiques de l'endoscopiste



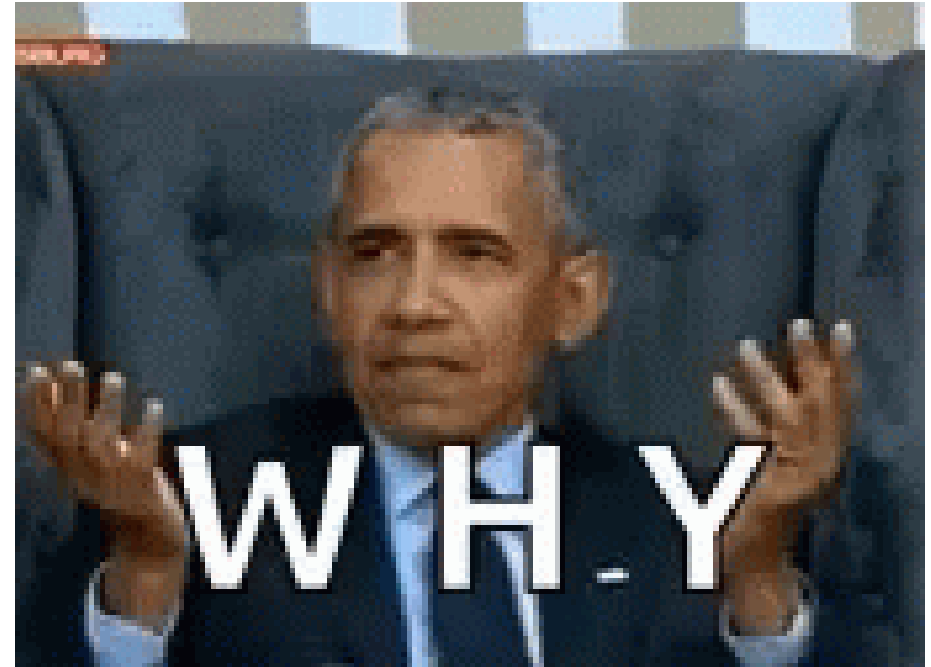
Samedi 13 Mai 2023

Benoît Bordaçahar

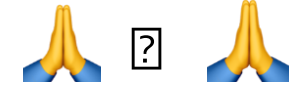


Samedi 13 mai 2023  
19<sup>ème</sup> JOURNÉE DE GASTRO-ENTEROLOGIE  
DE L'HOPITAL COCHIN  
(APHP.Centre Université Paris Cité)  
Lieu : Cercle National des Armées - 8 place Saint-Augustin, 75008 Paris

# Troubles musculo-squelettiques (TMS) et endoscopie...!!!??? 🤨🤨🤨



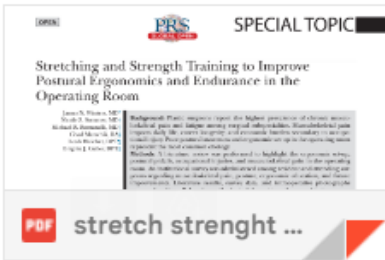
# Biblio...merci Pr Chaussade



ven. 12 mai 15:33 (il y a 8 heures)

**S Stanislas Chaussade**  
À moi ▾  
🌐 anglais ▾ > français ▾ Traduire le message

1 pièce jointe • Analyse effectuée par Gmail ⓘ



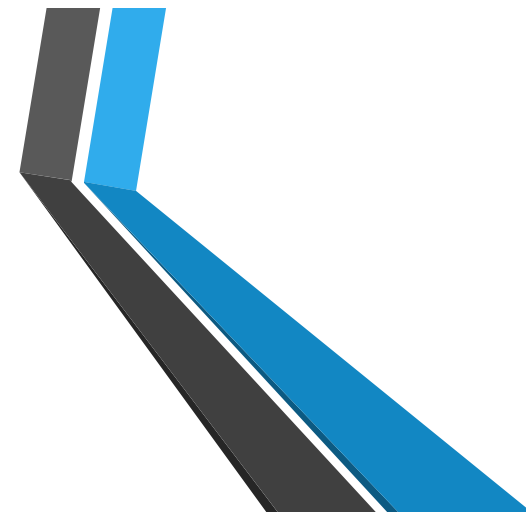
**S Stanislas Chaussade**  
À moi ▾  
🌐 anglais ▾ > français ▾ Traduire le message

1 pièce jointe • Analyse effectuée par Gmail ⓘ



**S Stanislas Chaussade**  
À moi ▾  
☰

1 pièce jointe • Analyse effectuée par Gmail ⓘ



**S Stanislas Chaussade**  
À moi ▾  
🌐 anglais ▾ > français ▾ Traduire le message

1 pièce jointe • Analyse effectuée par Gmail ⓘ



To be continued...

# Troubles musculo-squelettiques (TMS) et endoscopie ♥️🔥 enfin ♥️👍👍



# Troubles musculo-squelettiques (TMS) et endoscopie

- Blessures/pathologies en lien avec la pratique de l'endoscopie digestive<sup>1</sup>
  - Volume d'examens (20 examens/semaine, 16h endoscopie/semaine)
  - Age opérateur (répétitions des mouvements)
  - Postures inadaptées
  - Manque d'information sur l'ergonomie en endoscopie
- Ergonomie ?

= étude des conditions de travail permettant l'amélioration de l'efficacité et de la sécurité/santé au travail

1. Singla M, Kwok RM, Deriban G, et al. Training the endo-athlete: an update in ergonomics in endoscopy. Clin Gastroenterol Hepatol 2018;16:1003-6

# En Pratique

- 30-80% des gastro-entérologues réalisant des endoscopies digestives décrivent des TMS<sup>1-3</sup>

- Atteintes les plus fréquentes :

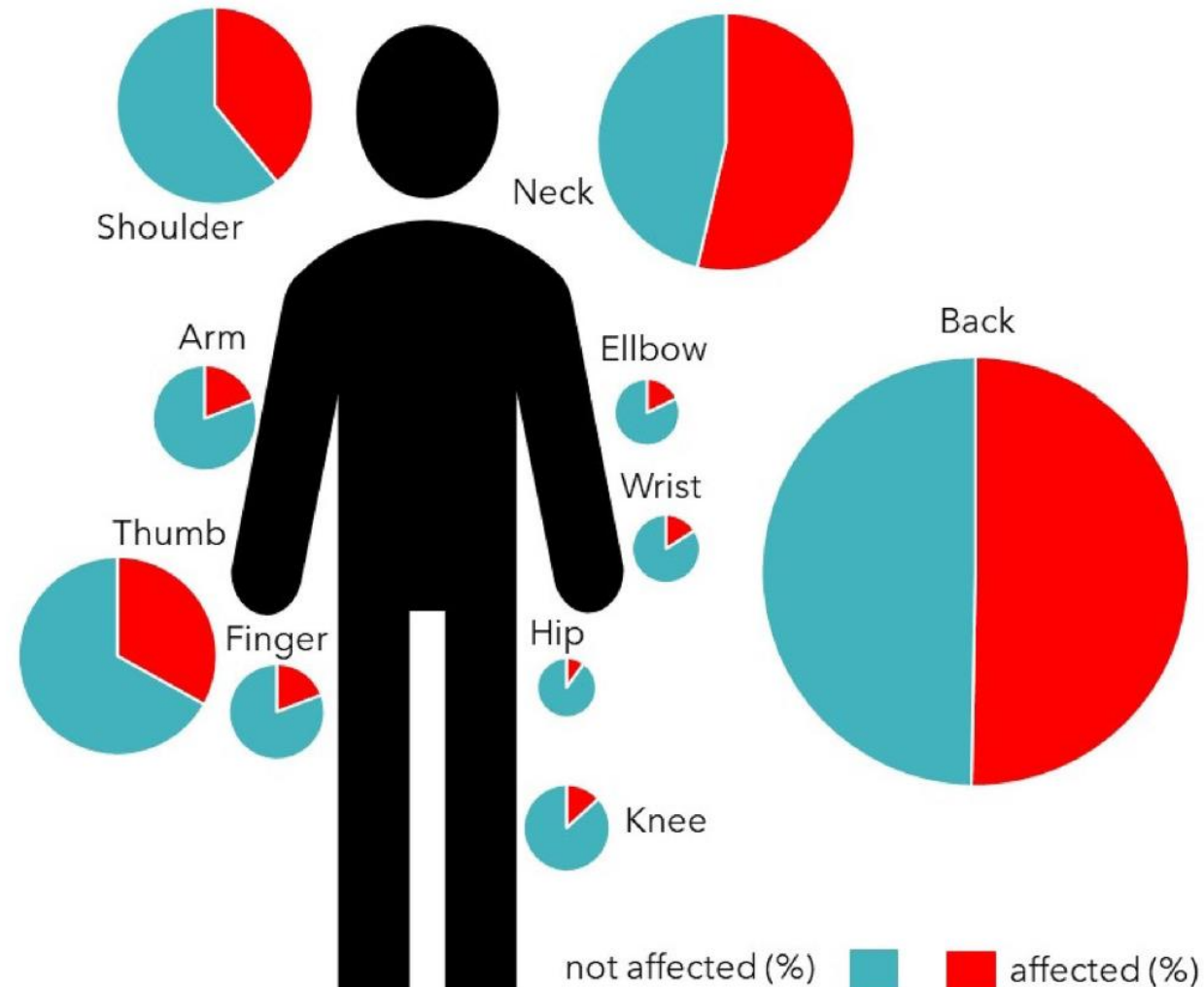
- Nuque/dos
- Epaule
- Main/poignet/pouce
- Pieds

- Mécanisme prédominant : mau

- Aucune formation dans l'apprei ergonomiques pour limiter les r

1. Shergill AK, McQuaid KR, Rempel D. Erg  
2. Harvin G. Review of musculoskeletal injur  
2014;48:590-4.

3. Hansel SL, Crowell MD, Pardi DS, et al. P  
controlled pilot study. J Clin Gastroenterol 20



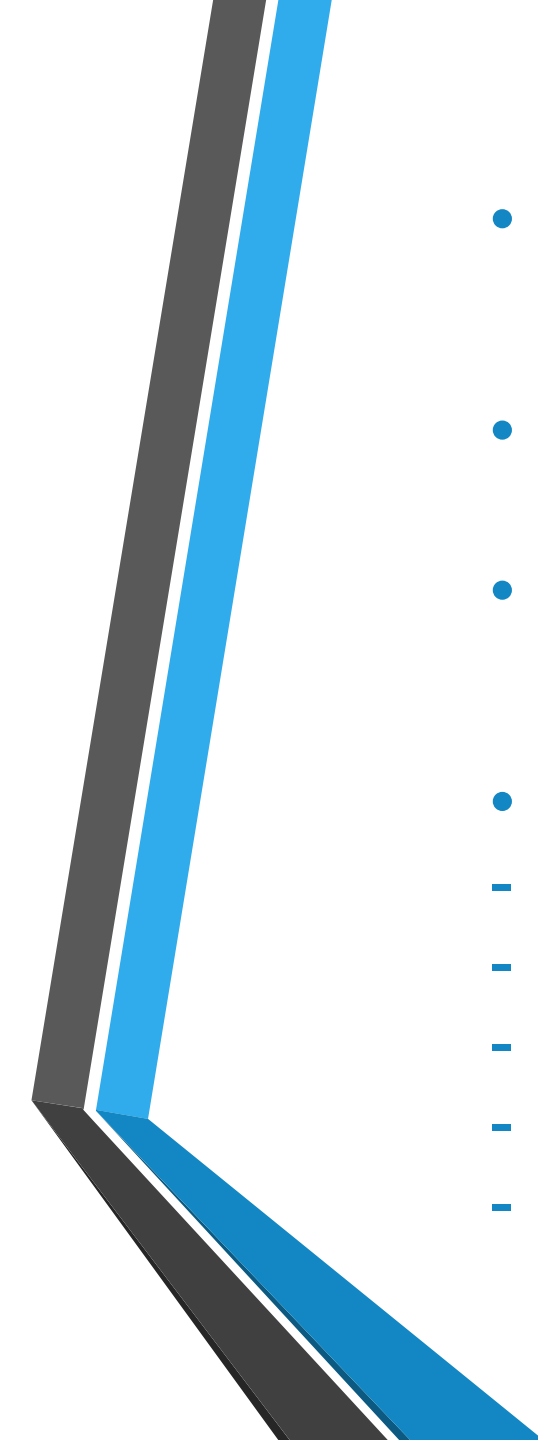
# scientific reports



OPEN

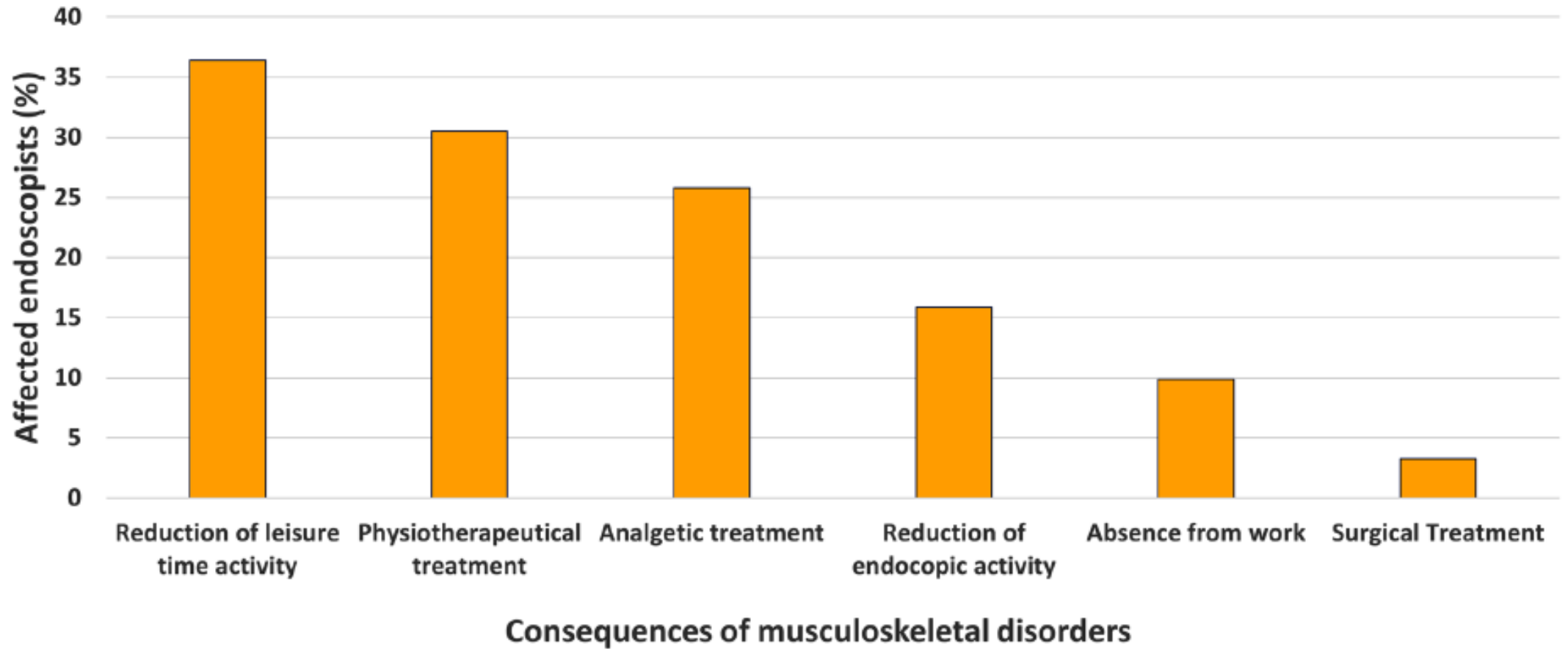
## The impact of endoscopic activity on musculoskeletal disorders of high-volume endoscopists in Germany

N. Sturm<sup>1</sup>, J. Leukert<sup>4</sup>, L. Perkhofer<sup>1</sup>, A. Hann<sup>3</sup>, M. Wagner<sup>1,2</sup>, B. Mayer<sup>6</sup>, T. Seufferlein<sup>1</sup>, J. Mayerle<sup>5</sup>, C. Schulz<sup>5</sup>, A. Meining<sup>3</sup>, E. Kraft<sup>4</sup> & Benjamin M. Walter<sup>1,2</sup>✉

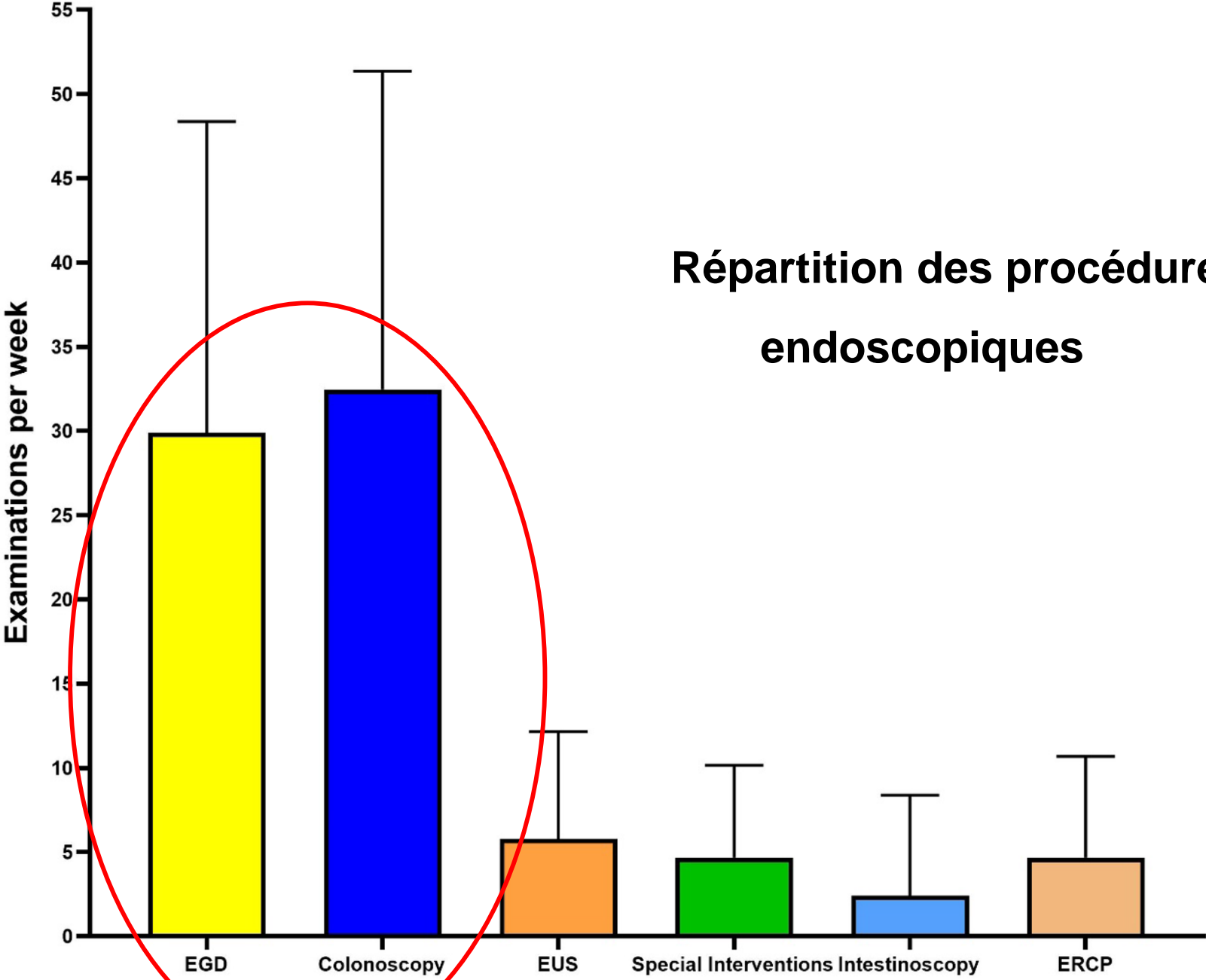
- 
- Prévalence et conséquences des troubles musculo-squelettiques (TMS) en rapport avec l'endoscopie digestive
  - 151 endoscopistes allemands, centres « haut volume »
  - Prévalence TMS : 83% dont 77% en rapport avec la pratique de l'endoscopie
  - Localisations TMS :
    - Nuque
    - Dos
    - Epaule
    - Pouce
    - autre



# Conséquences TMS

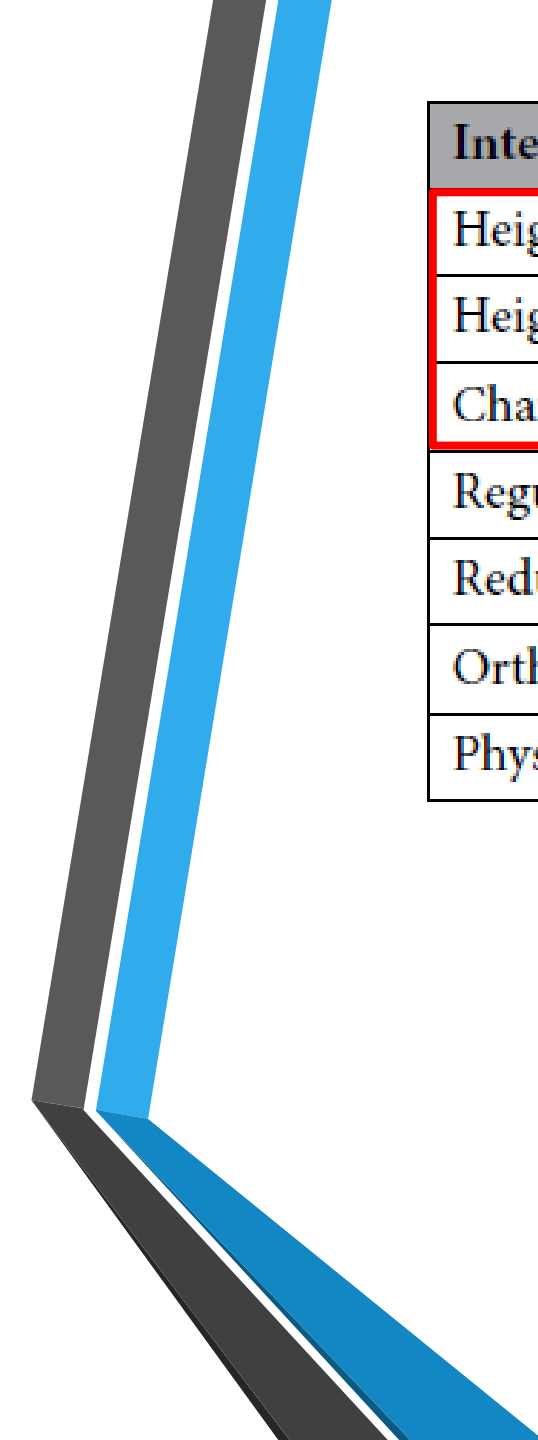


# Répartition des procédures endoscopiques



Variable	Odds Ratio	95% CI	Significance
Age (years)	1.05	1.00–1.09	0.04
Sex	0.85	0.31–2.30	0.75
Professional experience (years)	1.04	1.00–1.09	0.06
Working time in endoscopy (hours/day)	1.20	1.00–1.37	0.05
Height (cm)	1.02	0.97–1.07	0.45
Weight (kg)	1.00	0.97–1.04	0.72
BMI (kg/m <sup>2</sup> )	1.00	0.87–1.14	0.99
Physical exercise	1.49	0.87–2.54	0.14
Glove size	0.86	0.55–1.36	0.52
Breaks	1.34	0.71–2.54	0.37
<b>Place of work</b>			
Specialist practice/day clinic	0.63	0.19–2.11	0.45
Community hospital	0.53	0.18–1.62	0.27
University hospital	1.59	0.47–5.37	0.45
Number of endoscopic examinations per week (total)	1.00	0.99–1.02	0.69

EGD	1.01	0.99–1.03	0.39
Diagnostic	1.01	0.98–1.05	0.43
Therapeutic	1.02	0.97–1.08	0.50
Intestinoscopy	1.04	0.98–1.10	0.23
Colonoscopy	0.99	0.97–1.01	0.42
Diagnostic	0.99	0.96–1.02	0.47
Therapeutic	0.98	0.92–1.04	0.45
EUS	0.99	0.93–1.06	0.83
Diagnostic	0.98	0.89–1.07	0.60
Therapeutic	1.04	0.89–1.22	0.61
ERCP	1.01	0.93–1.10	0.80
Cholangioscopy	1.13	0.83–1.54	0.43
Special Intervention	0.99	0.91–1.08	0.84
EMR	0.99	0.92–1.08	0.89
ESD	1.22	0.91–1.62	0.18
POEM	0.57	0.08–4.13	0.58
FTR	0.53	0.21–1.33	0.17



Intervention	Frequency ( <i>n</i> = 151)	Percentage (%)
Height adjustment of the examination bed	42	27.8
Height adjustment of the video monitor	36	23.8
Changes in endoscopic technique	55	36.4
Regular work breaks	10	6.6
Reduction in the number of daily examinations	5	3.3
Orthopedic aids	10	6.6
Physical exercise	17	11.3

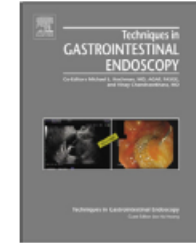
# Risques liés à la pratique de l'endoscopie



Contents lists available at [ScienceDirect](#)

## Techniques in Gastrointestinal Endoscopy

journal homepage: [www.techgiendoscopy.com/locate/tgie](http://www.techgiendoscopy.com/locate/tgie)



## Implementing ergonomics interventions in the endoscopy suite

M. Fahad Ali, MD, Jason Samarasena, MD, FACP\*

*H.H. Chao Comprehensive Digestive Disease Center, University of California – Irvine, 333 City Blvd. West, Suite 400, Orange, CA 92868*



## THE UCI ERGONOMICS FOR ENDOSCOPY “FMT” CHECKLIST Division of Gastroenterology



Floor and Fluoroscopy

Monitor

Table

# Comment se tenir en salle d'endoscopie

## Floor and Fluoroscopy

Anti-fatigue mats, gel floor pads, cushioned insoles, compression stockings and shifting positions can reduce fatigue and pain.

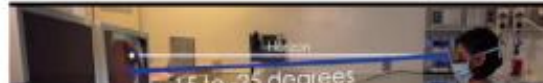


Use a **2-piece lead apron**. Doing so can reduce the weight on the lower back by **80%**.



## Monitor

Position monitor **directly in front** of you such that the viewing angle is between **15-25 degrees below horizontal**. If the monitor is too close, it can cause headache and eye fatigue.



## Table

Adjust the table to a height where a colonoscopy shaft is held between **elbow height and 10cm below elbow height**.



# Comment se tenir en salle d'endoscopie

## Floor and Fluoroscopy

Anti-fatigue mats, gel floor pads, cushioned insoles, compression stockings and shifting positions can reduce fatigue and pain.



Use a 2-piece lead apron. Doing so can reduce the weight on the lower back by **80%**.



## Monitor

Position monitor **directly in front** of you such that the viewing angle is **between 15-25 degrees below horizontal**. If the monitor is too close, it can cause headache and eye fatigue.



Use of bifocals can increase the risk of neck injury due to excessive neck extension.



## Table

Adjust the table to a height where a colonoscopy shaft is held **between elbow height and 10cm below elbow height**.



Stand in a **neutral position** to maximize the amount of force you can generate with the minimal amount of effort.



# Efficacité mesures ergonomiques

ORIGINAL ARTICLE: Clinical Endoscopy

## Individualized ergonomic wellness approach for the practicing gastroenterologist (with video)



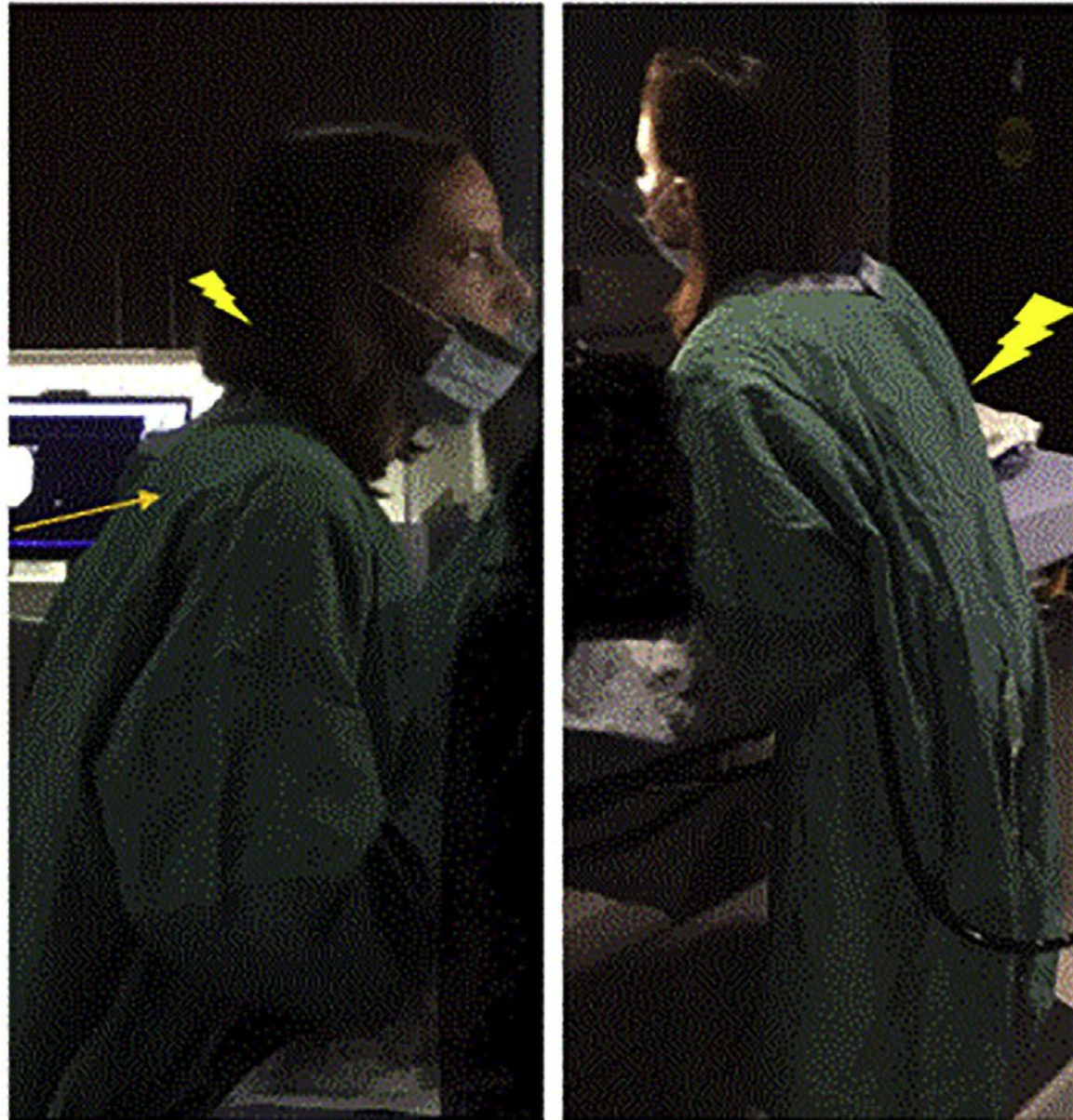
Stacy A. Markwell, MS, PT,<sup>1</sup> Katherine S. Garman, MD,<sup>2</sup> Iris L. Vance, MD,<sup>2</sup> Ami Patel, MD,<sup>2</sup>  
Melissa Teitelman, MD, MSCE<sup>2</sup>

Chapel Hill, Durham, North Carolina, USA

- 10 endoscopistes volontaires d'un seul centre
- Evaluation (questionnaires) + enregistrement vidéo (> 2 coloscopies)
- Prise en charge par un kinésithérapeute : programme personnalisé de santé
- Exercices individuels
- Ré-éducation postures statiques et dynamiques
- Optimisation/ré-organisation salle endoscopie



# Enregistrement coloscopie



# Après « correction » par Kiné



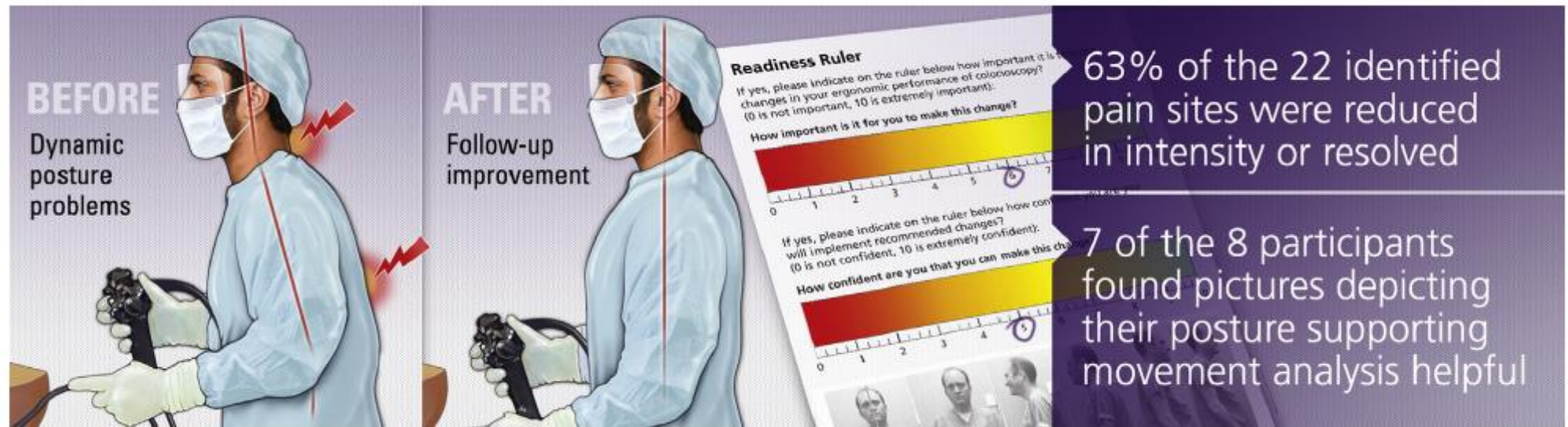
# Efficacité mesures ergonomiques

ORIGINAL ARTICLE: Clinical Endoscopy

## Individualized ergonomic wellness approach for the practicing gastroenterologist (with video)

Stacy A. Markwell, MS, PT,<sup>1</sup> Katherine S. Garman, MD,<sup>2</sup> Iris L. Vance, MD,<sup>2</sup> Ami Patel, MD,<sup>2</sup>  
Melissa Teitelman, MD, MSCE<sup>2</sup>

Chapel Hill, Durham, North Carolina, USA



**BEFORE**  
Dynamic posture problems

**AFTER**  
Follow-up improvement

**Readiness Ruler**  
If yes, please indicate on the ruler below how important it is for you to make this change?  
(0 is not important, 10 is extremely important).  
How important is it for you to make this change?  
0 1 2 3 4 5 6 7

If yes, please indicate on the ruler below how confident you are that you can make this change?  
(0 is not confident, 10 is extremely confident).  
How confident are you that you can make this change?  
0 1 2 3 4 5 6 7

63% of the 22 identified pain sites were reduced in intensity or resolved

7 of the 8 participants found pictures depicting their posture supporting movement analysis helpful

# Comment tenir un endoscope

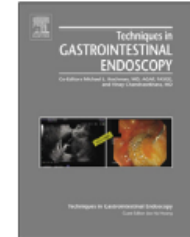


ELSEVIER

Contents lists available at [ScienceDirect](#)

## Techniques in Gastrointestinal Endoscopy

journal homepage: [www.techgiendoscopy.com/locate/tgie](http://www.techgiendoscopy.com/locate/tgie)

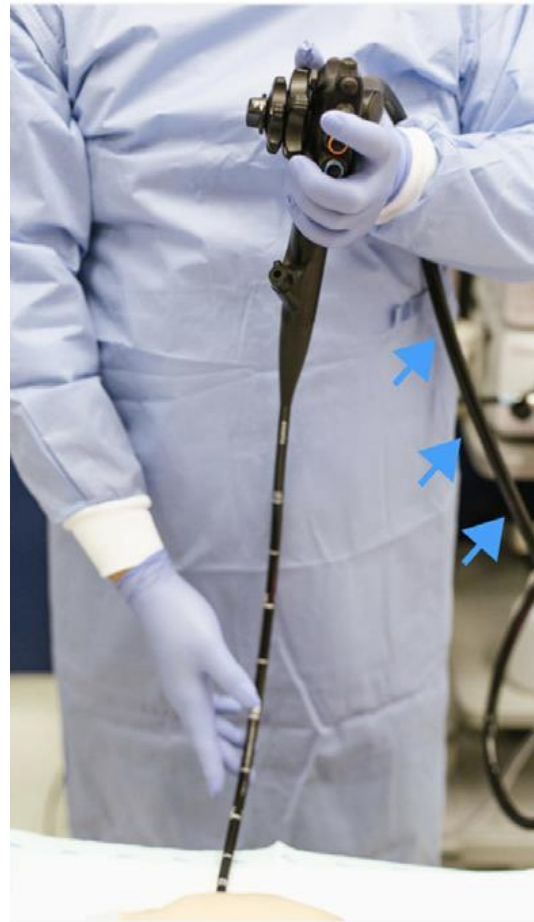


### Holding and manipulating the endoscope: A user's guide

Roy Soetikno, MD, MS<sup>a,b,\*</sup>, Ravishankar Asokkumar, MBBS, MRCP<sup>c</sup>, Tiffany Nguyen-Vu, BA<sup>b,d</sup>,  
Thomas DeSimio, RN<sup>e</sup>, Tonya Kaltenbach, MD, MS<sup>a,b,d</sup>

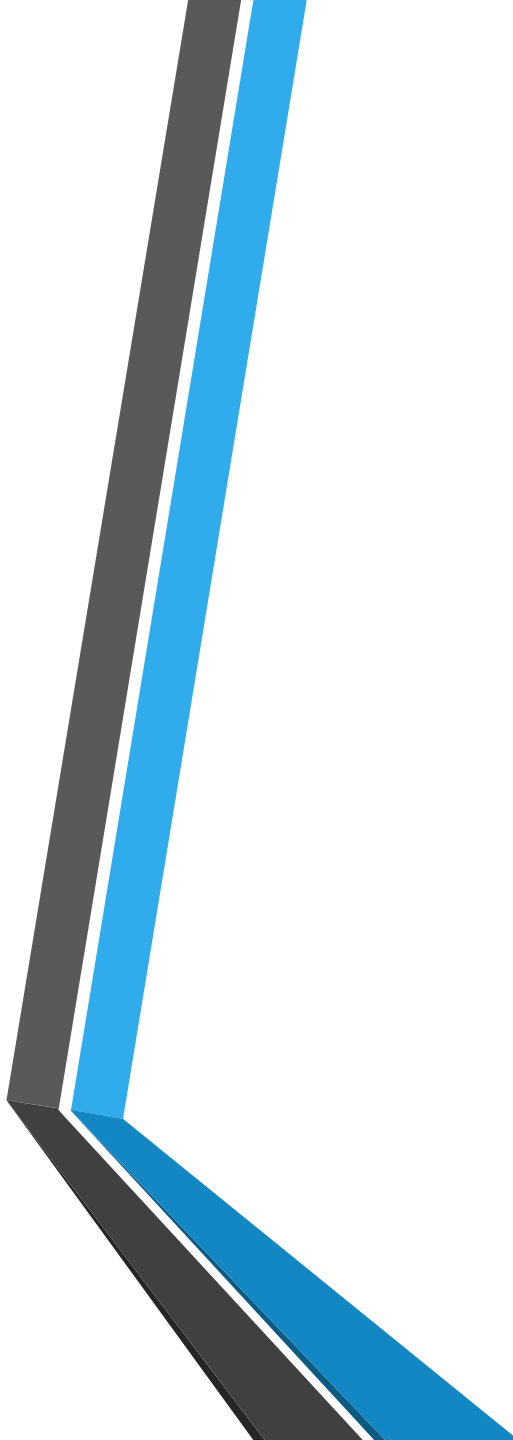


# Comment tenir un endoscope

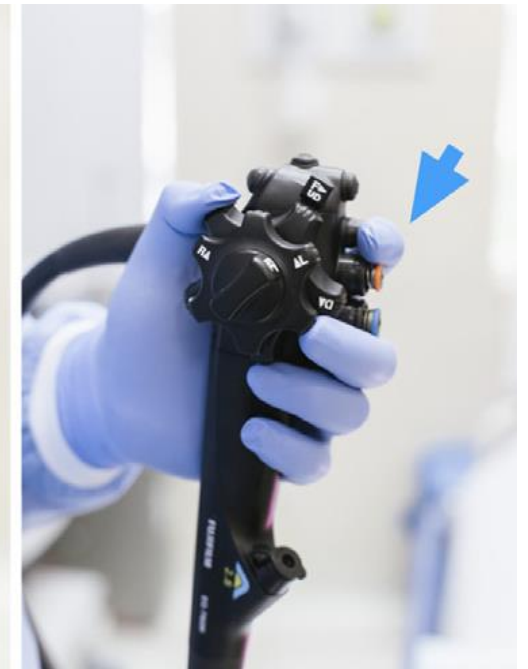


# Comment tenir un endoscope





# Main gauche : endoscopi(anist)e

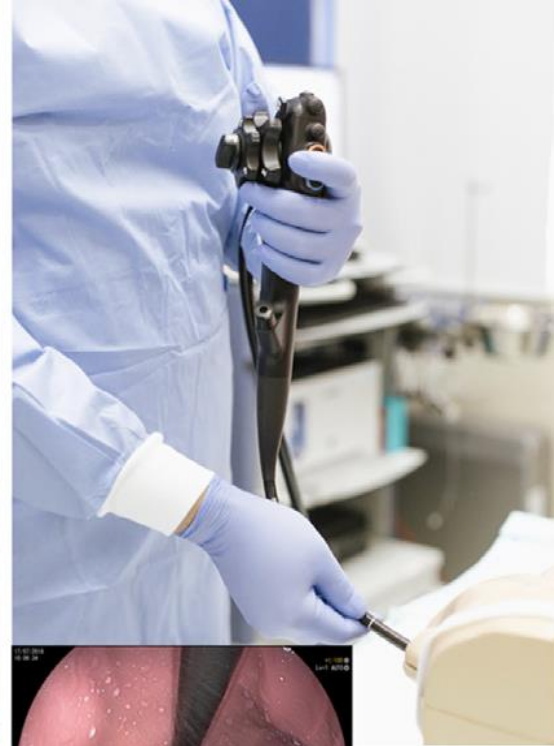
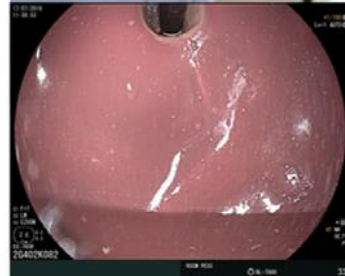
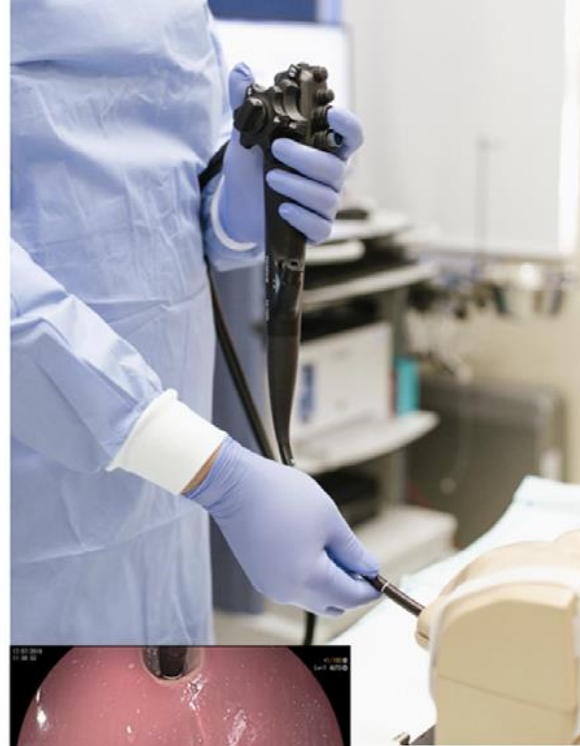




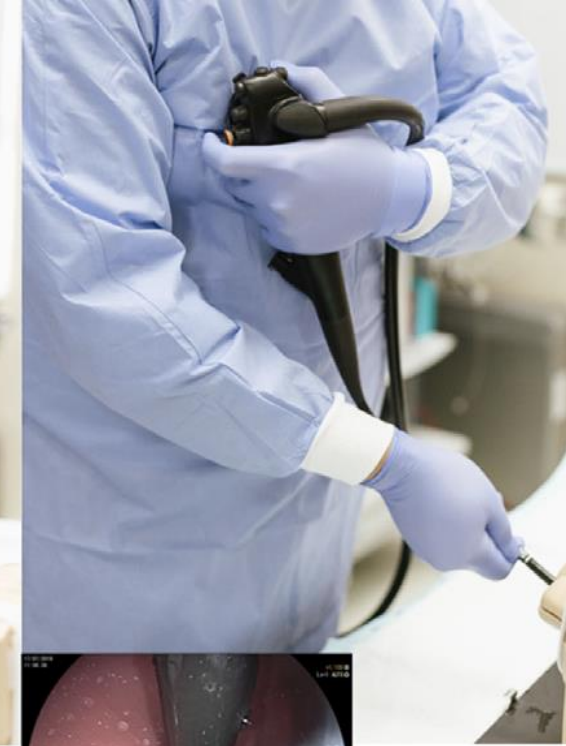
# Main gauche : endoscopi(anist)e



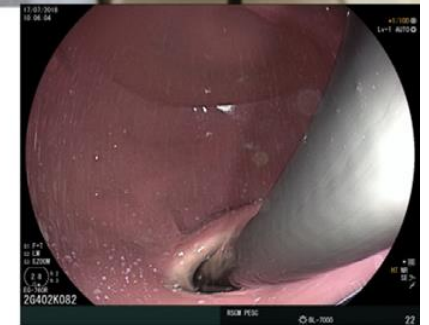
# Endoscopie haute



Water can be  
suctioned while  
examining



# Endoscopie haute



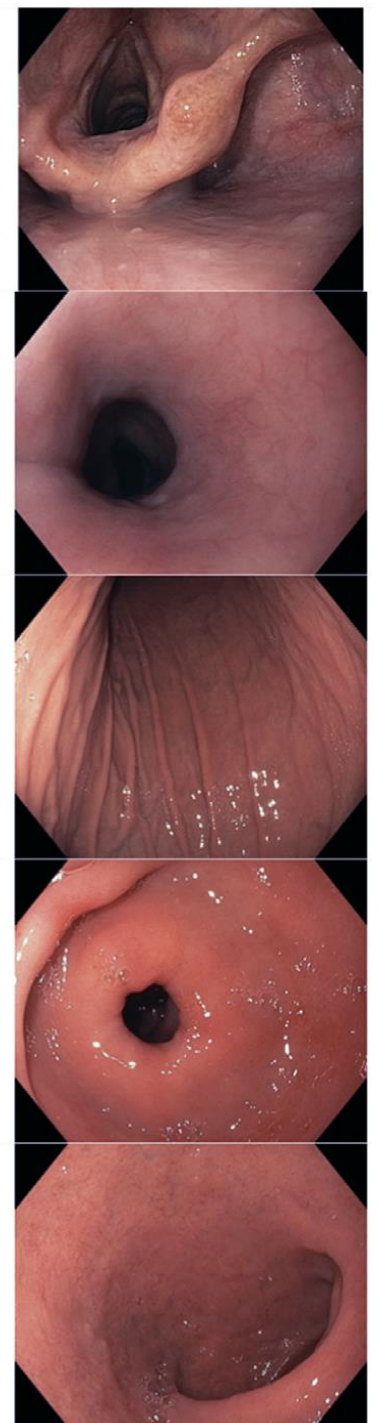
Advance insertion tube to visualise the vocal cords and pyriform fossa

After insertion into the esophagus, the control body is brought straight up to orient the endoscope

The same straight orientation is maintained upon entry into the stomach. The stomach is inflated to flatten the rugal folds

The same straight orientation is maintained while examining the four quadrants of the antrum

The endoscope makes a big loop in the stomach before entering the duodenal bulb. The straight orientation is maintained.

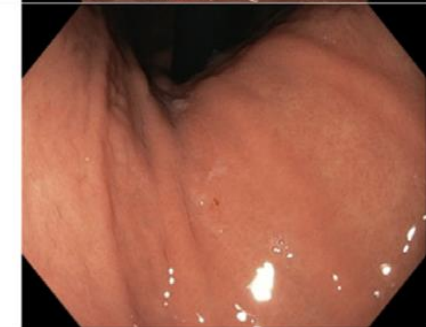
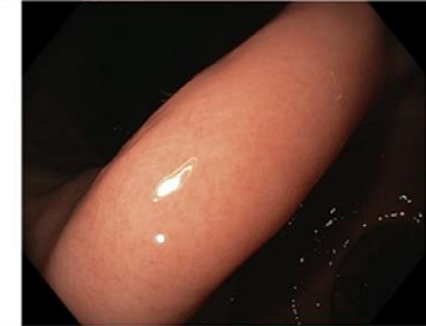
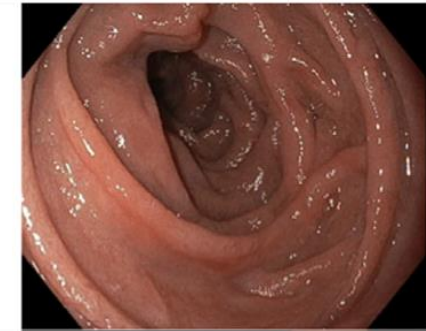


To enter the second part, the small knob and the control body is turned to the right and the big knob is turned down. The scope is shortened by withdrawing the insertion tube. When shortening, the scope advances deeper

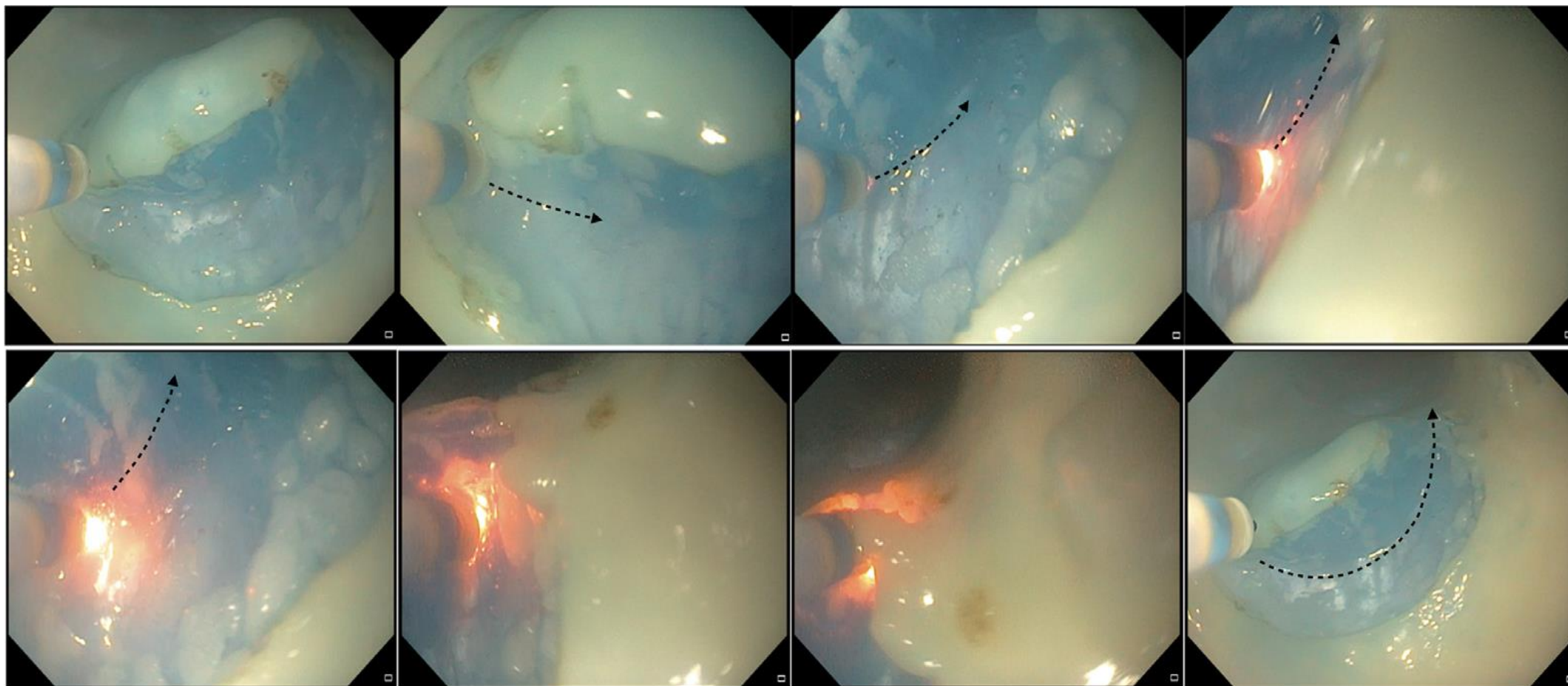
At the antrum, the big knob is turned down to visualise and examine the incisura

While seeing the incisura, one hand-retroflexion is performed by turning the small knob to the right, moving the control body towards your right shoulder and withdrawing the scope. The scope advances towards greater curvature of the fundus

To visualise the cardia and high lesser curve, the control body is moved to the left hand side towards the patient's bed



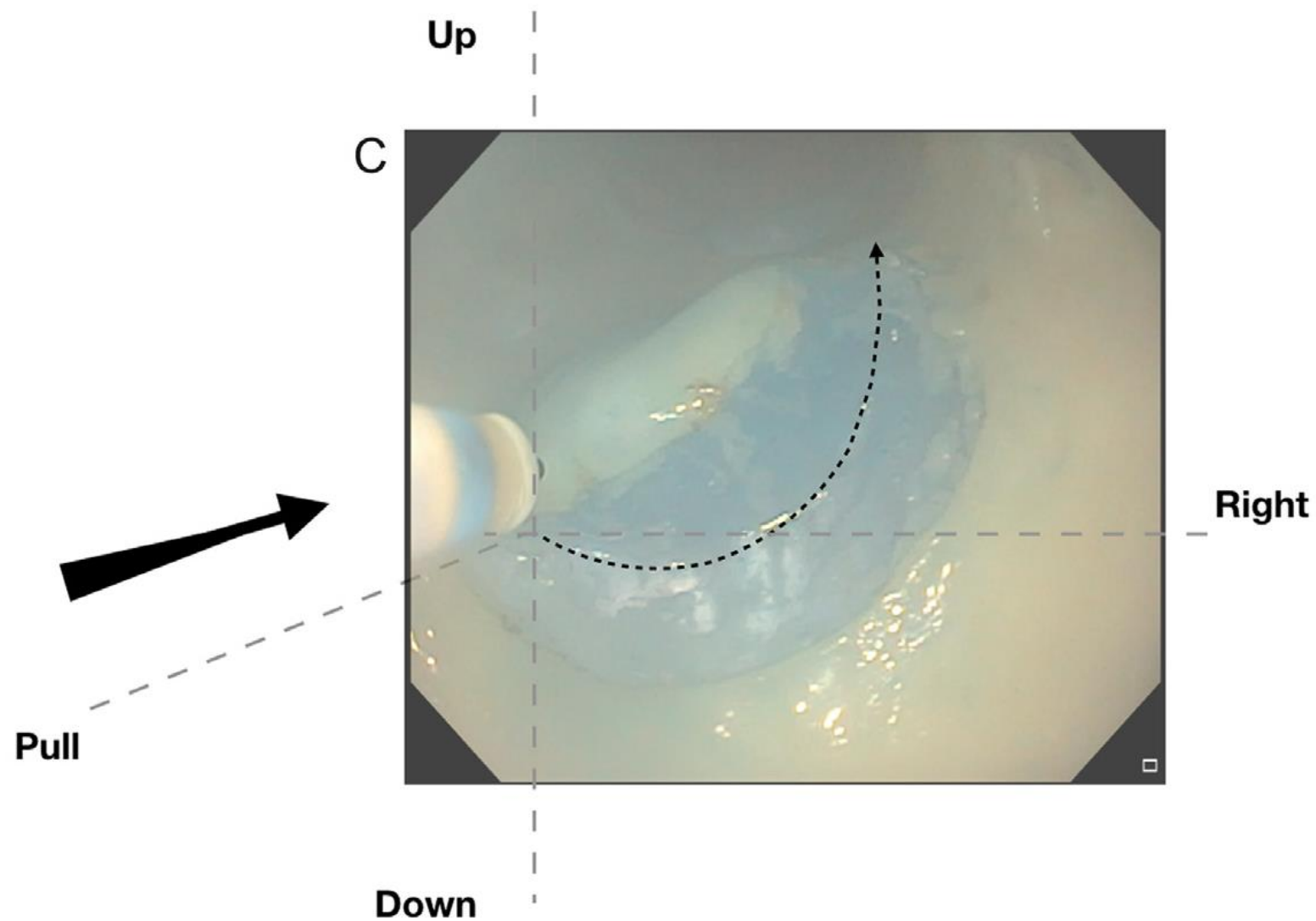
# Dissection sous-muqueuse



# Dissection sous-muqueuse



# Dissection sous-muqueuse





# Endoscopiste et grossesse

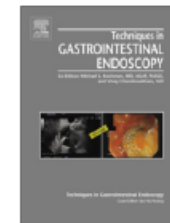


ELSEVIER

Contents lists available at [ScienceDirect](https://www.sciencedirect.com)

## Techniques in Gastrointestinal Endoscopy

journal homepage: [www.techgientoscopy.com/locate/tgie](http://www.techgientoscopy.com/locate/tgie)



### Special situations: Performance of endoscopy while pregnant

Kerstin Austin, MD\*, Haley Schoenberger, MD, Sumona Saha, MD, MS

*Gastroenterology and Hepatology, University of Wisconsin, 1685 Highland Ave, Room 4240 MFCB, Madison, Wisconsin 53705-2281*



# Endoscopiste et grossesse

- Augmentation proportion des femmes gastro-entérologues (USA)
  - 16% 1990-2000
  - 34% 2015
  - > 50% étudiantes en médecine



- Majorité des études concerne pré-éclampsie, prématurité, taux de césariennes...
- Modifications ostéo-musculaires au cours de la grossesse (hormonales, anatomiques) : majoration risque TMS

# TMS endoscopiste et grossesse

- Douleurs lombaires (50-90%). Prévalence X 4 Vs Endoscopiste non enceinte (X8 port tablier plomb)
- Douleurs ceinture pelvienne : liées à la statique (heures d'endoscopie, absence de changement de positions)
- Gonalgies/métatarsalgies : rôle de la laxité ligamentaire
- Syndrome du canal carpien : 40% femme enceinte faisant de l'endoscopie Vs 10% femme non enceinte
- Ténosynovite de De Quervain

# Modifications ergonomiques

- Limiter le poids des objets soulevés/manipulation des patients
- Réduire les postures statiques et/ou inconfortables
- Tapis de sol lors des procédures, repose pieds lors des pauses, ceinture de soutien lombaire
- Ajustement hauteur du lit pour permettre expansion de l'abdomen : appui sur le lit efficace pour diminuer les douleurs lombaires, se rapprocher du patient. Alignement à hauteur du coude ou 10cm en dessous
- Station debout < 2 heures. Limiter le nombre de procédures (3<sup>ème</sup> T +++)  
et pauses : s'asseoir, s'étirer, s'hydrater

# CPRE et grossesse

- Pas de risque d'exposition pour le fœtus si respect des règles et port du tablier (tablier spécifique qui s'enroule)
- TMS et CPRE :
  - Cervicalgies
  - Dorsalgies
  - Lombalgies
- Augmentation de la charge statique sur les vertèbres lombaires : lombalgies +++

# Conclusion

- TMS fréquents +++
- Mauvaises postures : statiques et dynamiques
- Importance dépistage précoce : correction longue +++
- Mesures ergonomiques :
  - Individuelles
  - Collectives : organisation salle endoscopie

