AGL 2022

51st GLOBAL CONGRESS ON MIGS

December 1–4, 2022 | Gaylord Rockies Resort and Convention Center | Aurora, Colorado

SYLLABUS

Panel 6: Minimally Invasive Surgery (MIS): An Occupational Hazard?

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The following have agreed to provide verbal disclosure of their relationships prior to their presentations. They have also agreed to support their presentations and clinical recommendations with the "best available evidence" from medical literature (in alphabetical order by last name). Noor Dasouki Abu-Alnadi, MD*
Paolo A. Gehrig, MD*
Jacqueline Wong, MD, MSCR – Grant: NIH National Center for Advancing Translational Sciences (NCATS)

Panel 6: ***Minimally Invasive Surgery (MIS): An Occupational Hazard?***

Chair: *Jacqueline Wong, MD, MSCR*

Faculty: *Noor Dasouki Abu-Alnadi, MD and Paolo A. Gehrig, MD*

Course Description

This session aims to delineate the ergonomic risks that surgeons face in the performance of MIS approaches and will present a discussion of the various instruments and devices that may impart an elevated ergonomic risk. We aim to empower MIG surgeons to adopt the surgical techniques that impart the least ergonomic risk to them in their surgical practices, thereby reducing their risk of occupational injury and prolonging their surgical longevity. A demonstration of operating room setup and a review of intraoperative ergonomic interventions will provide a practical and reproducible guide for surgeons to directly implement in their own surgical practices. We will provide a framework for surgeons to further teach their own trainees how to employ ergonomic techniques. Given that ergonomic risk particularly affects surgeons of a young age and female sex, this intervention also offers a way to help reduce this disparity encountered within our surgeon population.

Learning Objectives

At the conclusion of this course, the participants will be able to: 1) Determine how ergonomic measures decrease work-related injury through the review of supporting scientific evidence; 2) Apply optimal laparoscopic and robotic surgical ergonomic principles that reduce surgeon risk; and 3) Integrate intraoperative modifications and instrument selections that optimize surgeon efficacy, efficiency, and safety.

Course Outline

2:00 pm	Welcome, Introduction and Course Overview	J. Wong
2:05 pm	Robotic Ergonomics	P.A. Gehrig
2:20 pm	Surgical Ergonomics: Laparoscopy	N.D. Abu-Alnadi
2:35 pm	Laparoscopic Instrument Ergonomics	J. Wong
2:55 pm	Questions & Answers	All Faculty
3:05 pm	Adjourn	

Robotic Ergonomics

Paola A. Gehrig, MD
W. Norman Thornton, Jr., MD, Professor and Chair
Department of Obstetrics and Gynecology
University of Virginia

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Disclosure

I have no financial relationships to disclose

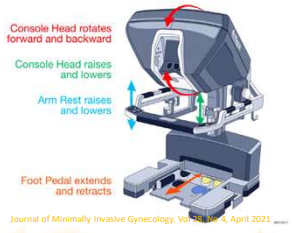
Objectives

- To review the following:
  - ❖ the robotic console set up
  - ❖ improving the comfort of the robotic chair
  - ❖ maximizing your assistant's range of motion and comfort
  - ❖ uterine manipulation
  - ❖ where can we "win" with the robotic assistance?

Definitions

- Ergonomics: the study of people in their working environments
- -Three types: physical, cognitive, and organizational
- -Five aspects: safety, comfort, ease of use, productivity/performance, and aesthetics
- -10 basic principles: work in a neutral position, decrease the need for excessive force, keep materials within easy reach, work at the proper heights, reduce unnecessary motions, minimize fatigue, minimize contact stress, leave adequate clearance, move and stretch throughout the day, keep your environment comfortable

The Robotic Console



Journal of Minimally Invasive Gynecology. Vol. 28, No. 4, April 2021

- Scope of the problem:
- ~90% of MIS surgeons experience pain due to operating
- ~30% seek treatment
- 10-35% have limited their practice
- 11% of gyn oncologists required surgery
- ~25% of robotic surgeons place themselves in poor ergonomic position
- Suboptimal posture contributes to surgeon pain
- Survey of 289 robotic surgeons:
  - 54% experienced discomfort
  - Higher case volume associated with lower sx report rates ((p<0.05)

Franasiak J, et al. *Gynecol Oncol*. 2012;126:437-42.
Adams SR, et al. *J Minim Invasive Gynecol* 2013;20:656-660
Lee, et al. J Gynecol Oncol 2017;28(5):e70

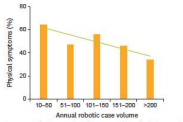


Fig. 2. Correlation between physical symptoms and annual robotic case volume.

Table 2. Discomforting body parts and reported rate

Body parts	Frequency (%)
Finger	134 (85.9)
Neck	193 (75.4)
Upper back	86 (55.1)
Lower back	65 (41.7)
Shoulder	57 (36.5)
Wrist	34 (37.2)
Eye	43 (27.6)

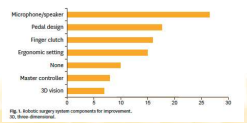


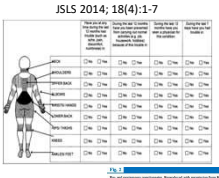
Fig. 1. Robotic surgery system components for improvement.
3D, three-dimensional.

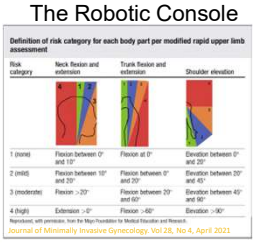
Survey study
- N=1215 (7.1% response rate)
- Physical discomfort
  - Robotics 8.3%
  - Open 36.3%
  - Laparoscopy 55.4%
- Robotic surgery with more eye pain and finger symptoms
- More thumb pain
- Higher rate of among female surgeons
  - Suboptimal equipment heights

Lee, et al. *J Gynecol Oncol* 2017;28(5):e70
Wee et al, *Int J Med Robotics Assist Surg* 2020;16:e2113:1-10.

The Robotic Console

JSLS 2014; 18(4):1-7





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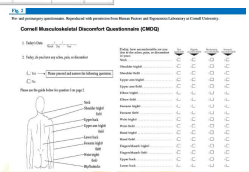


The Robotic Chair

Common features:
- Wheels (97.6%)
- Adjustable height (97.6%)
- Seat rotation (94.8%)
- Back support (84.2%)

How often to you adjust the Console?
- 38.7% every case
- 16% quite often
- 34.2% infrequently
- 11.1% never

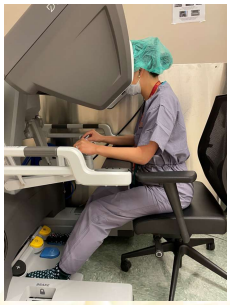
Lee, et al. J Gynecol Oncol 2017;28(5):e70

Beginning position: Top of the console is raised to the highest possible position and rotated toward the surgeon as much as the Xi RAS console will go. The console arm rest is lowered to the lowest possible position. Foot pedals are moved to a position furthest away from the chair/surgeon at console.

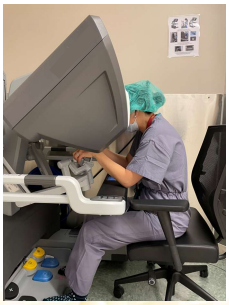
Procedure:

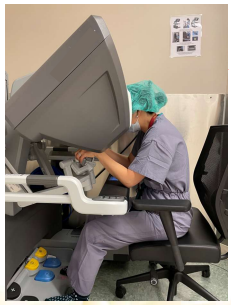
1. Chair Height. Adjust the chair height to visually match the popliteal height. The surgeon's knee should be positioned in a right angle.
2. Chair Distance. Ask the surgeon to, **"Move your chair as close to the armrest/console as feasible."** Raise the armrest slightly if clearance is needed for the knees.
3. Console Height. With the top of the Console rotated toward the surgeon and at the highest level, lower the console until the surgeon can use the viewfinder. Ask the surgeon to, **"Sit up as tall as you can and tell me when you can see through the eye piece."** Make sure to require them to sit up straight.
4. Armrest Height. Ask the surgeon to, **"Please hold the controls and keep your arms close to your side with neutral/relaxed shoulders."** Raise the armrest up to the forearm. From here move the armrest up 2-3 inches to allow for leg clearance and more precision in the task.
5. Pedal location. Ask the surgeon to place his/her ball of the foot behind the blue pedal (closer to the chair). Move the pedals toward the surgeon until the surgeon's knee visually forms a right angle (between thigh and lower leg).

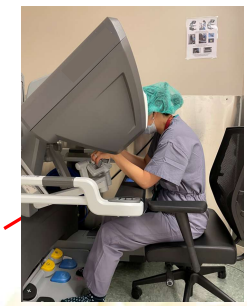
*Originally designed for the Intuitive Surgical DaVinci Xi Robot ©





Does ergonomic training help?

- Franasiak et al
- Offered surgeons in person training
  - 90-degree flexion of the knee
  - Forearm parallel to the floor with elbows tucked to the sides
  - Head flexion less than 20 degrees
  - Little to no forehead pressure on the headrest
  - Less frequent finger clutching
- 88% changed their practice and 74% reported decreased strain

- One challenge: surgeon height 64-73 inches

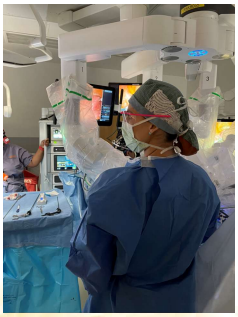
Franasiak J, et al. *Gynecol Oncol.* 2012;126:437-42.

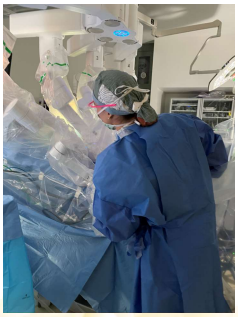
Bedside Assistant

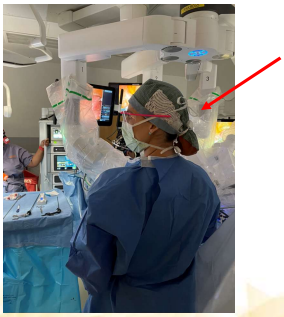
- 7 survey-based studies reported rates of MSK injury between 73-100%
- Most common sites of injury are neck, back, shoulder, elbow and wrist.
- Risk factors: younger age, hand-assisted, shorter surgeon stature, female gender, higher volume.

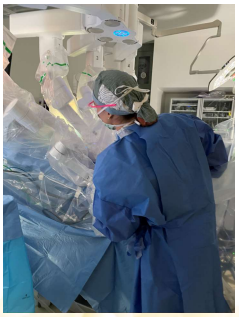
Things to consider are no different than with standard laparoscopy….monitor height, placement and distance, instruments, table height, steps, pedals, robotic arm position, etc.

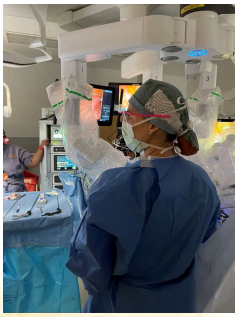
Clin Colon Rectal Surg 2019;32:424-34
Female Pelvic Medicine & Reconstructive Surgery 2018;24:1-12



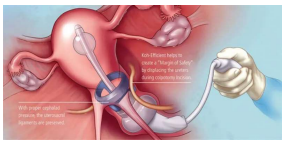








Uterine Manipulation



Right tool for the right job
- ❖ Uterine size
- ❖ Vaginal capacity
- ❖ Vaginal length
- ❖ Patient size and weight distribution

L. Mettler · Y. A. Nikam

A comparative survey of various uterine manipulators used in operative laparoscopy

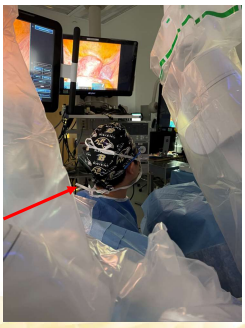
Gynecol Surg (2006) 3: 239–243

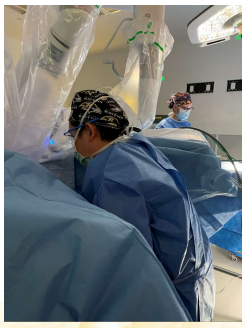
242

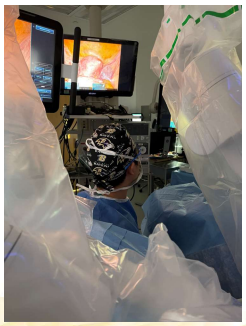
Table 8 Movement ranges of the various manipulators

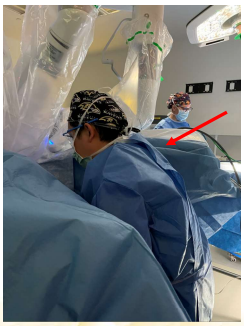
Sr No	Model of uterine manipulator	Reusable	Axis rotation movements	Lateral movements	Elevation movements	Vaginal fixation identification	Independent movements	Easiness of use and assembling	Handling	Pneumoperitoneum maintenance
1	Clermont-Forrand	Yes	++++	++++	+++	+++	++++	+	++	+++
2	HGIL	Yes	+++	+++	++	++	+++	+	++	++
3	Endopath	No	+++	+++	++	+	+	++	++	++
4	HUMI with Kolpotip	Partially	++++	+++	++	++++	– – – – –	+	++	+++
5	Hoenicke	Yes	++	++	++++	+++	++++	+++	+++	+
6	Vcare	No	++	++	++	++++	– – –	++++	+++	+++
7	TLH-Dr Mangalekar	Yes	+++	+++	++	+++	++	+++	+++	+++

Movement ranges: 140 degrees = ++++; 130 degrees = +++; 90 degrees = ++; restricted = +









Where can we really "win" with robotic assistance?

- Degrees of freedom
- Motion scaling
- Tremor reduction
- Force feedback
- 3-D immersive optics for depth perception
- Multimodality imaging frameworks
- Seated position may reduce neck and eye strain and avoid the unequal lower extremity eight bearing seen with laparoscopy.
- Lower mental workload

However….
- Thenar strain
- Stress scores are still high

Female Pelvic Medicine & Reconstructive Surgery 2018;24:1-12
J Minim Invasive Gynecol 2013:20(5):648-655

Take Home:

- ❖ Robotic surgery is ergonomically superior to open and laparoscopic surgery
- ❖ Physical strain remains significant
- ❖ Training and console familiarity is critical and can decrease reported strain

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Thank you!

References

- Franasiak J, et al. *Gynecol Oncol.* 2012;126:437-42.
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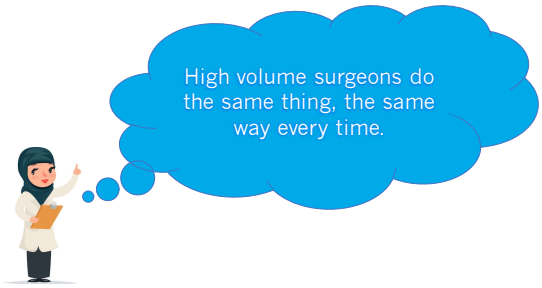


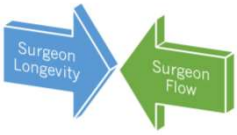
Surgical mantra

Workplace injuries are REAL!



Surgical Ergonomics: Laparoscopy

- Monitors
- Table
- Posture
- Steps
- Pedals
- Instruments



Surgical Ergonomics: Laparoscopy

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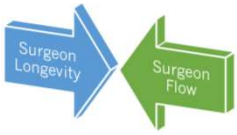


Monitors:

Considerations:

1. Position
2. Level
3. Distance

Monitors:

Considerations:

1. **Position: Directly in front**
2. Level
3. Distance

> Ann Surg. 1998 Apr;227(4):481-4. doi: 10.1097/00000658-199804000-00005.

Task performance in endoscopic surgery is influenced by location of the image display

G B Hanna [1], S M Shimi, A Cuschieri

- **Simulation study:** 10 surgeons completing a laparoscopic task while monitors were placed 3 different axis points (left, right, straight on) and 2 different levels (eye, hand). Distance of monitor was 100cm
- **Task:** 3 runs of intracorporeal knot tying of 20 cm 2-0 silk
- **Outcome measures:** execution time and knot analysis

> Ann Surg. 1998 Apr;227(4):481-4. doi: 10.1097/00000658-199804000-00005.

Task performance in endoscopic surgery is influenced by location of the image display

G B Hanna [1], S M Shimi, A Cuschieri

- **Results:** Monitors placed at hand level and in front of surgeon result in better task efficiency and task quality.
- **The more aligned the visual and motor axis the better!**

Monitors:

Considerations:

1. Position: Directly in front
2. **Level: hand level, 15° below eye level**
3. Distance

Monitors:

Considerations:

1. Position: Directly in front
2. **Level: hand level, 15° below eye level**
3. Distance

Monitors:

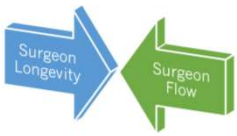
80 cm is above assistant head!

Considerations:

1. Position: Directly in front
2. Level: hand level, 15° below eye level
3. **Distance: ~80-100cm from surgeon**

Surgical Ergonomics: Laparoscopy

- Monitors
- Table
- Posture
- Steps
- Pedals
- Instruments



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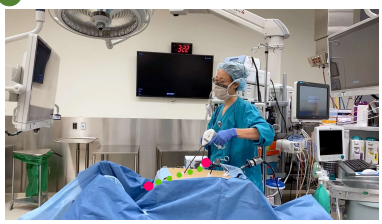


Considerations:

1. Height
2. Assistants
3. Port placement

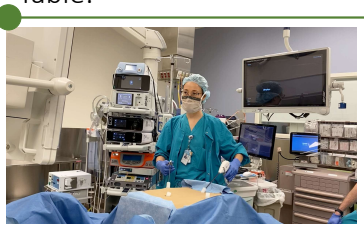
> Surg Endosc. 2002 Mar;16(3):416-21. doi: 10.1007/s00464-001-8190-y. Epub 2001 Nov 16.

An ergonomic study of the optimum operating table height for laparoscopic surgery

R Berguer [1], W D Smith, S Davis

- **Prospective study:** 21 surgeons, table height adjusted to -20cm, -10cm, 0, +10cm, +20cm from elbow height.
- **Task:** Simulated cutting task.
- **Outcome measures:** Muscle effort of deltoid and trapezius (EMG), arm elevation angle
- **Results:**
  - **Deltoid and Trapezius muscles gradually require more effort with table height**
  - **Arm elevation increase with table height**

Table:



Considerations:

1. Height: **upper thigh, hip**
2. Assistants: **adjust to tallest surgeon**
3. Port placement: **lower table height for suprapubic**

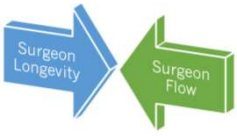
Table and Goldilocks….

Too LOW: crouch more

Too HIGH: abduct arm more

Surgical Ergonomics: Laparoscopy

- Monitors
- Table
- Posture
- Steps
- Pedals
- Instruments



Posture:

Considerations:

1. Stand upright
2. Minimize trunk rotation
3. Head with slight nod forward
4. Shoulder abduction < 30°
5. Elbow angle 90°-120°
6. Neutral forearm
7. Wrist extension, finger flexion (slight)

Posture:

ALWAYS TUCK ARMS!!!

1. More room to stand
2. Prevents trunk rotation
3. Surgeon always faces the monitor

Surgical Ergonomics: Laparoscopy

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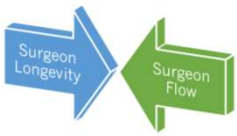

Steps:

Considerations:

1. Scenarios to use:
   - Short surgeon
   - Suprapubic port (decreased arm abduction)
2. Create "platform"

Steps:

Considerations:

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Surgical Ergonomics: Laparoscopy

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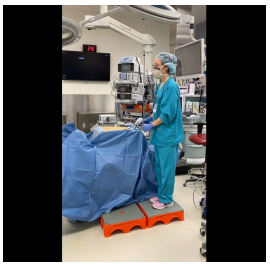
Pedals:



Considerations:

1. Place close to feet
2. Place same orientation as trunk
3. Do not hover above the pedal

Surgical Ergonomics: Laparoscopy

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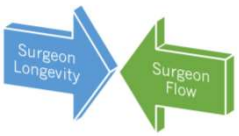


Laparoscopic Instrument Ergonomics

Jackie Wong, MD, MSCR
Minimally Invasive Gynecologic Surgery
Oregon Health & Science University

AAGL Annual Meeting December 2022

Disclosures: This research was supported by grant funding from the NIH National Center for Advancing Translational Sciences (NCATS).

What are important differences in laparoscopic instrument ergonomics?

What risk factors for injury are relevant for MIGS surgeons?

How do we minimize our ergonomic risk from our instruments?

What can I do about it?

Why is laparoscopic instrument ergonomics relevant for MIGS surgeons?

Why is laparoscopic instrument ergonomics relevant for MIGS surgeons?

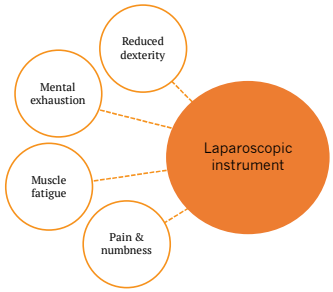
Our types of instruments
Our types of surgeons
Our types of procedures

77%

of gynecologic surgeons report physical complaints from laparoscopic instrument use

Wong et al. *JMIG*. 2021.
Berguer et al. *Surg Endosc*. 1998.
Trejo et al. *Appl Ergon*. 2007.
Cuschieri et al. *Am J Surg*. 1995.
Epstein et a. *JAMA Surg*. 2017.

Laparoscopic instrument ergonomics



Berguer et al. *Surg Endosc.* 1998
McDonald et al. *Gynecol Oncol.* 2014
Sutton et al. *Surg Endosc.* 2014

Instrument handle types

Ring

Axial

Shank/pistol

Instrument handle types – Ring handle

- Fingers held inside the rings of the grasper
- Creates pressure in areas contacted by the rings → can lead to paresthesia, discomfort, fatigue (laparoscopist's thumb)
- Requires exaggerated ulnar deviation at the wrist for use → leads to pain over time.

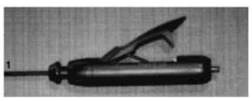
Sancibrian et al. *Appl Ergon.* 2020
Matern and Waller. *Surg Endosc.* 1999
Alleblas et al. *Gynecol Surg.* 2016

Instrument handle types – Ring handle

- The contact zones between the rings and the surgeon's hand do not conform to the most sensitive areas of the hand.
- Reduced haptic sensation.
- Very user- and size- dependent.

Matern and Waller. *Surg Endosc.* 1999
Matern et al. *Surg Endosc.* 1999

Instrument handle types – Axial handle

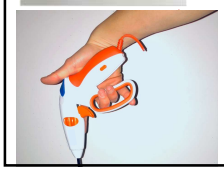


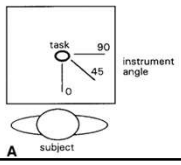
- Pros:
  - Improvement over ring handles with the absence of pressure points
- Cons:
  - No rotational knob
  - Marked ulnar deviation at the wrist for in-line use
  - Must overcome spring force to open/close

Sancibrian et al. *Appl Ergon.* 2020
Matern and Waller. *Surg Endosc.* 1999

Instrument handle types – Shank handle, pistol grip

- Alleviates contact stress points
- Cons:
  - Handles are often far too large
  - Must overcome spring resistance, stiff levers, and inaccessible buttons
  - Most uncomfortable when operating at angles of >90 degrees to the surgeon





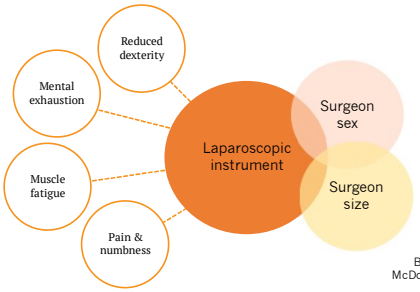
Alleblas et al. *Gynecol Surg.* 2016
Berguer et al. *Surg Endosc.* 1998

Instrument handle types – Shank handle, pistol grip

- Cons:
  - The contact zones between the rings and the surgeon's hand still do not conform to the most sensitive areas of the hand.
  - Reduced haptic sensation.

Matern and Waller. *Surg Endosc.* 1999
Matern et al. *Surg Endosc.* 1999

Laparoscopic instrument ergonomics



Berguer et al. *Surg Endosc.* 1998
McDonald et al. *Gynecol Oncol.* 2014
Sutton et al. *Surg Endosc.* 2014

Logistic regression analysis of physical symptoms from laparoscopic device use:

	Univariate		Multivariate Model 1a		Multivariate Model 2b	
	OR (95%)	p-value	OR (95%)	p-value	OR (95%)	p-value
Sex						
Male	Ref		Ref		Ref	
Female	5.37 (2.56, 11.25)	<0.01	5.12 (2.13, 12.28)	<0.01	2.02 (0.59, 6.93)	0.26
Age (1 year older)	0.95 (0.92, 0.98)	<0.01	0.99 (0.95, 1.02)	0.43	1.00 (0.96, 1.03)	0.78
Glove size (1 unit increase)	0.30 (0.18, 0.52)	<0.01	-	-	0.41 (0.16, 1.02)	0.05

Model 1a adjusted for: age, average number of minor laparoscopic procedures per month, average number of major laparoscopic procedures per month, length of average laparoscopic case
Model 2b adjusted for: **Model 1a and glove size**

Wong et al. *JMIG.* 2022

Normalized grip strength with device use, mean (SD)

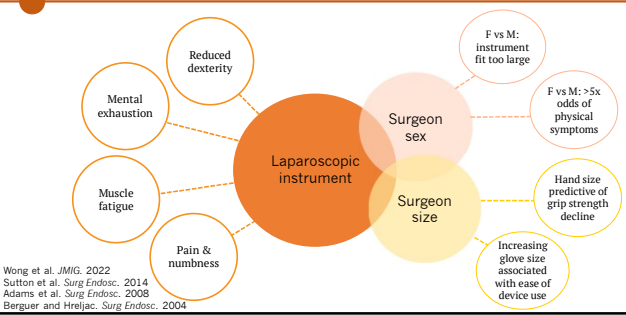
	All participants (n=38)	Surgeon sex			Surgeon glove size		
		Female (n=19)	Male (n=19)	p-value	Small (size <7) (n=15)	Large (size ≥7) (n=23)	p-value
All devices	81 (10)	79 (11)	83 (8)	0.08	77 (11)	83 (8)	<0.01

Linear regression analysis of normalized grip strength, all pooled devices

	Univariate				Multivariate Model[a]			
	R^2	β estimate	F	p-value	R^2	β estimate	F	p-value
Handspan	0.09	1.1	10.9	<0.01	0.23	0.8	6.3	<0.01

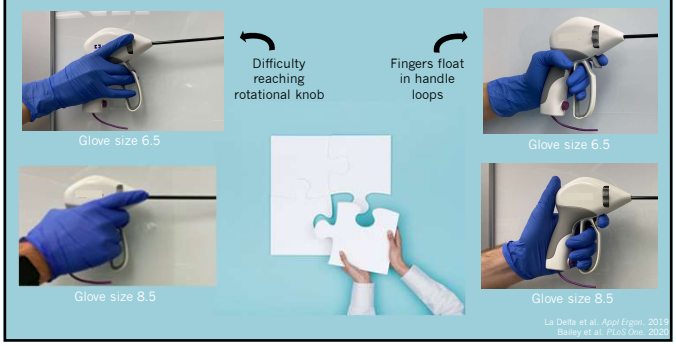
[a]Adjusted for body mass index (BMI), current position, and surgeon sex.

Laparoscopic instrument ergonomics



Wong et al. *JMIG.* 2022
Sutton et al. *Surg Endosc.* 2014
Adams et al. *Surg Endosc.* 2008
Berguer and Hreljac. *Surg Endosc.* 2004

User-device mismatch



La Delfa et al. *Appl Ergon.* 2019
Bailey et al. *PLoS One.* 2020

How do we minimize our ergonomic risk?

What can I do to limit the ergonomic strain of laparoscopic instruments?

Considerations:

1. Hold the instruments with the tips of the fingers
2. Use handles with ratchets/ instruments that self-lock
3. Avoid non-rotating instruments
4. Consider using a modified grip
5. Use an instrument that fits your hand best

#1) Hold instruments with the tips of the fingers

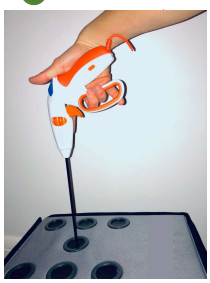
#2) Use ratcheting or self-locking instruments

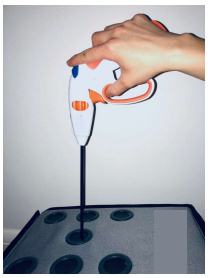
Berguer et al. *Surg Endosc*. 1998
Hallbeck et al. *Appl Ergon*. 2017

#3) Avoid non-rotational handles

Matern. *Min Invas Ther Appl Technol*. 2001
Matern and Waller. *Surg Endosc*, 1999
Li et al. *Int J Surg*. 2016

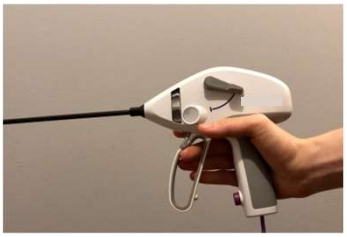
#4) Consider using a modified grip





Sancibrian et al. *Appl Ergon*. 2020
Alleblas et al. *Gynecol Surg*. 2016
Wong et al. *JMIG*. 2022

#5) Use an instrument that fits your hand best



This is *not* a fad...

> Surg Endosc. 2008 Oct;22(10):2310-3. doi: 10.1007/s00464-008-9986-9. Epub 2008 Jun 14.

One size does not fit all: current disposable laparoscopic devices do not fit the needs of female laparoscopic surgeons

Danielle M Adams [1], Stephen J Fenton, Bruce D Schirmer, David M Mahvi, Karen Horvath, Peter Nichol

> Surg Endosc. 2014 Apr;28(4):1051-5. doi: 10.1007/s00464-013-3281-0.

The ergonomics of women in surgery

Erica Sutton, Myra Irvin, Craig Zeigler, Gyusung Lee, Adrian Park

> Surg Endosc. 2021 Jan 25. doi: 10.1007/s00464-021-08295-3. Online ahead of print.

Gender equity in ergonomics: does muscle effort in laparoscopic surgery differ between men and women?

Priscila Rodrigues Armijo [1, 2], Laura Flores [3], Bhavani Pokala [4, 5], Chun-Kai Huang [6], Ka-Chun Siu [4, 7], Dmitry Oleynikov [8]

Journal of Minimally Invasive Gynecology

Available online 2 May 2022

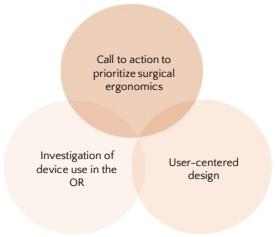
In Press, Journal Pre-proof

Investigation of the Association Between Surgeon Sex and Laparoscopic Device Ergonomic Strain in Gynecologic Surgery

Jacqueline MK Wong MD [1], R.JR. Kristin J Moore PhD [1], Erin T Carey MD [1]

So.... What next?

So.... What next?



Thank you!

Jackie Wong at Wongjac@ohsu.edu

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Dr. Katherine Saul, Monique Reid, and the Movement Biomechanics Lab!

CULTURAL AND LINGUISTIC COMPETENCY & IMPLICIT BIAS

The California Medical Association (CMA) announced new standards for Cultural Linguistic Competency and Implicit Bias in CME. The goal of the standards is to support the role of accredited CME in advancing diversity, health equity, and inclusion in healthcare. These standards are relevant to ACCME-accredited, CMA-accredited, and jointly accredited providers located in California. AAGL is ACCME-accredited and headquartered in California.

CMA developed the standards in response to California legislation (Business and Professions (B&P) Code Section 2190.1), which directs CMA to draft a set of standards for the inclusion of cultural and linguistic competency (CLC) and implicit bias (IB) in accredited CME.

The standards are intended to support CME providers in meeting the expectations of the legislation. CME provider organizations physically located in California and accredited by CMA CME or ACCME, as well as jointly accredited providers whose target audience includes physicians, are expected to meet these expectations beginning January 1, 2022. AAGL has been proactively adopting processes that meet and often exceed the required expectations of the legislation.

CMA CME offers a variety of resources and tools to help providers meet the standards and successfully incorporate CLC & IB into their CME activities, including FAQ, definitions, a planning worksheet, and best practices. These resources are available on the CLC and IB standards page on the CMA website.

Important Definitions:

Cultural and Linguistic Competency (CLC) – The ability and readiness of health care providers and organizations to humbly and respectfully demonstrate, effectively communicate, and tailor delivery of care to patients with diverse values, beliefs, identities and behaviors, in order to meet social, cultural and linguistic needs as they relate to patient health.

Implicit Bias (IB) – The attitudes, stereotypes and feelings, either positive or negative, that affect our understanding, actions and decisions without conscious knowledge or control. Implicit bias is a universal phenomenon. When negative, implicit bias often contributes to unequal treatment and disparities in diagnosis, treatment decisions, levels of care and health care outcomes of people based on race, ethnicity, gender identity, sexual orientation, age, disability and other characteristics.

Diversity – Having many different forms, types or ideas; showing variety. Demographic diversity can mean a group composed of people of different genders, races/ethnicities, cultures, religions, physical abilities, sexual orientations or preferences, ages, etc.

Direct links to AB1195 (CLC), AB241 (IB), and the B&P Code 2190.1:

Bill Text – AB-1195 Continuing education: cultural and linguistic competency.
Bill Text – AB-241 Implicit bias: continuing education: requirements.
Business and Professions (B&P) Code Section 2190.1

CLC & IB Online Resources:

Diversity-Wheel-as-used-at-Johns-Hopkins-University-12.png (850×839) (researchgate.net)
Cultural Competence In Health and Human Services | NPIN (cdc.gov)
Cultural Competency – The Office of Minority Health (hhs.gov)
Implicit Bias, Microaggressions, and Stereotypes Resources | NEA
Unconscious Bias Resources | diversity.ucsf.edu
Act, Communicating, Implicit Bias (racialequitytools.org)
https://kirwaninstitute.osu.edu/implicit-bias-training
https://www.uptodate.com/contents/racial-and-ethnic-disparities-in-obstetric-and-gynecologic-care-and-role-of-implicitbiases
https://www.contemporaryobgyn.net/view/overcoming-racism-and-unconscious-bias-in-ob-gyn
https://pubmed.ncbi.nlm.nih.gov/34016820/