



28
Congreso
Sociedad Canaria
de Urología

COLPOSACROPEXIA ROBÓTICA VS LAPAROSCOPICA

Guillermo Conde Santos

Hospital QuirónSalud Tenerife

 **quirónsalud**
La salud persona a persona

 **Universidad
Europea**

Rossum's Universal Robots (R.U.R.). Karel Capek 1921

ČESKÉ ZEMSKÉ DIVADLO V PRAZE
NÁRODNÍ DIVADLO
 V úterý 25. ledna 1921. Mimo předplacení.

Poprvé,
R. U. R.
 (Rossum's Universal Robots.)

Utopická hra v třech dějstvích a třech aktech. Napsal Karel Čapek.
 Režie: Václav Hlaváček. Vynálek: Bedřich Fučík. Kostýmy: Josef Čapek.

Mary Demov, americká robotka E. U. R.	Prof. Zdeněk	Marie, mladá dívka	Marie Střizbová
Dr. Fabry, generální ředitel robotů R. U. R.	Blahoslav	Marie, starší	Elžka Váňová
Dr. Gal, předseda vlády a vynálezce robotů R. U. R.	Karel Tichavský	Marie, starší	Elžka Váňová
Dr. Rákosník, mladá žena slovenského a českého národa	František Štábl	Marie, starší	Elžka Váňová
Karel, robot, první robot slovenského a českého národa	František Štábl	Marie, starší	Elžka Váňová
Marie, robotka, první robotka slovenského a českého národa	Jiří Štábl	Marie, starší	Elžka Váňová
Marie, robotka, první robotka slovenského a českého národa	Jiří Štábl	Marie, starší	Elžka Váňová

Děje se v blízkosti Prahy 400 let po vynálezu robotů.

Začátek o 7. hod. Po vstupu komedii a druhém akte přestávka. Koniec o 10. hod.

Číslo: Jaroslav Burša, Václav Hlaváček

V úterý 25. ledna 1921.

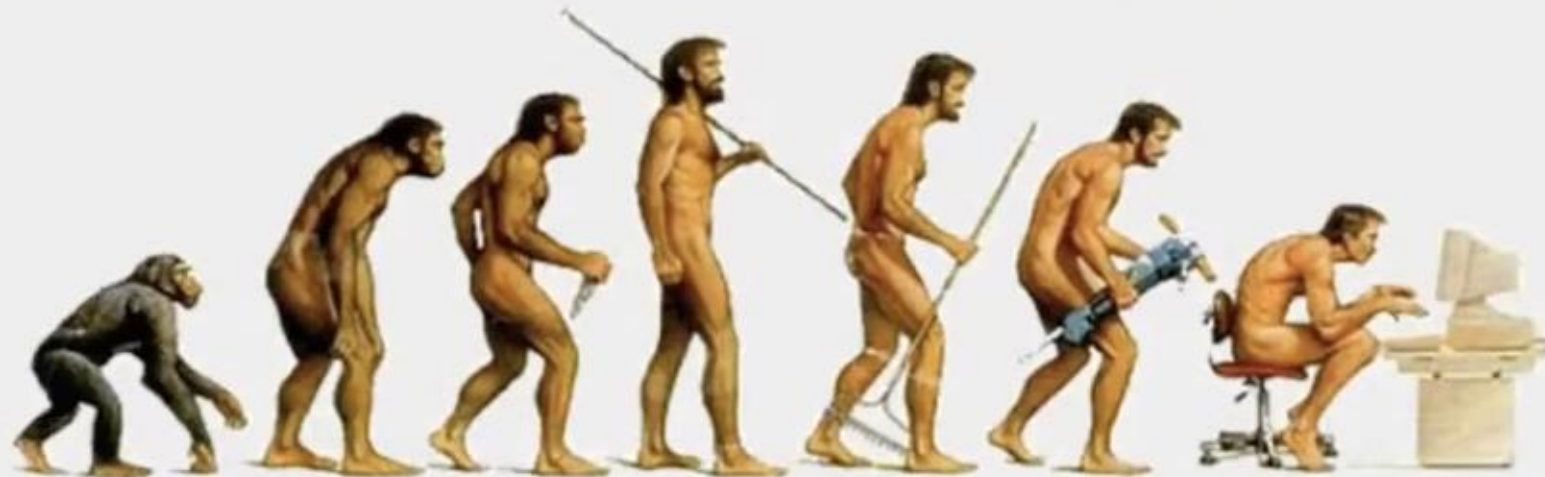
Odpověď o 2. hod.	Větr o 7. hod. mimo předplacení.
Š Á R K A	KOUZELNÁ PLETNA
Číslo 17 o 7. hod. E. U. R. Číslo 18 o 7. hod. Pásmo (druhá část) Číslo 19 o 7. hod. Lázeň o 7. hod. E. U. R.	Číslo 20 o 7. hod. E. U. R. o 7. hod. Lázeň o 7. hod. E. U. R.

Předprodejní vstupenek jest zaplacen tabulka 7. a 8. dílu předprodejní se vstupenky na všechny představení až číselna do možná a se vstupenky na představení používá až předprodejní vstupenky tabulka.

První představení: úterý 25. ledna 1921. První představení: úterý 25. ledna 1921. První představení: úterý 25. ledna 1921.



EVOLUTION OF THE SURGERY



courtesy by C. Rossitto

Laparotomy

Laparoscopy

Robotic

1957 first experience with abdominal sacrocolpopexy

1990 First Laparoscopic Burch

1991 First Laparoscopic sacrocolpopexy

Wattiez A, Boughizane S, Alexandre F, Canis M, Mage G, Pouly JL, Bruhat MA (1995) Laparoscopic procedures for stress incontinence and prolapse. Curr Opin Obstet Gynecol 7:317–321

ROBOTIC-ASSISTED LAPAROSCOPIC SACROCOLPOPEXY FOR TREATMENT OF VAGINAL VAULT PROLAPSE DAVID S. DIMARCO, GEORGE K. CHOW, MATTHEW T. GETTMAN, AND DANIEL S. ELLIOTT. UROLOGY 63: 373–376, 2004. © 2004

COLPOSACROPEXIA LAPAROSCÓPICA ASISTIDA POR ROBOT COMO TRATAMIENTO DEL PROLAPSO UROGENITAL.

Jesús Moreno Sierra, Isabel Galante Romo, Elena Ortiz Oshiro¹, Carlos Núñez Mora y Ángel Silmi Moyano.

Arch. Esp. Urol. vol.60 no.4 may. 2007

¿de donde venimos?

Sacrocolpopexia abierta:

Gold standard prolapso complejo apical

Estancia larga, morbilidad elevada

SC Laparoscópica:

mínima invasión, baja morbilidad, estancia hospitalaria reducida, efectiva- corto y largo plazo

La prohibición de las mallas vía vaginal FDA incrementa el interés por esta técnica.

Prolapso apical, mujeres sexualmente activas con prolapsos de alto grado multicompartimental

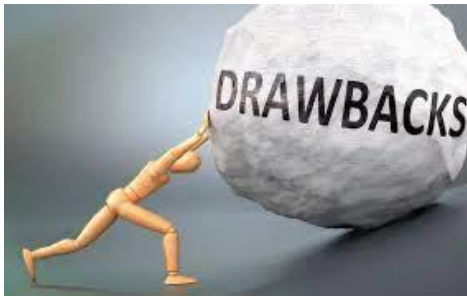
Cirugía laparoscópica

Visión en dos dimensiones limita la sensación de profundidad

Cámara inestable y depende del nivel de competencia del ayudante

Los instrumentos son rígidos y limitan los grados de libertad de los movimientos

Imagen especular: en ocasiones el movimiento es contradictorio (movimientos del instrumental derecha que originan un movimiento hacia la izquierda en la pantalla)



Reproducción de los movimientos
con 7 grados de libertad



Inmersión: visión 3D,
realidad aumentada x10



Cirugía robótica y suelo pélvico ¿de donde venimos?

Sacrocolpopexia abierta:

estancia larga, morbilidad

SC Laparoscópica:

mínima invasión, baja morbilidad, estancia hospitalaria reducida, efectiva corto y largo plazo

Sin embargo: curva de aprendizaje larga, mínima ergonomía, larga duración

SC Robótica:

mejoría ergonómica, visión tridimensional, instrumental mas preciso, menor daño tisular.

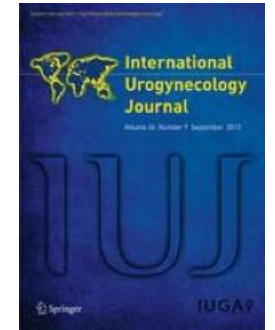


Laparoscopic sacrocolpopexy for female genital organ prolapse:
establishment of a learning curve

Cherif Y. Akladios^{a,*}, Daphné Dautun^a, Christian Saussine^b, Jean Jaques Baldauf^a,
Carole Mathelin^c, Arnaud Wattiez^a

The learning curve of laparoscopic
sacrocolpopexy shows a steady decrease in
the duration of surgery. A turning point is
observed after **18–24 procedures**

International Urogynecology Journal



The challenge of implementing laparoscopic sacrocolpopexy

To decrease operation time, suture training can be
implemented ahead. Following a **15-h suturing lab**,
trainees achieved comparable operation times after 30
cases

Proficiency is more dependent on **patient characteristics**,
though this component is poorly studied. One experience
showed it takes **60 procedures** to effectively limit
complications.



International Urogynecology Journal



Assessing the learning curve of robotic sacrocolpopexy

Brian J. Linder¹ · Mallika Anand² · Amy L. Weaver³ · Joshua L. Woelk² ·
Christopher J. Klingele² · Emanuel C. Trabuco² · John A. Occhino² · John B. Gebhart²

Operative time plateaued after the **first 60 cases**, whereas complication rates continued to decrease beyond this. **Proficiency**, as determined by a risk-adjusted CUSUM analysis for complication rates, was achieved after approximately **84 cases**

Learning curve of robot-assisted laparoscopic sacrocolpo(recto)pexy: a cumulative sum analysis

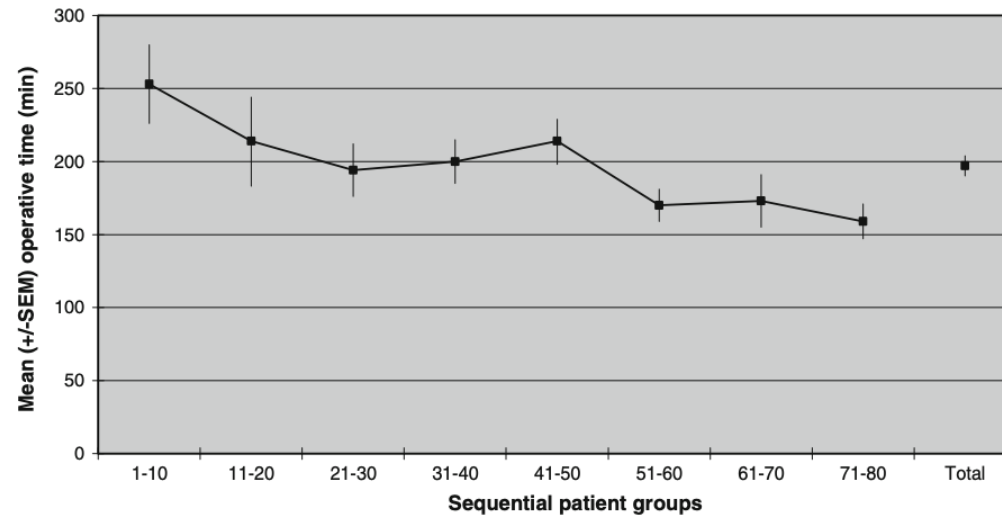
Femke van Zanten¹, Steven E Schraffordt Koops², Pieterneel C M Pasker-De Jong³, Egbert Lenters², Henk W R Schreuder⁴

The learning curve never fell below the unacceptable failure limits and stabilized after **23 of 41 cases**. **Proficiency** was obtained after **78 cases** for both surgeons. Surgery time decreased after 24-29 cases in robot-assisted sacrocolpopexy

Robotic-assisted sacrocolpopexy: technique and learning curve

Mohamed N. Akl · Jaime B. Long · Dobie L. Giles ·
Jeffrey L. Cornella · Paul D. Pettit · Anita H. Chen ·
Paul M. Magtibay

Surg Endosc (2009) 23:2390–2394



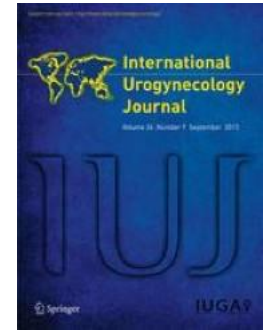
After completion of the **first ten cases**, our mean operative time decreased significantly by **25.4%** (64.3 min, 95% CI 16.1–112.4 min, $p < 0.01$).

The mean operative time of the last 30 cases was 167.3 min



Comparing the outcomes and effectiveness of robotic-assisted sacrocolpopexy and laparoscopic sacrocolpopexy in the treatment of pelvic organ prolapse

Chia-Lun Chang^{1,2} · Chun-Hua Chen³ · Shang-Jen Chang^{1,2}



Received: 22 December 2020 / Accepted: 11 February 2021 / Published online: 24 March 2021
© The International Urogynecological Association 2021

A total of **2115 participants** were included in the pooled analysis Meta-analyses

Operative time

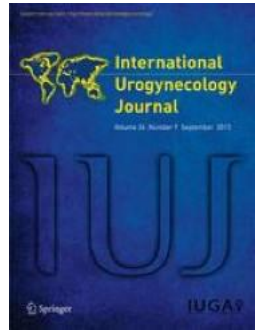
The mean operative time was **269.8 ± 81 min** for **RASC** and **229.6 ± 69.2 min** for **LSC**.

The operative time for **RASC** was significantly longer than that of **LSC** (weighted mean difference, 29.53 min; 95% CI 12.88 to 46.18 min, P = 0.0005).

Comparing the outcomes and effectiveness of robotic-assisted sacrocolpopexy and laparoscopic sacrocolpopexy in the treatment of pelvic organ prolapse

Chia-Lun Chang^{1,2} · Chun-Hua Chen³ · Shang-Jen Chang^{1,2}

Received: 22 December 2020 / Accepted: 11 February 2021 / Published online: 24 March 2021
© The International Urogynecological Association 2021



Estimated blood loss was significantly **lower in the RASC group** compared with the LSC group (weighted mean difference, -86.52 ml; 95% CI -130.26 to -42.79 ml, $P = 0.0001$).

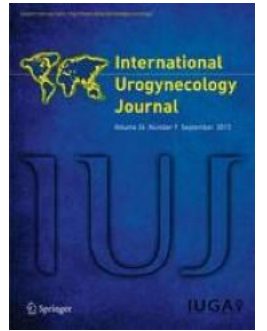
Length of hospital stay

May be **shorter in the RASC group** but that this difference **was not statistically significant** (weighted mean difference, -0.28 ; 95% CI -1.18 to 0.62 ; $P = 0.54$).

Comparing the outcomes and effectiveness of robotic-assisted sacrocolpopexy and laparoscopic sacrocolpopexy in the treatment of pelvic organ prolapse

Chia-Lun Chang^{1,2} · Chun-Hua Chen³ · Shang-Jen Chang^{1,2}

Received: 22 December 2020 / Accepted: 11 February 2021 / Published online: 24 March 2021
© The International Urogynecological Association 2021



Overall intraoperative complications and conversion to laparotomy

Intraoperative complications.

RASC had significantly **fewer intraoperative complications** compared with LSC (OR 0.6; 95% CI 0.40 to 0.91; $P = 0.01$).

Rate of conversion to laparotomy

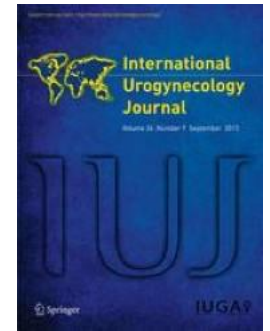
significantly lower conversion rate to laparotomy in the **RASC group** compared with the LSC group ($P = 0.01$).

There were **no significant differences between the RASC and LSC** groups with regard to bladder injury, bowel injury, ureteral injury, vascular injury

Comparing the outcomes and effectiveness of robotic-assisted sacrocolpopexy and laparoscopic sacrocolpopexy in the treatment of pelvic organ prolapse

Chia-Lun Chang^{1,2} · Chun-Hua Chen³ · Shang-Jen Chang^{1,2}

Received: 22 December 2020 / Accepted: 11 February 2021 / Published online: 24 March 2021
© The International Urogynecological Association 2021



Overall postoperative complications

The rate of postoperative complications was **16.39% and 20.3% in the RASC and LSC groups**, respectively. There were **no significant differences** in the rate of postoperative complications between these two groups (OR 0.9; 95% CI 0.57 to 1.41; P = 0.63).

Effectiveness of interventions

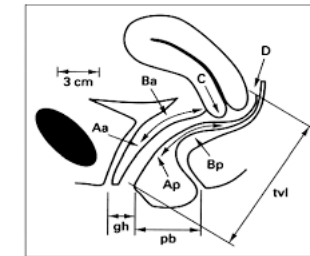
Anatomical outcomes were reported using the POP-Q scale

Postoperative anatomical outcomes

The results revealed **no significant differences for the point Bp, Ba, C**

The study by **Illiano et al.** revealed better outcomes in the **RASC group** at all points and was especially significant for **point C**.

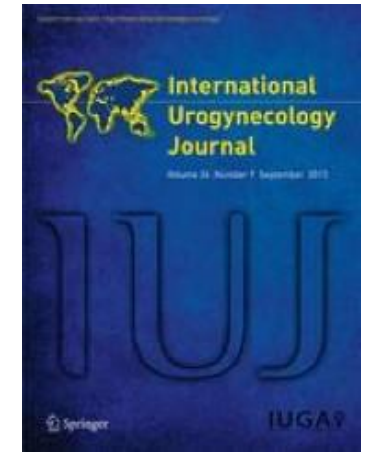
We could postulate that these results might address the advantages of RASC such as **better dissection of the vaginal wall, more efficient positioning of the mesh and easier stitch fixation to sacral promontory**.



Comparing the outcomes and effectiveness of robotic-assisted sacrocolpopexy and laparoscopic sacrocolpopexy in the treatment of pelvic organ prolapse

Chia-Lun Chang^{1,2} · Chun-Hua Chen³ · Shang-Jen Chang^{1,2}

Received: 22 December 2020 / Accepted: 11 February 2021 / Published online: 24 March 2021
© The International Urogynecological Association 2021



Conclusions

The current study showed comparable **efficacy between RASC and LSC treatments**.

The choice of either the RASC or LSC surgical procedure should therefore be at the discretion of the surgeon and according to the patient's preferences.

Ann Transl Med. 2021 Mar; 9(6): 449

Robotic and laparoscopic sacrocolpopexy for pelvic organ prolapse: a systematic review and meta-analysis

Jiang Yang[#], Yong He[#], Xiaoyi Zhang, Zhi Wang, Xiaohu Zuo, Likun Gao, Li Hong

49 articles were available, including **3,014 patients**

Median operative time was 226 [90–604] minutes, 21.7% hysterectomy 25% anti-incontinence

Blood loss was 56 [5–1,500] mL

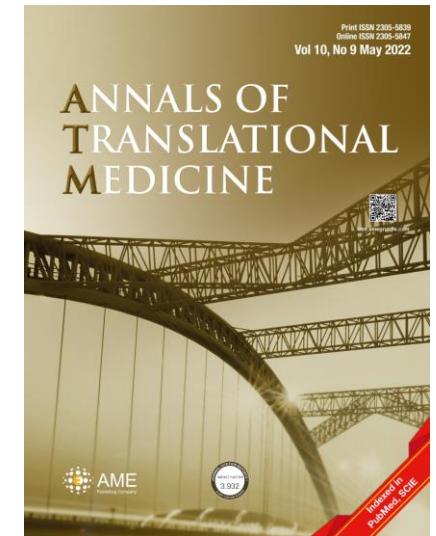
Hospital stay was 1.55 [1–16] days

RSCP vs LSCP **Intraoperative outcomes**

Intraoperative blood loss in the **RSC** group was significantly less than that in the LSC group high heterogeneity ($P < 0.00001$,

Rate of conversion, and the results showed that there was much lower conversion rate in **RSC** than that in LSC

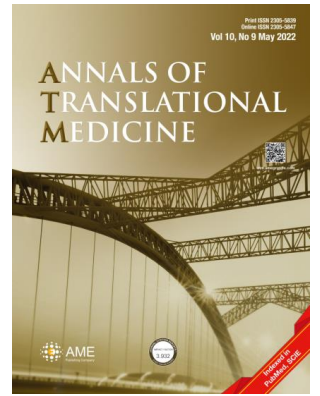
Operation times, which revealed a significant difference between **RSC and LSC 37.35** minutes no statistically significant difference in the rate of intraoperative complications



Ann Transl Med. 2021 Mar; 9(6): 449

Robotic and laparoscopic sacrocolpopexy for pelvic organ prolapse: a systematic review and meta-analysis

Jiang Yang[‡], Yong He[‡], Xiaoyi Zhang, Zhi Wang, Xiaohu Zuo, Likun Gao, Li Hong



Postoperative outcomes and complications

Length of hospital stay

Perioperative transfusion
differences

Rate of erosion of the mesh. RSC 2.3% vs. LSC 2.7%,

Postoperative anorectal dysfunction. RSC 5.2% vs. LSC 3.2%,

Postoperative sexual disorders, RSC 15.9% vs. LSC 13.1%

There was no significant

Cure and objective recurrence rate
not statistically significant

The difference between RSC and LSC in a of POP there was

PRICE

IS WHAT YOU PAY

VALUE

IS WHAT YOU GET

WARREN BUFFETT

Cost-Minimization Analysis of Robotic-Assisted, Laparoscopic, and Abdominal Sacrocolpopexy

[John P. Judd, MD](#)   • [Nazema Y. Siddiqui, MD](#) • [Jason C. Barnett, MD](#) • [Anthony G. Visco, MD](#) • [Laura J. Havrilesky, MD](#) • [Jennifer M. Wu, MD, MPH](#)

JMIG

A **decision model** was developed to compare the costs (2008 US dollars) of robotic, laparoscopic, and abdominal sacrocolpopexy

For the **Robot Existing** robot model,

robotic sacrocolpopexy \$8508 per procedure

laparoscopic sacrocolpopexy at \$7353

abdominal sacrocolpopexy at \$5792.

The **addition of robotic purchase and maintenance** costs resulted in an incremental increase of \$581, \$865, and \$1724 per procedure when these costs were distributed over 60, 40, and 20 procedures per month, respectively.

Robotic Compared With Laparoscopic Sacrocolpopexy: A Randomized Controlled Trial

Jennifer T. Anger, Elizabeth R. Mueller, Christopher Tarnay, Bridget Smith, Kevin Stroupe, Amy Rosenman, Linda Brubaker, Catherine Bresee, and Kimberly Kenton.

Obstet Gynecol. 2014 January ; 123(1): 5–12

Laparoscopic and robotic sacrocolpopexy ---Evidence comparing outcomes and costs

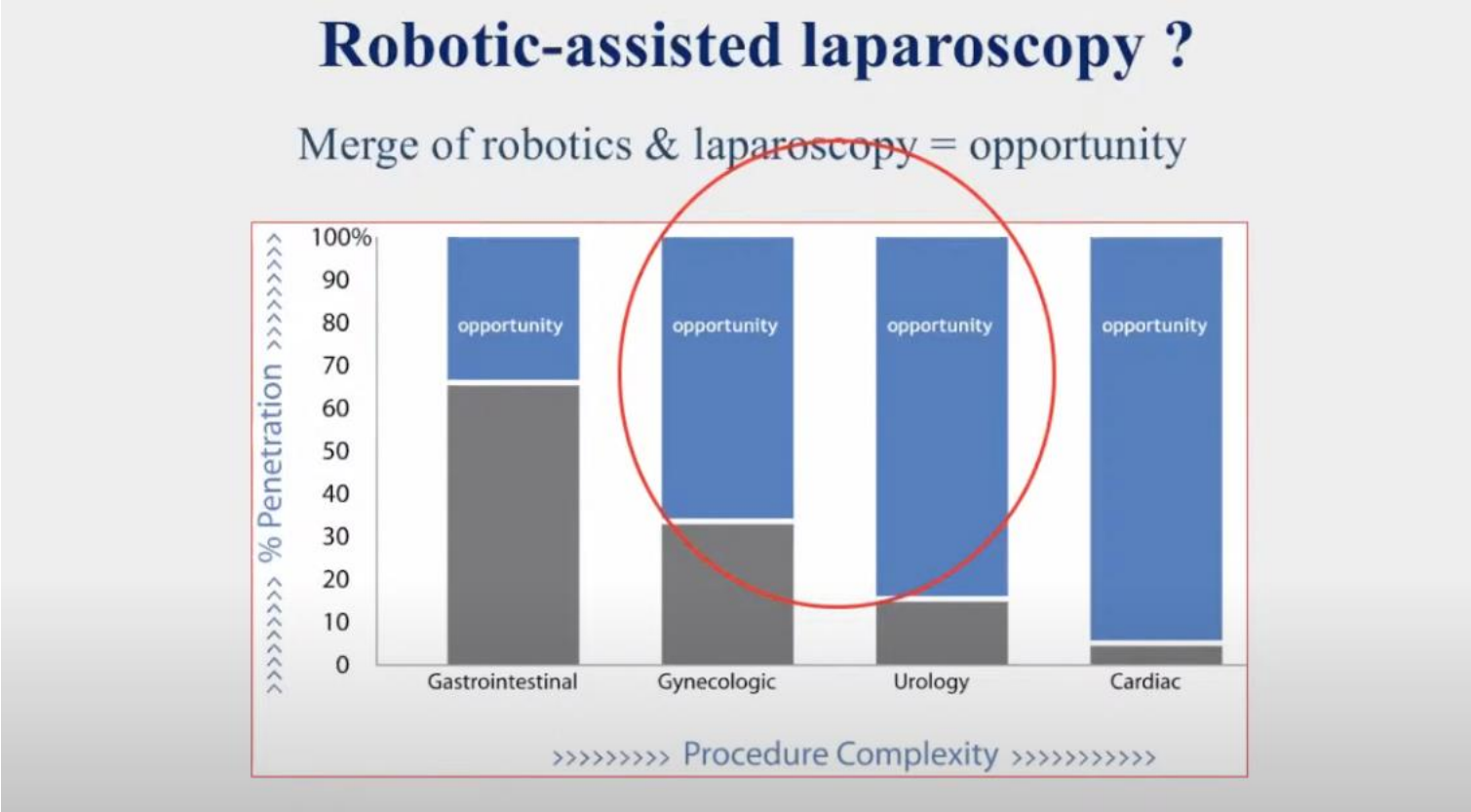
Randomized to either laparoscopic or robotic sacrocolpopexy

Randomized 78 women [mean age 59 years]: laparoscopic (n=38), robotic (n=40).

The **robotic sacrocolpopexy** group had higher initial hospital **costs** .

When we **excluded costs of robot** purchase and maintenance, we did not detect a statistical difference in initial day of surgery costs of robotic vs. laparoscopic or hospital costs over 6 weeks

Los procedimientos completos extras suponen una oportunidad



Surgeons' Perceptions and Injuries During and After Urologic Laparoscopic Surgery

Ofer N. Gofrit, Albert A. Mikahail, Kevin C. Zorn, Gregory P. Zagaja, Gary D. Steinberg, and Arie L. Shalhav

Estudio en urólogos edad media 43 años y que realizan 3 procedimientos laparoscópicos semana

UROLOGY 71 (3), 2008

Laparoscopic surgery is far more demanding, both physically and mentally, than traditional open surgery.

Intraoperative injuries occurred in 30% of surgeons performing laparoscopy

Poor ergonomics can lead to increasing tremor, frustration, and fatigue for surgeons.

Conclusion robotic technology decrease the injury rate

> [Minim Invasive Ther Allied Technol.](#) 2010 Apr;19(2):105-9. doi: 10.3109/13645701003643972.

The operation room as a hostile environment for surgeons: physical complaints during and after laparoscopy

> [J Am Coll Surg.](#) 2010 Mar;210(3):306-13. doi: 10.1016/j.jamcollsurg.2009.10.017.
Epub 2009 Dec 24.

Patients benefit while surgeons suffer: an impending epidemic

[Adrian Park](#) ¹, [Gyusung Lee](#), [F Jacob Seagull](#), [Nora Meenaghan](#), [David Dexter](#)

Affiliations + expand

PMID: 20193893 DOI: [10.1016/j.jamcollsurg.2009.10.017](#)

Conclusions: 87% of surgeons who regularly perform minimally invasive surgery suffer such symptoms or injuries

European Association for Endoscopic Surgery (EAES).

2980 EAES members in 2017 enquiring about their working practice, musculoskeletal (MSK) pain and burnout.

569 (19%) surgeons responded

(62%) reported their worst **pain** score was 3 or higher (10–point scale) in the past 7 working days

A significant proportion of the respondents **(49%)** felt their physical discomfort would influence the **ability to perform or assist with surgical procedures in the future**

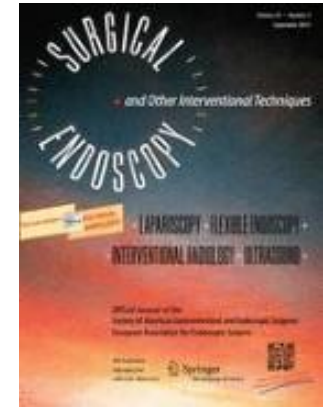
22% of the overall respondents, had sought professional **medical help** for their pain or discomfort

These surgeons reported significantly **lower satisfaction from their work** ($p = 0.024$), **higher burnout** ($p = 0.005$) and significantly **higher callousness toward people** ($p < 0.001$) than those not fearing loss of career longevity.

Surgeons' display reduced mental effort and workload while performing robotically assisted surgical tasks, when compared to conventional laparoscopy

Lee J. Moore · Mark R. Wilson · John S. McGrath · Elizabeth Waine · Rich S. W. Masters · Samuel J. Vine

Surg Endosc 2015 Sep;29(9):2553-60



Robotic system surgical tasks can be performed more proficiently lower workload

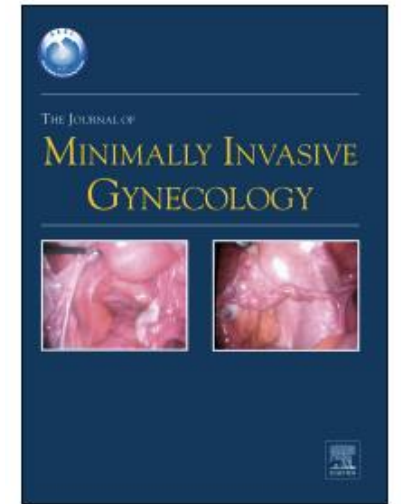
Reducing surgeon's risk of overload-induced performance errors, stress-related disorders, and burnout

Less mental effort using a robotic device, potentially allowing surgeons greater cognitive resources for dealing with other demands such as communication, decision-making, or periods of increased complexity in the operating room

Comparison of Postural Ergonomics Between Laparoscopic and Robotic Sacrocolpopexy: a Pilot Study

Megan E. Tarr, MD, MS Sam J. Brancato, MD Jacqueline A. Cunkelman, MD, MPH Anthony Polcari, MD Benjamin Nutter, MS Kimberly Kenton, MD

Journal of Minimally Invasive Gynecology October 2014

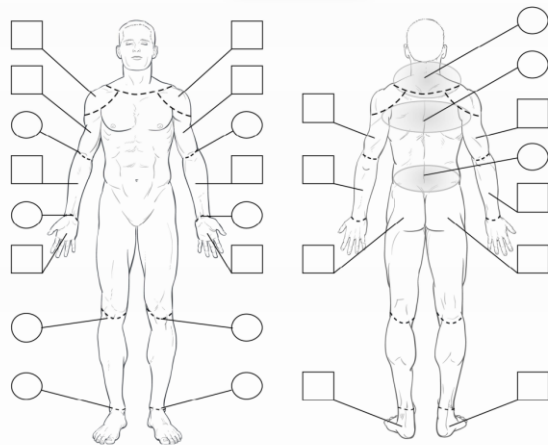
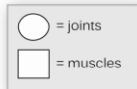


This pilot study demonstrates an **ergonomic benefit** in the neck/shoulder and back regions when using **robotic surgery** to perform a minimally invasive sacrocolpopexy

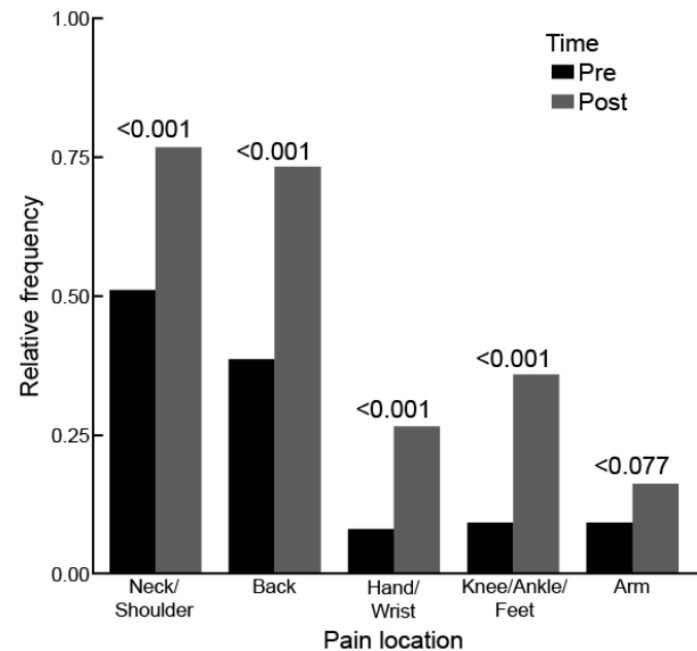
Musculoskeletal Discomfort Survey

Please mark discomfort level in box identifying location using scale:

- 1 = no discomfort
- 2 = minimal discomfort
- 3 = moderate discomfort
- 4 = significant discomfort
- 5 = severe discomfort



□ PREOP / □ POSTOP



La cirugía laparoscópica incrementa el stress psicológico y cognitivo
comparando con la cirugía abierta

Las técnicas de cirugía robótica ofrecen un ambiente mucho mas
ergonómico y amigable para el cirujano.

Robotic Sacrocolpopexy—Is It the Treatment of Choice for Advanced Apical Pelvic Organ Prolapse?

Janine L. Oliver & Ja-Hong Kim
Curr Urol Rep (2017) 18: 66

Robotic-assistance may benefit the surgeon in terms of ergonomics and technical feasibility (for better or worse, it has been said that the robot can make a lesser, or less-experienced, surgeon better, but cannot improve an excellent surgeon)

Further quality long-term comparative studies are needed, but together with excellent surgical experience, robotic- assistance may overcome some disadvantages of the laparoscopic approach and accomplish performance of a procedure which we know has established long-term efficacy.

While the evidence for RSC is not there yet to support calling it the treatment of choice, it is an **excellent choice for many women.**



ICS 2020 Online - Robotic Functional Ur...



Ver más ta...

Compartir

CONCLUSIONS



SCP has stood the test of time

SCP has an important role in POP repair



Mini-invasive approach is the choice



Robotic approach is the future



Oportunidad de aprendizaje

ROBOTIC SURGERY TEACHING



¿Que colposacropexia?



ICS 2019 > Programme > S24 > Abstract 481

Laparoscopic Sacral Colpopexy: step by step technique
Hernández Hernández D¹, Conde Santos G², Padilla-Fernández B¹,
Castro Díaz D¹

Malla Uplift - Neomedic

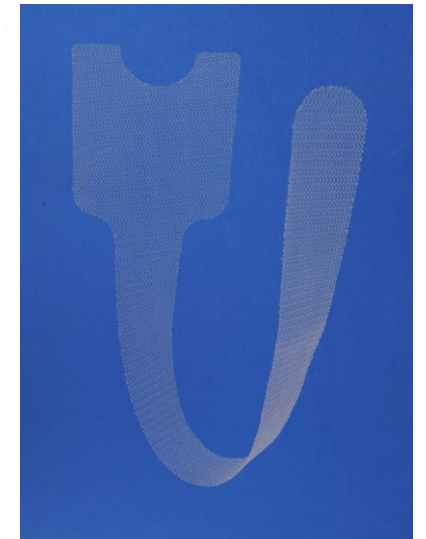
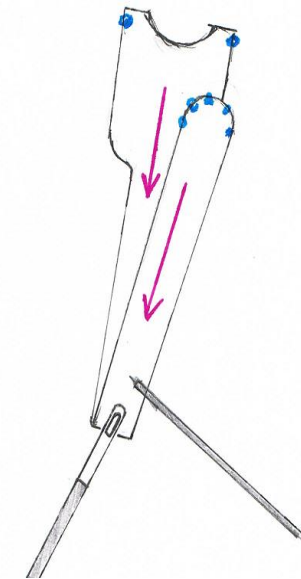
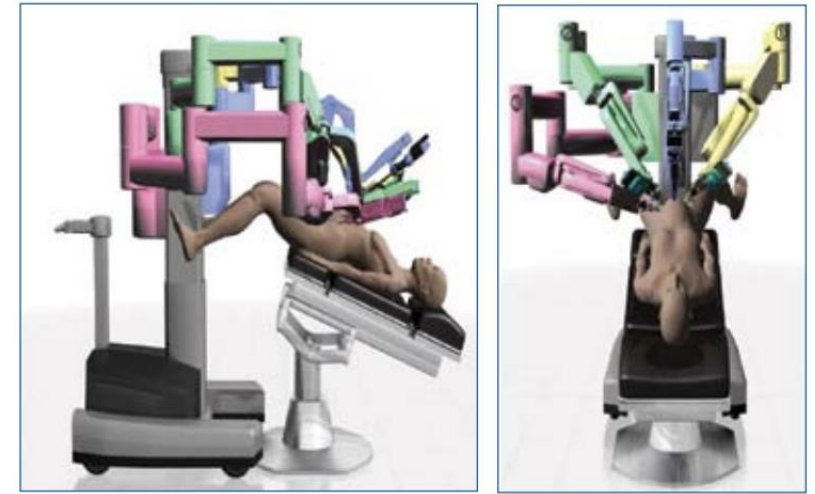
One loop design allows tension mesh adjustment easier and facilitates the times of fixation to the sacrum

> [Eur J Obstet Gynecol Reprod Biol.](#) 2010 Sep;152(1):103-7.

doi: [European journal of obstetrics, gynecology, and reproductive biology.](#) pub 2010 Jun 9.

Nerve-preserving sacrocolpopexy: anatomical study and surgical approach

Thomas Shiozawa ¹, Markus Huebner, Bernhard Hirt, Diethelm Wallwiener, Christl Reisenauer



¿En que me ayuda la cirugía robótica?

Ergonomía

Dissección promontorio (preservación plexo hipogástrico)

Dissección del espacio recto-vaginal (minimizar la dissección) 30° cuerpo perineal

Dissección distal espacio vesico-vaginal (trígono)

Precisión sutura Cuerpo perineal. M elevadores. Lig Uretro-sacros. Cara anterior vaginal.

Sutura sobre el LVCA sin desajustar la tensión

Minimally Invasive Sacrocolpopexy: How to Avoid Short- and Long-Term Complications

Catherine A. Matthews

Curr Urol Rep (2016) 17:81

Sentido crítico – equilibrio entre efectos positivos de dar soporte vaginal y las potenciales complicaciones.

Adecuada selección de las pacientes.

Algunas complicaciones pueden ocurrir años después de la cirugía –exposición o erosión mallas.

Tipo de cirugía debe ser adaptada a cada paciente y a su grado de prolapso.

Cirugía de puerto único.

Cirugía de extracción de cuerpos extraños. Excision mesh

Colocación de esfínter artificial femenino.



> [Int Urogynecol J.](#) 2022 Mar 10. doi: 10.1007/s00192-022-05134-4.

International urogynecology journal

A robotic approach to management of failed sacrocolpopexy and sacrocolpopexy complications: a case series

Alexandra I Goodwin ¹, Jose Torres ², Danielle L O'Shaughnessy ³,
Peter S Finamore ³

Escenario cambiante

Incremento en el número de robots

Nuevas plataformas robóticas

Disminución de costes material fungible

Demanda por parte del paciente

La cirugía robótica es una evolución natural de la cirugía laparoscópica para los procedimientos mas complejos

Delimitar indicaciones

Obesidad

Mayor complejidad con grandes defectos multicompartimentales

Recidivas de colposacropexia laparoscópica

Cirugías previa de prolapso

¿Posibilidad de hacer cirugía mayor ambulatoria?

¿Futuro?



Robótica instrumento presente
Precisión y Seguridad

Unidad de Cirugía Robótica Avanzada

Teléfono: 682 305 154

E-mail:

CirurgiaRobotica.tfe@quironsalud.es

Responsable: **Guillermo
Conde Santos**



Medicina de Precisión

Medina Centrada en las Personas

