

History of surgeries

(In cervical cancer)

Date: March 8th 2024

Name: Henrik Falconer, Karolinska University Hospital, Sweden

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Board member Surgical Science

Cervical cancer: the amazing development the past century

Cancer Medicine Open Access
 ORIGINAL RESEARCH
Uterine cervix cancer treatment at Radiumhemmet: 90 years' experience. Time trends of age, stage, and histopathology distribution
 Kristina Hellman, Ann-Cathrin Hellström & B. Folke Pettersson

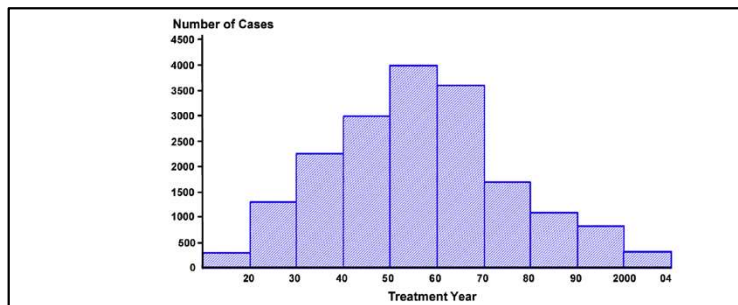


Figure 4. Carcinoma of the uterine cervix treated at Radiumhemmet 1914-2004 (n = 18,472).

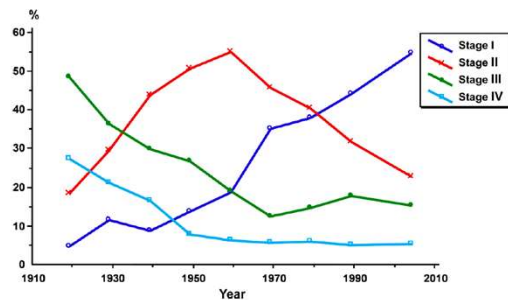


Figure 5. Distribution of stage by year of treatment of 18,472 cases of carcinoma of the uterine cervix treated at Radiumhemmet.



George Papanicolaou



Harald zur Hausen

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HPV Vaccination and the Risk of Invasive Cervical Cancer

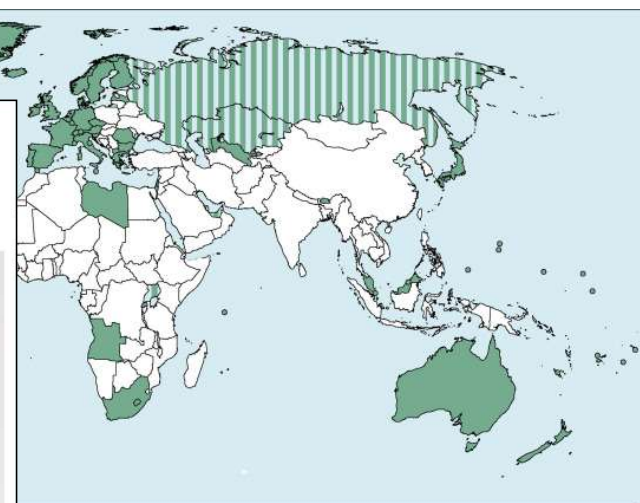
Jiayao Lei, Ph.D., Alexander Ploner, Ph.D.,
Jiangrong Wang, Ph.D., Adam Roth, M.D., Ph.D.,
Karin Sundström, M.D., Ph.D., Joakim
and Pär Sparén, Ph.D.

"Vi kan utrota hpv i Sverige till 2026"

Publicerad: 11 september 2020, 07:00



Totalt behövs det 150 miljoner kronor och att barnmorskor tillåts ge vaccination i samband med screening för att effektivt kunna stoppa viruset, skriver flera debattörer.



2011	2012	2013	2014	2015
Argentina	Brunei	Fiji	American Samoa*	Angola
Bermuda*	Bulgaria	Finland	Austria	Uzbekistan
Cayman Islands*	Colombia	Israel	Bahamas	
Cook Islands*	Czech Republic	Kazakhstan†	Barbados	
Guyana	Guam*	Libya	Belize	
Iceland	Lesotho	Paraguay	Brazil	
Japan	Malta	Suriname	Chile	
Kiribati	Uganda†	Trinidad and Tobago	Dominican Republic	
Monaco		Uruguay	Seychelles	
New Caledonia*			South Africa	
Peru				
Rwanda				

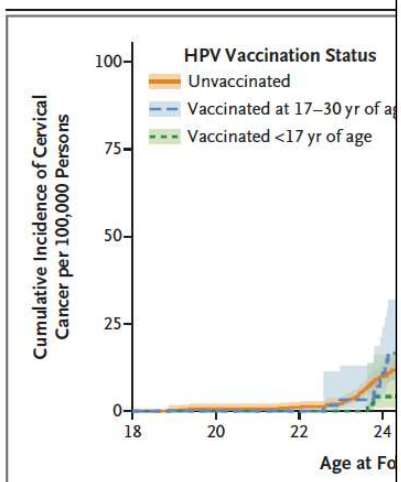
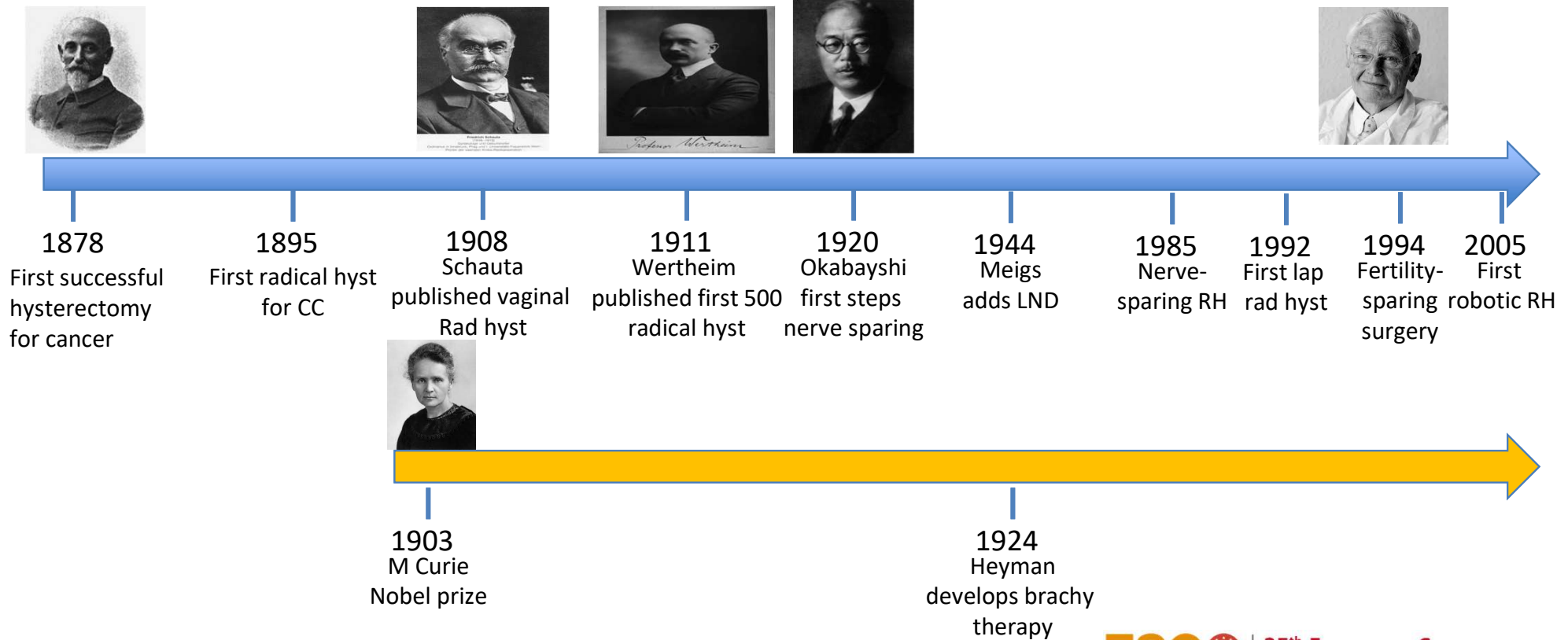


Figure 2. Cumulative Incidence of Invasive Cervical Cancer According to HPV Vaccination Status.

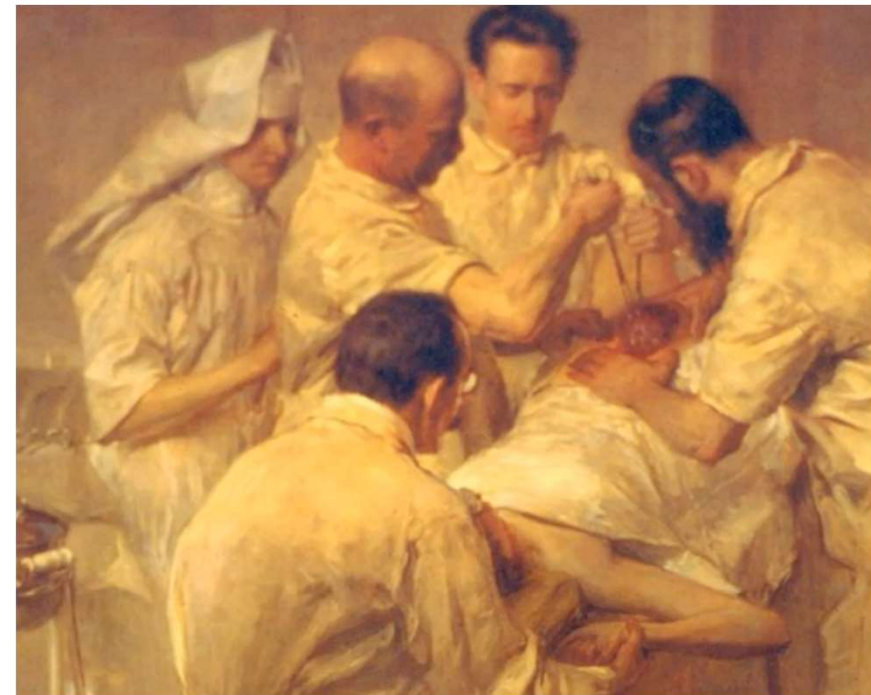
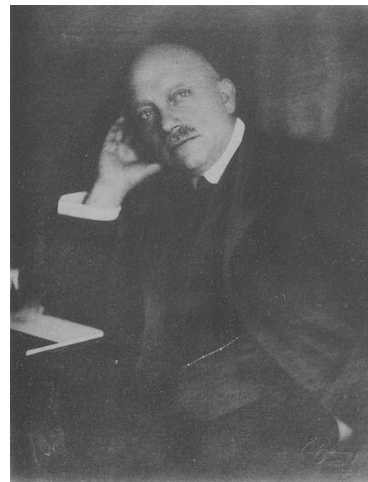
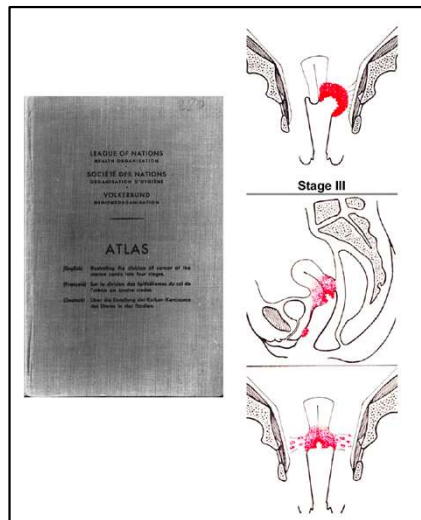
Age at follow-up is truncated in the graph because no cases of cervical cancer were observed in girls younger than 18 years of age.

History of surgery for cervical cancer



What did Wertheim discover?

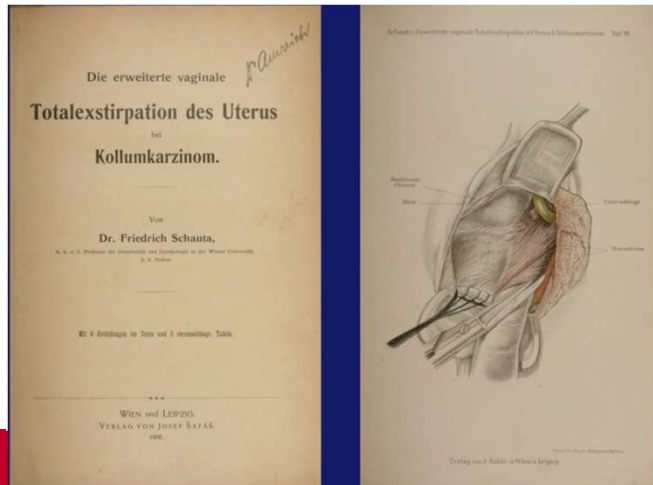
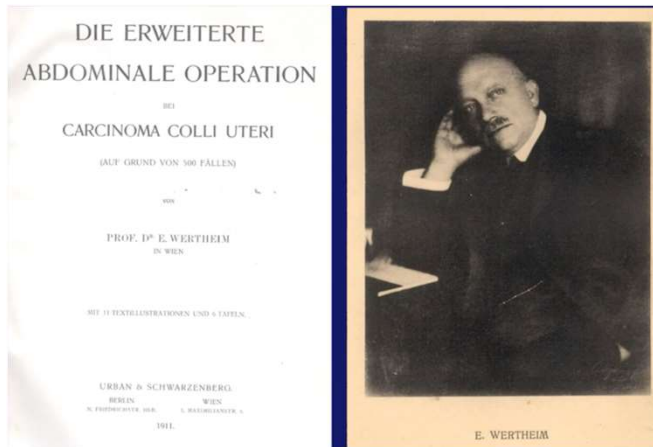
- What Wertheim (and Schauta) discovered: wide excision necessary to avoid incomplete resection



The Wertheim operation

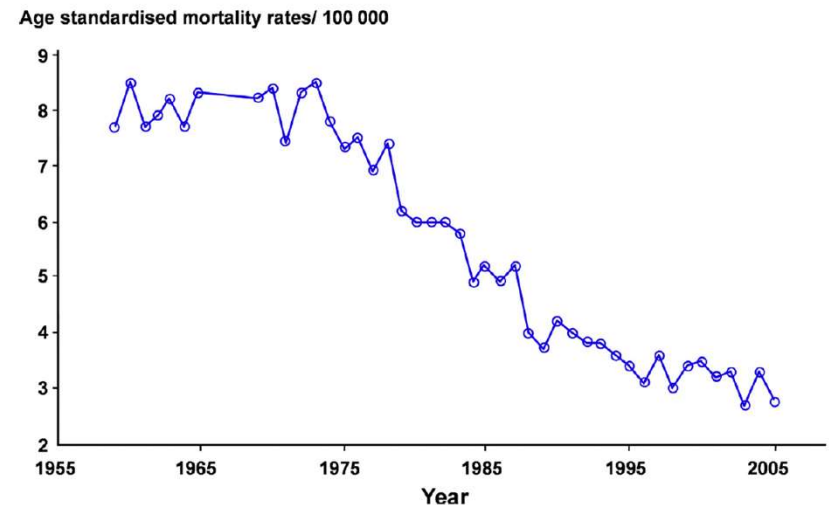


The fierce rivalry between Wertheim and Schauta

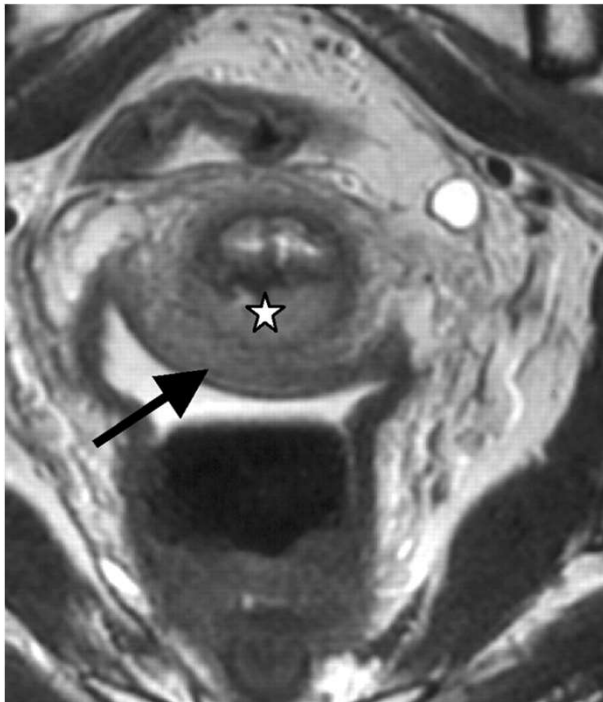


Massive changes after Wertheim affecting surgical practice

- Screening
- Diagnostics/imaging
- Improved radiotherapy
- Vaccination
- (Surgery)



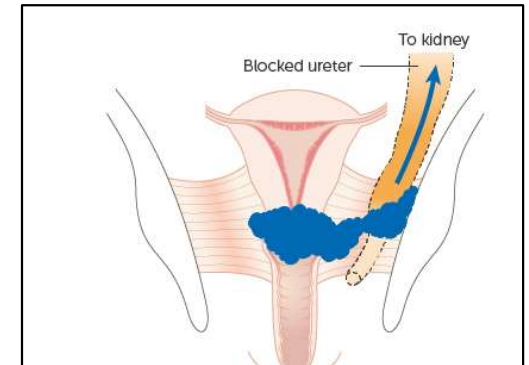
What we see (and what Wertheim didn't see)



(a)



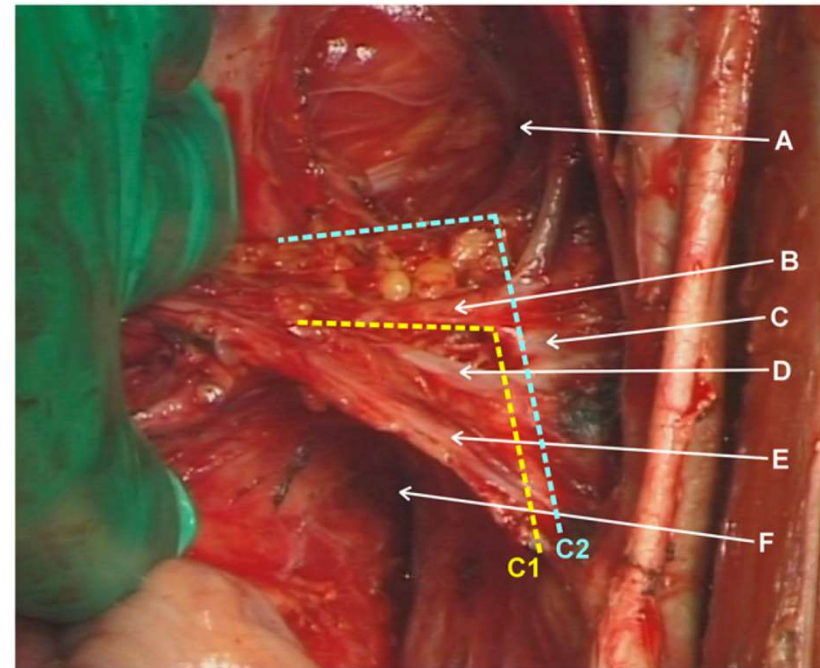
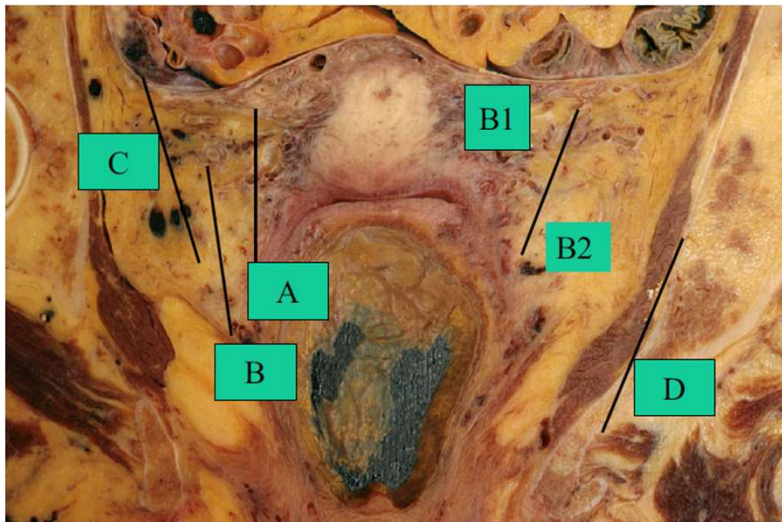
(b)



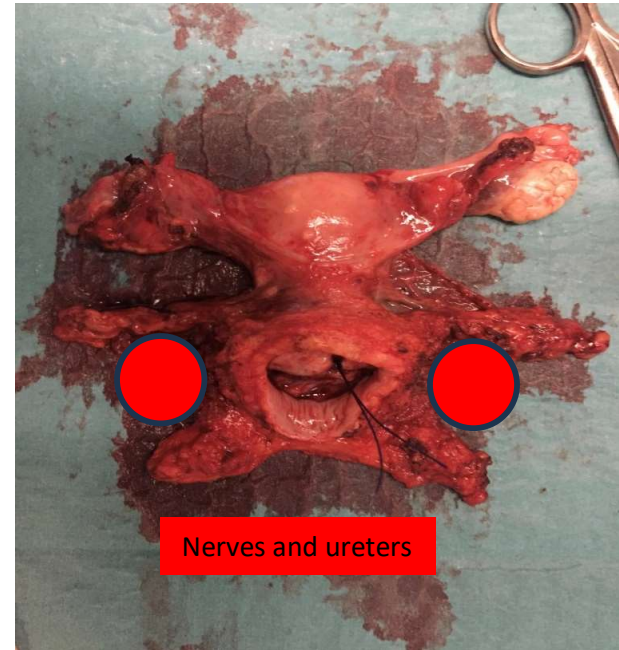
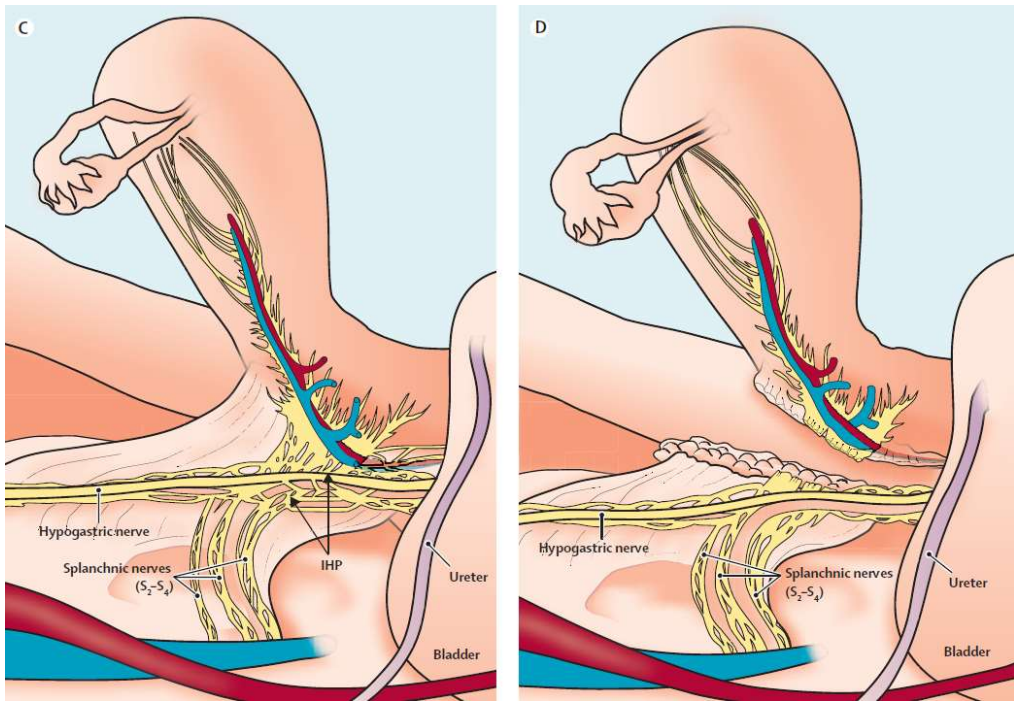
Classification of the radical hysterectomy is difficult!

Classification of radical hysterectomy

Denis Querleu, C Paul Morrow



Nerve-sparing radical hysterectomy



Compartment based surgery – lessons from rectal cancer

- Total mesorectal excision (TME) developed by Bill Heald in 1980
- Rectal cancer – prior to TME 20-25% local failure
- TME – compartmental resection of tissue at risk
- After TME (Heald) – local RR 5-7%

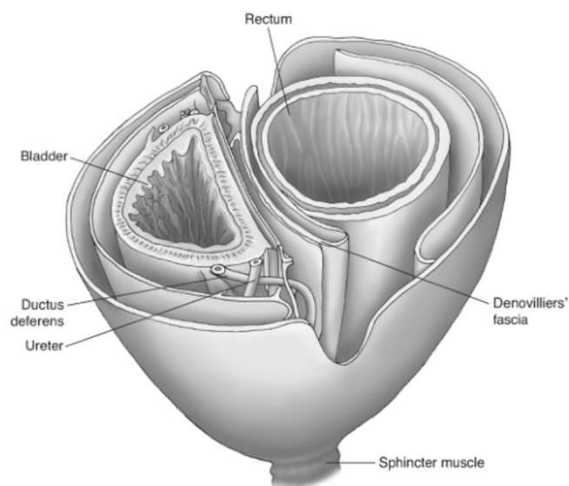
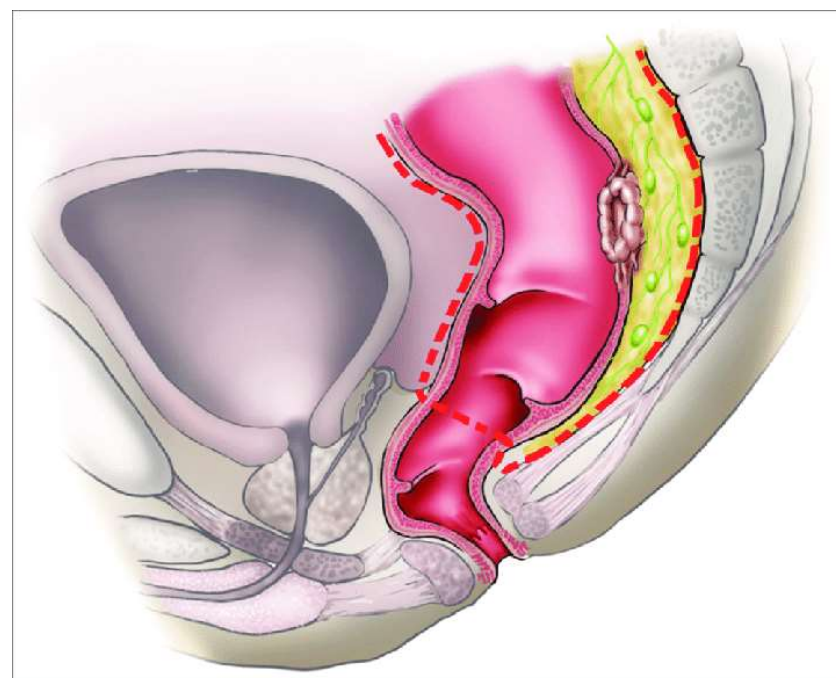
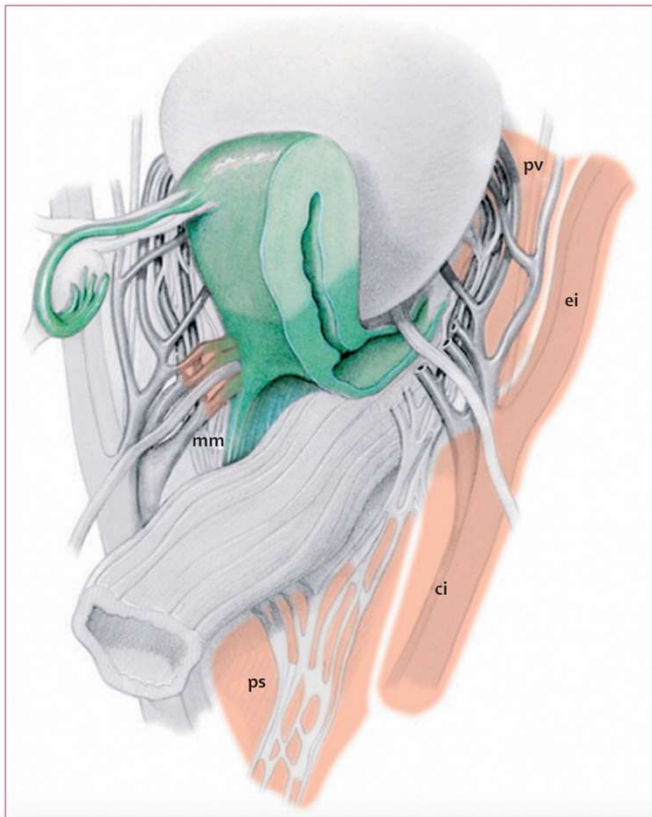


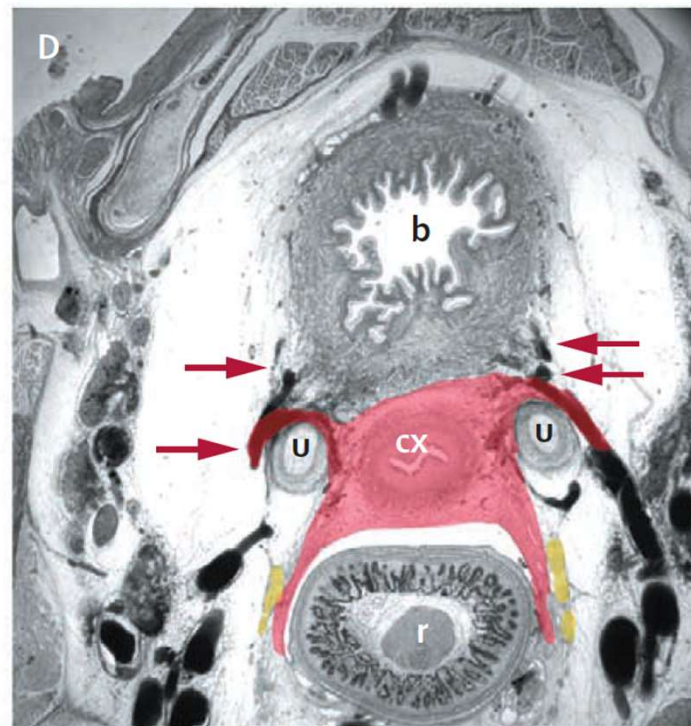
Fig. 4. The fascial layers of the pelvis (after Stelzner). "Like the layers of an onion—or two onions with Denovilliers septum between."



Total mesometrial resection in cervical cancer



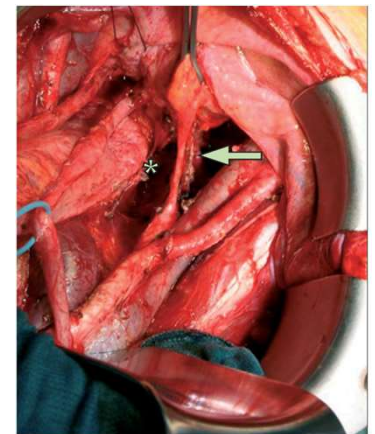
The TMMR concept (M Höckel)



Surgical resection based on ontogenetic cancer field theory for cervical cancer: mature results from a single-centre, prospective, observational, cohort study

Michael Höckel, Benjamin Wolf, Katja Schmidt, Meinhard Menda, Bihriye Aktas, Rainer Kimmig, Nadja Dornhöfer, Lars-Christian Horn

IB1+IIA1 (N0) DFS 96.2% (no adjuvant tx)

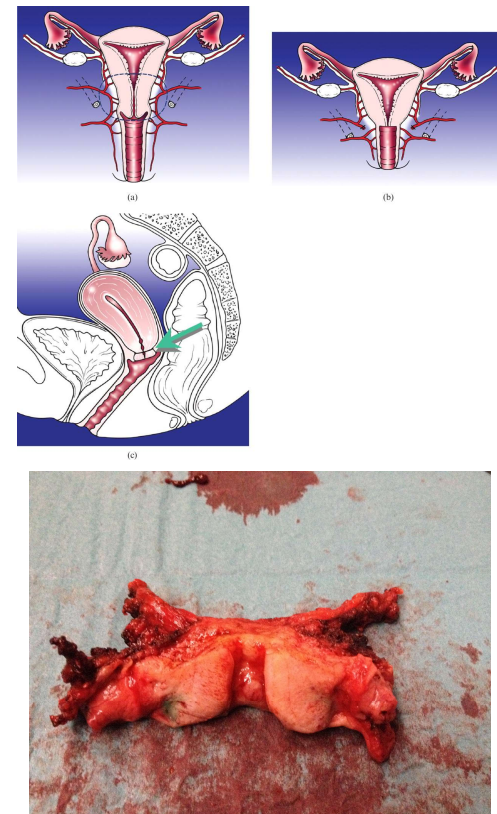


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Fertility-sparing surgery in CC

- Radical trachelectomy preserves fertility in small CC
- Developed by Dargent in 1990s
- Permanent cerclage to avoid premature delivery
- Good reproductive and oncologic results





Development of minimally invasive surgery

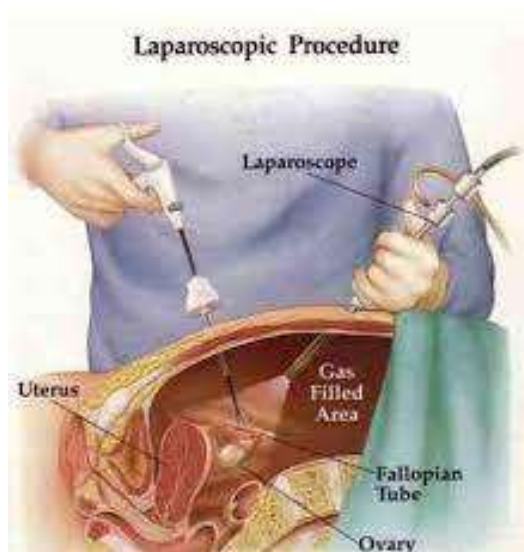


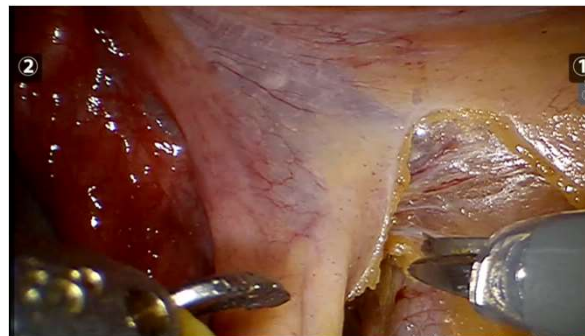
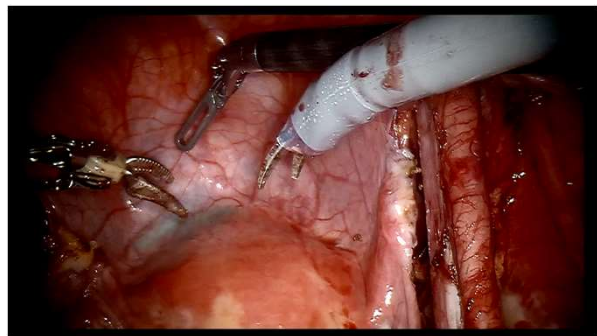
Figure 3. Abdominal incision after ORH.

- Development of MIS in the 1970s
- Introduction of videolaparoscopy in the 1980s
- Less scars, quicker recovery



Figure 4. Five small trocar incisions after RRH.

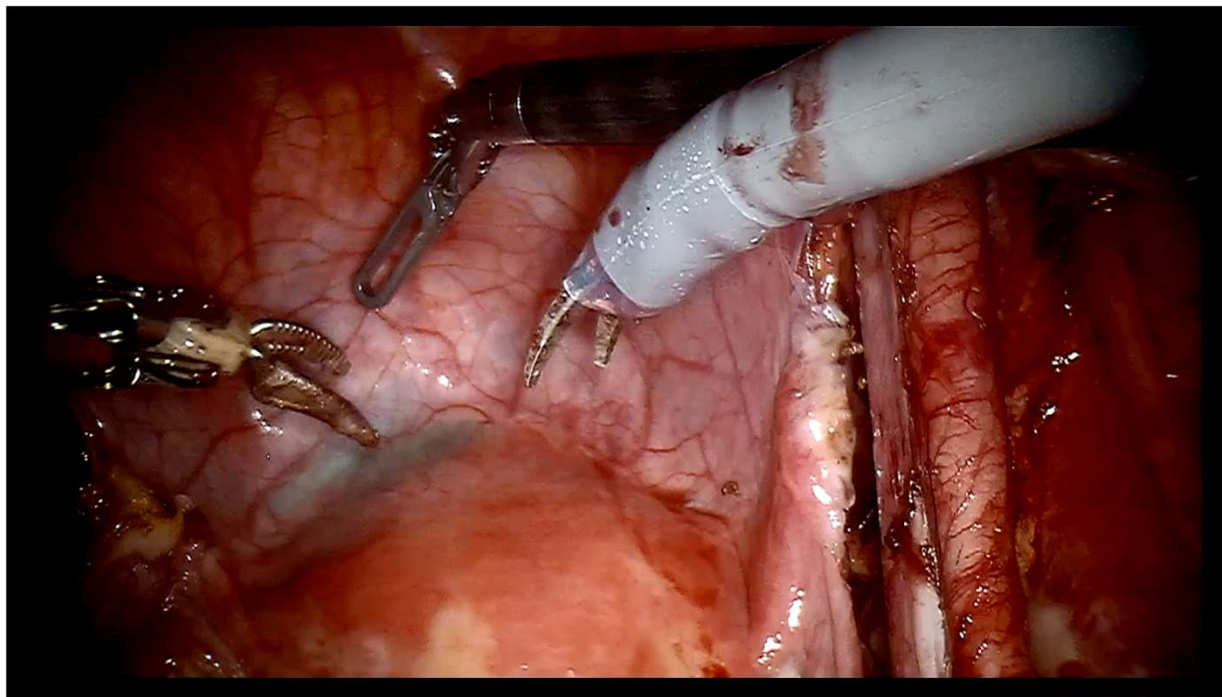
2005: Robot-assisted surgery in GYN



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Robotic-assisted radical hysterectomy

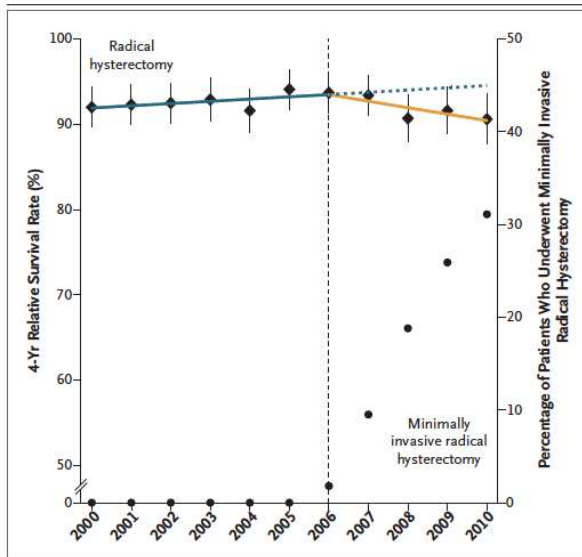


Is minimally invasive surgery safe in CC?

THE NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Survival after Minimally Invasive Radical Hysterectomy for Early-Stage Cervical Cancer



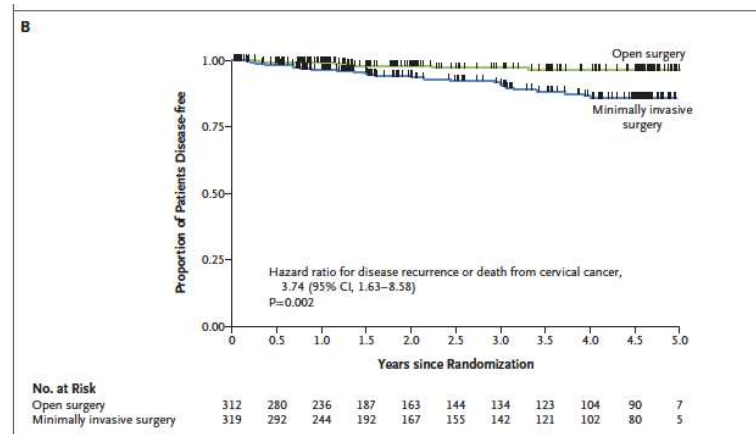
Melamed et al NEJM 2018

THE NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Minimally Invasive versus Abdominal Radical Hysterectomy for Cervical Cancer

Pedro T. Ramirez, M.D., Michael Frumovitz, M.D., Rene Pareja, M.D., Aldo Lopez, M.D., Marcelo Vieira, M.D., Reitan Ribeiro, M.D., Alessandro Buda, M.D., Xiaojian Yan, M.D., Yao Shuzhong, M.D., Naven Chetty, M.D., David Isla, M.D., Mariano Tamura, M.D., Tao Zhu, M.D., Kristy P. Robledo, Ph.D., Val Gebski, M.Stat., Rebecca Asher, M.Sc., Vanessa Behan, B.S.N., James L. Nicklin, M.D., Robert L. Coleman, M.D., and Andreas Obermair, M.D.



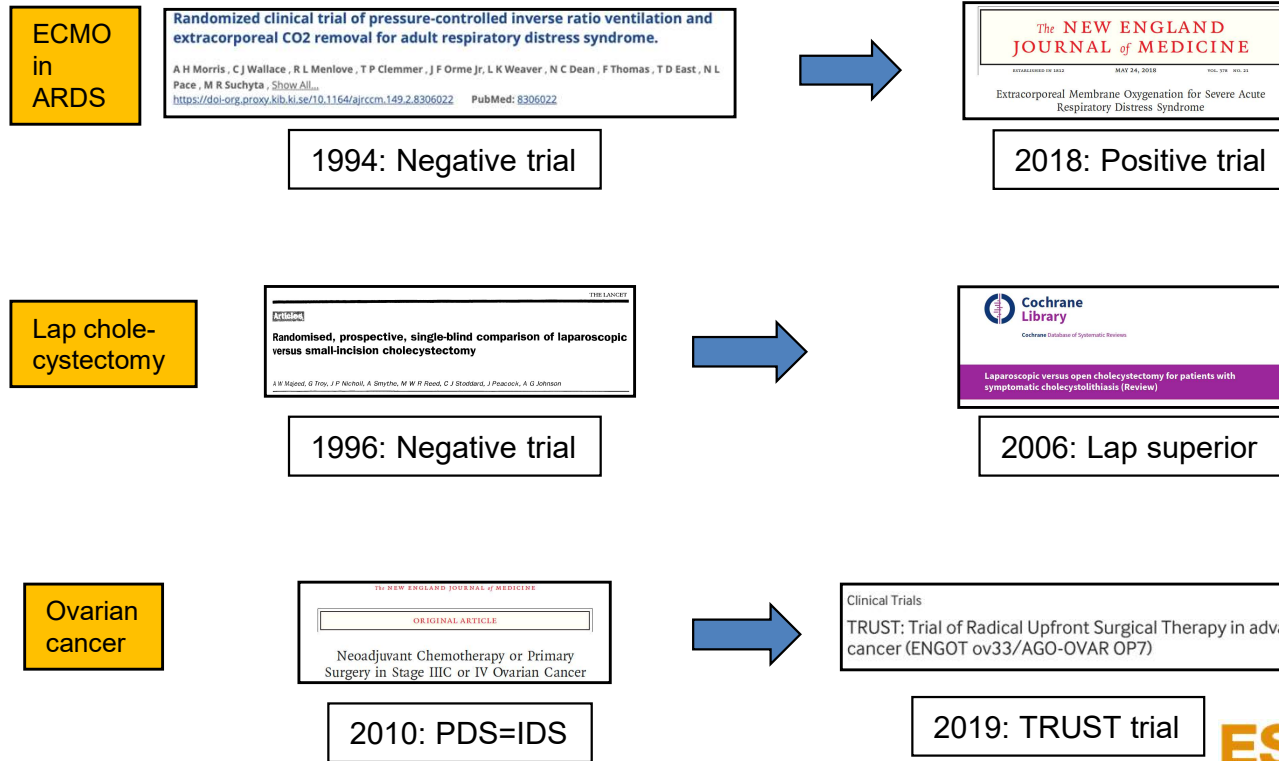
Ramirez et al NEJM 2018

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Lessons from other procedural interventions – things change



Scandinavian and Dutch population-based data – real world data

European Journal of Cancer 116 (2019) 168–177

Available online at www.sciencedirect.com

ScienceDirect

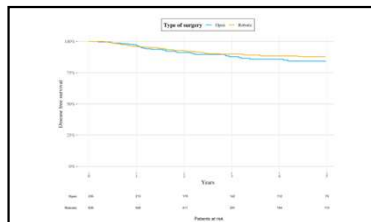
ELSEVIER

journal homepage: www.ejca.com

Original Research

No survival difference between robotic and open radical hysterectomy for women with early-stage cervical cancer: results from a nationwide population-based cohort study

Emilia Alfonso ^{a,b}, Emelie Wallin ^c, Linnea Ekdahl ^{d,e}, Christian Staf ^f, Angelique Flöter Rådestad ^g, Petur Reynisson ^h, Karin Ståhlberg ⁱ, Henrik Falconer ^j, Jan Persson ^{k,l}, Pernilla Duhm-Kähler ^{a,b,d,e,g}



Swedish

European Journal of Cancer 126 (2023) 61–70

Available online at www.sciencedirect.com

ScienceDirect

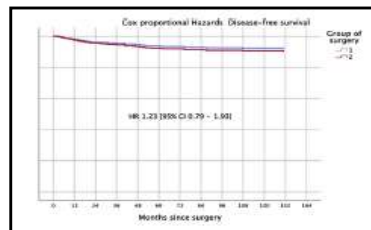
ELSEVIER

journal homepage: www.ejca.com

Original Research

Survival after a nationwide adoption of robotic minimally invasive surgery for early-stage cervical cancer – A population-based study

Pernille T. Jensen ^{a,b,c,d}, Tine H. Schneck ^e, Ligitia P. Frøding ^f, Signe F. Bjørn ^g, Henrik Lajer ^h, Algrinda Markkanen ⁱ, Kirsten M. Jochimsen ^j, Katrine Fuglsang ^k, Jacob Dincov ^l, Charlotte H. Seggaard ^m, Erik Seggaard-Andersen ⁿ, Marianne M. Jensen ^o, Aage Knudsen ^p, Laura H. Øster ^q, Claus Hogdall ^r



Danish

European Journal of Cancer 116 (2019) 168–177

Available online at www.sciencedirect.com

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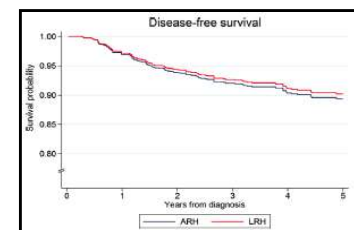
ELSEVIER

journal homepage: www.ejca.com

Original Research

Survival of patients with early-stage cervical cancer after abdominal or laparoscopic radical hysterectomy: a nationwide cohort study and literature review

Hans H.B. Wenzel ^{a,b,c}, Ramon G.V. Smolders ^d, Joghum J. Beltman ^e, Sandrina Lambrechts ^f, Hans W. Trum ^g, Relika Yigit ^h, Petra L.M. Zusterzeed ⁱ, Ronald P. Zweemer ^j, Constantijn H. Mom ^k, Ruid L.M. Bekkers ^l, Valery E.P.P. Lemmens ^{m,n}, Hans W. Nijman ^o, Maaike A. Van der Aa ^p



Dutch

>3000 patients
>90% robot
No selection bias
No information bias



Welcome to The RACC-trial Robot-assisted Approach to Cervical Cancer

The concerning results from the LACC-trial has questioned the safety of minimally invasive surgery (MIS) for early stage cervical cancer. However, the LACC-trial mainly explored conventional laparoscopy and the past decade has seen a dramatic surge in robot-assisted surgery in many institutions.

The RACC-trial is an international, multicentre randomised controlled trial (RCT). In the RACC-trial, women with early stage cervical cancer will be randomised to robot-assisted surgery or laparotomy. The primary endpoint is recurrence-free survival at 5 years and secondary endpoints include overall survival, complications, Quality of Life and diagnostic accuracy of sentinel node biopsy. The trial was launched in May 2019 and is open for all hospitals meeting the quality requirements.

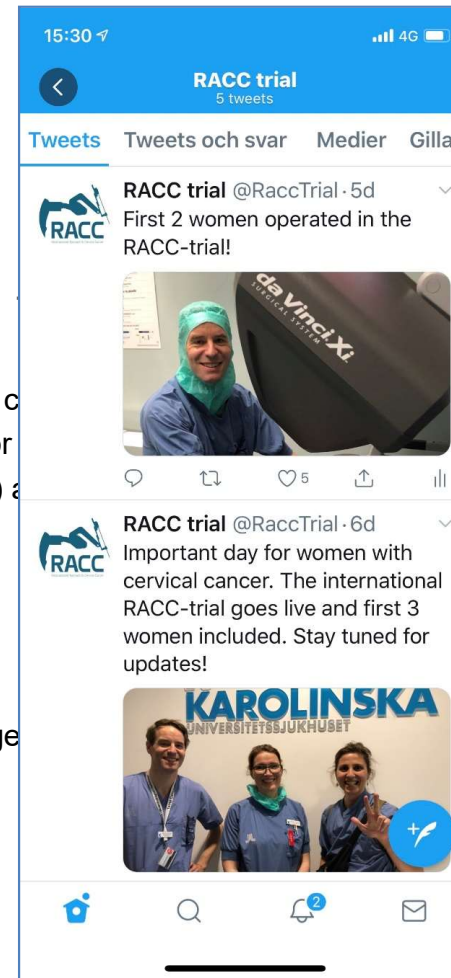
Accrual status – [Read more](#)





The RACC trial – Robot-assisted Approach

- International, multicenter, open-label randomized controlled trial
- Hypothesis: RALS is non-inferior to laparotomy for early-stage cervical cancer
- Primary endpoint: Recurrence-free survival (RFS) at 5 years
- Secondary endpoints:
 - Overall survival
 - Complications
 - Patients reported outcomes
 - Accuracy of a sentinel lymph node algorithm
 - Health care costs
- Quality assessment of participating sites and surgeons
- Sample size: 768 women
- To date: 25 active sites
- Trial launched May 2019
- www.racctrial.org



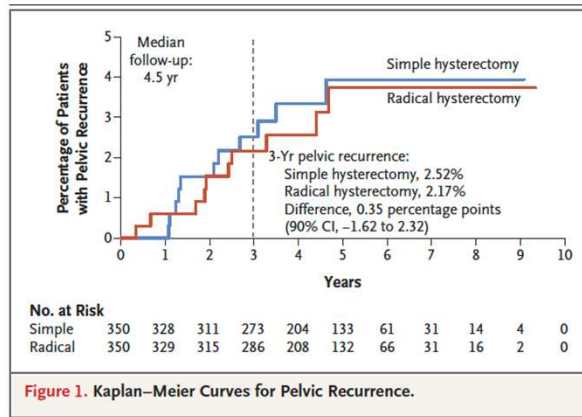
Recent development: less radical surgery

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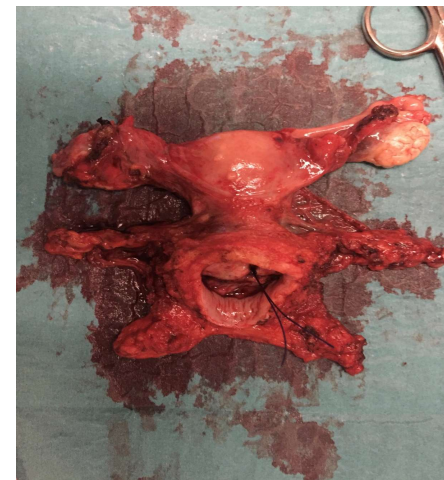
ORIGINAL ARTICLE

Simple versus Radical Hysterectomy in Women with Low-Risk Cervical Cancer

Marie Plante, M.D., Janice S. Kwon, M.D., Sarah Ferguson, M.D.,



Radical hysterectomy



Simple hysterectomy



Summary

- Cervical cancer can be eradicated through a combination of HPV screening and vaccination
- As CC becomes less common, centralisation of surgery is important
- Surgery is becoming less radical
- Fertility-sparing surgery may be an option in early-stage CC
- Minimally invasive surgery should not be performed outside clinical trials



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Thank you for listening

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