Fertility preservation for women with gynecologic cancer

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DECLARATION OF INTERESTS

Nothing to declare

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    1. Cervical cancer
    2. Endometrial cancer
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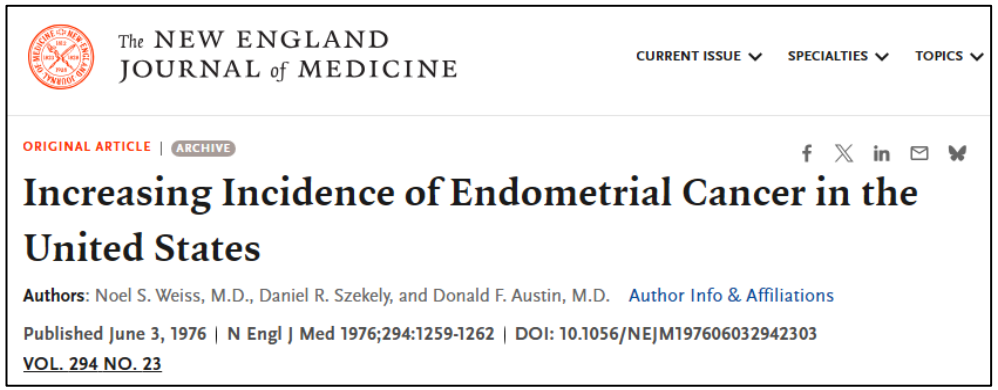
3. GLP-1 agonist

Introduction



The NEW ENGLAND JOURNAL of MEDICINE

CURRENT ISSUE SPECIALTIES TOPICS

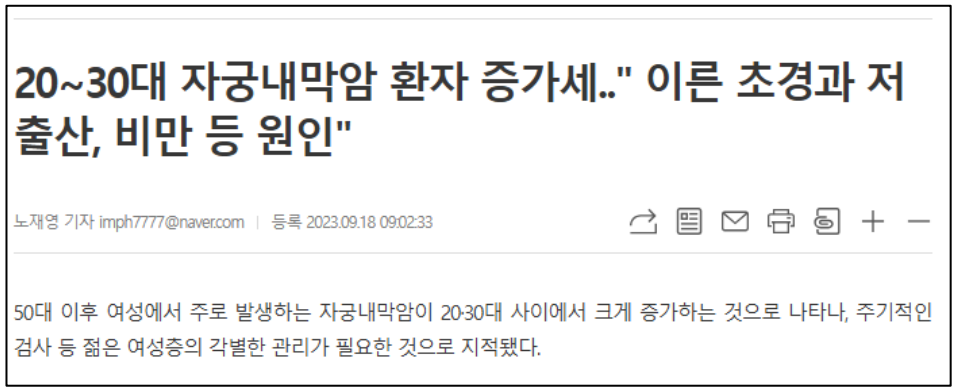
ORIGINAL ARTICLE | ARCHIVE

Increasing Incidence of Endometrial Cancer in the United States

Authors: Noel S. Weiss, M.D., Daniel R. Szekely, and Donald F. Austin, M.D. Author Info & Affiliations

Published June 3, 1976 | N Engl J Med 1976;294:1259-1262 | DOI: 10.1056/NEJM197606032942303

VOL. 294 NO. 23



20~30대 자궁내막암 환자 증가세.." 이른 초경과 저출산, 비만 등 원인"

노재영 기자 imph7777@naver.com | 등록 2023.09.18 09:02:33

50대 이후 여성에서 주로 발생하는 자궁내막암이 20-30대 사이에서 크게 증가하는 것으로 나타나, 주기적인 검사 등 젊은 여성층의 각별한 관리가 필요한 것으로 지적됐다.

Introduction

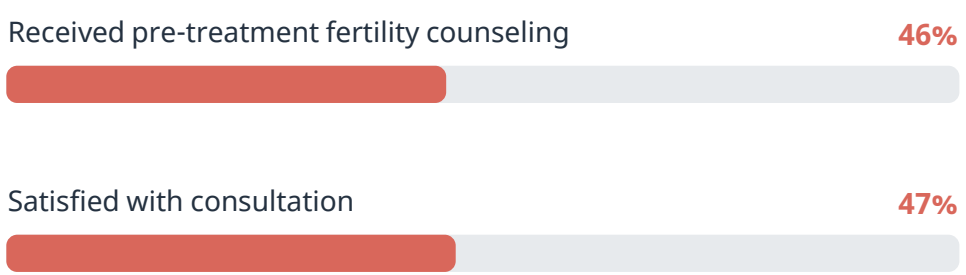
- **842,000 new cancers** in women aged 15 – 39 worldwide in 2022.
- **1.9 times higher** cancer incidence in females than males (52.9 vs. 28.3 per 100,000).
- **About 1 million cancers** diagnosed per year among women of reproductive age.

Dinicu et al. J Women's Health 2025;34:e409–e415

Introduction

GYNECOLOGIC CANCER SURVIVORS

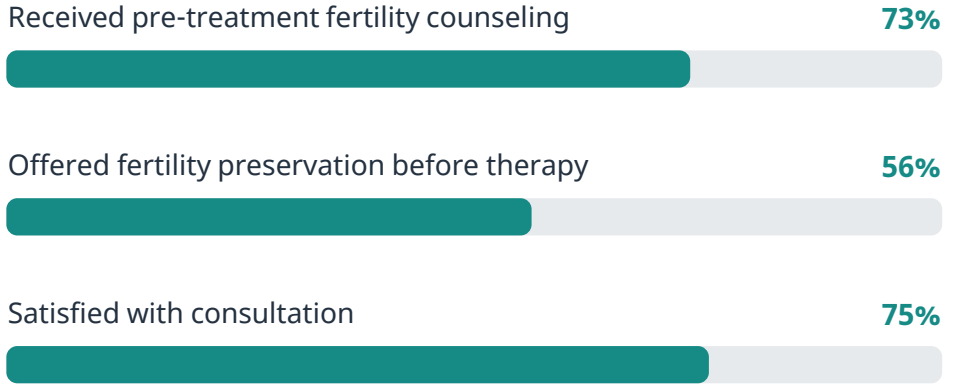
Chan et al., 2017 • n=470



Chan et al. J Cancer Surviv 2017;11:58–63

CONTEMPORARY CANCER COHORT

Martin et al., 2026 • n=107



Martin et al. IJGC 2026;36:104660

Two different cohorts, a decade apart.
Counseling is improving, but **timely fertility preservation is still not universal**.

Introduction

ASCO 2025: Evaluate and counsel about reproductive risk **at diagnosis** and **during survivorship**; refer patients who are interested in or uncertain about fertility preservation, and discuss options **before cancer-directed therapy**.

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Cervical cancer

Fertility-sparing treatment and follow-up in patients with cervical cancer, ovarian cancer, and borderline ovarian tumours: guidelines from ESGO, ESHRE, and ESGE

Philippe Morice, Giovanni Scambia, Nadeem R Abu-Rustum, Maribel Acien, Alessandro Arena, Sara Brucker, Ying Cheong, Pierre Collinet, Francesco Fanfani, Francesca Filippi, Ane Gerda Zahl Eriksson, Sebastien Gouy, Philipp Harter, Xavier Matias-Guiu, George Pados, Maja Pakiz, Denis Querleu, Alexandros Rodolakis, Christine Rousset-Jablonski, Artem Stepanyan, Antonia Carla Testa, Kirsten Tryde Macklon, Dimitrios Tsolakidis, Michel De Vos, François Planchamp, Michaël Grynberg

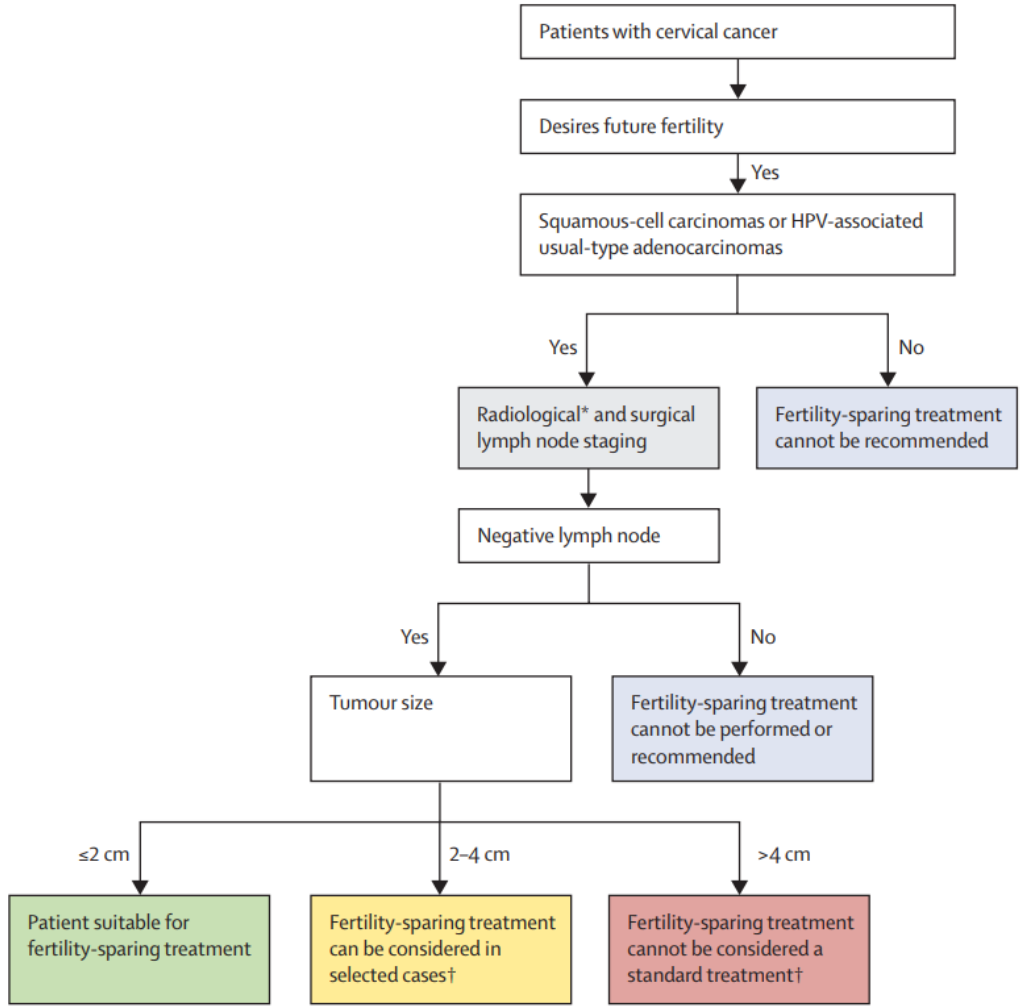
The European Society of Gynaecological Oncology, the European Society of Human Reproduction and Embryology, and the European Society for Gynaecological Endoscopy jointly developed clinically relevant and evidence-based guidelines focusing on key aspects of fertility-sparing strategies and follow-up of patients with cervical cancers, ovarian cancers, and borderline ovarian tumours. The developmental process of these guidelines is based on a systematic literature review and critical appraisal involving an international multidisciplinary development group consisting of 25 experts from relevant disciplines (ie, gynaecological oncology, oncofertility, reproductive surgery, endoscopy, imaging, conservative surgery, medical oncology, and histopathology). Before publication, the guidelines were reviewed by 121 independent international practitioners in cancer care delivery and patient representatives. The guidelines comprehensively cover oncological aspects of fertility-sparing strategies during the initial management, optimisation of fertility results and infertility management, and the patient's desire for future pregnancy and beyond.

Lancet Oncol 2024; 25: e602–10
Published Online August 28, 2024
https://doi.org/10.1016/S1470-2045(24)00262-6

Department of Gynecological Surgery, Gustave Roussy Cancer Campus, Villejuif, France (Prof P Morice MD, Prof S Gouy MD); **Université Paris Saclay, Paris, France** (Prof P Morice, Prof S Gouy,

Do not proceed with FST when:

- Positive or suspicious nodes
- Extracervical extension or distant disease
- High-risk non-usual histology
- Tumor >4 cm / IB3+
- Upper cervical or internal-os involvement
- Positive margins that cannot be cleared



Cervical cancer

Table 1: Clinical management options depending on the stage of cervical cancer for patients wishing to receive fertility-sparing surgery

Clinical stage	Management options for patients wishing to receive FSS
Stage 1A1 without LVSI	Conization
Stage 1A1 with LVSI, stages 1A2–1B1	VRT and pelvic lymphadenectomy (or SLN mapping)
Stage 1A2-1B1 and all criteria should be met (no LVSI, negative cone margins, squamous cell (any grade) or usual-type adenocarcinoma (grade 1 or 2 only), depth of invasion ≤10 mm, and negative imaging for metastatic disease)	Conization and pelvic lymphadenectomy
Stage IB2	ART or LRT; the ART group exhibited more favorable oncologic outcomes, but lower pregnancy rates. Limited data for the LRT group
Neoadjuvant chemotherapy followed by FSS	Not recommended

LVSI: Lymphovascular space invasion, VRT: Vaginal radical trachelectomy, SLN: Sentinel lymph node, FSS: Fertility-sparing surgery, ART: Abdominal

Liu et al. GMIT 2024.

Cervical cancer

Evidence supporting de-escalation in low-risk disease

Trial	Population	Main oncologic result
SHAPE	n= 700; low-risk tumors ≤2 cm	3-year pelvic recurrence: 2.17% radical vs 2.52% simple
ConCerv	n= 100 evaluable; low-risk IA2–IB1	2-year recurrence: 3.5% (95% CI 0.9–9.0)

Outcome	Radical	Simple
Urinary incontinence >4 weeks	11.0%	4.7%
Urinary retention >4 weeks	9.9%	0.6%
Conclusion	More morbidity	Noninferior pelvic control in selected disease

Cervical cancer

Reproductive outcomes: possible, but not routine obstetrics

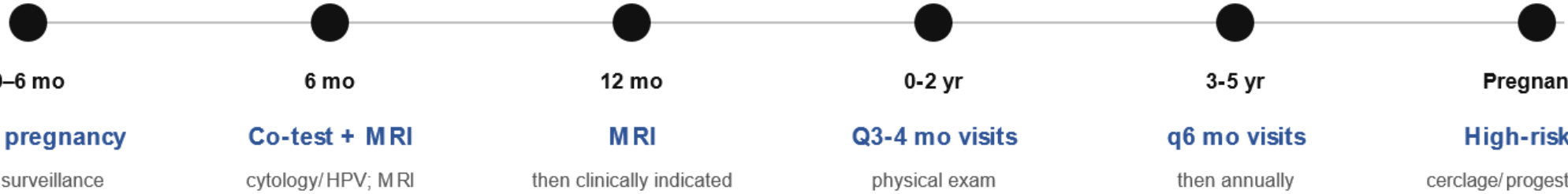
Table 2: Oncologic and reproductive outcomes after various surgical procedures

Study	Procedure	Simple trachelectomy/ cone resection	Radical vaginal trachelectomy	ART	LRT	Neoadjuvant chemotherapy
Bentivegna *et al.*[10]	Pregnancy rate (%)	56	57	44	65	77
Stage IA-IIA	Live birth rate (%)	74	67	68	78	76
	Prematurity rate (%)	15	39	57	50	15
	Recurrence rate (%)	1.8	3.8	3.8	4.7	4.3
Nezhat *et al.*[8]	Pregnancy rate (%)	65	68	42	42	
Stage 1A1–1B1	Live birth rate (%)	86	63	66	66	
	Prematurity rate (%)	25	35	31	31	
	Recurrence rate (%)	1.4	3.7	3.6	3.3	
Morice *et al.*[11]	Pregnancy rate (%)	56.3	58.7	36	46.4	
Stage IB1	Live birth rate (%)	88	71	66.6	62	
	Recurrence rate (%)	4.1	4.7	2.4	5,2	
Morice *et al.*[11]	Pregnancy rate (%)			36	46.4	74.5
Stage IB2	Live birth rate (%)			66.6	63.3	78.7
	Recurrence rate (%)			4.8	10.5	13.2

ART: Abdominal radical trachelectomy via laparotomy, LRT: Abdominal radical trachelectomy via laparoscopy

Liu et al. GMIT 2024.

Cervical cancer

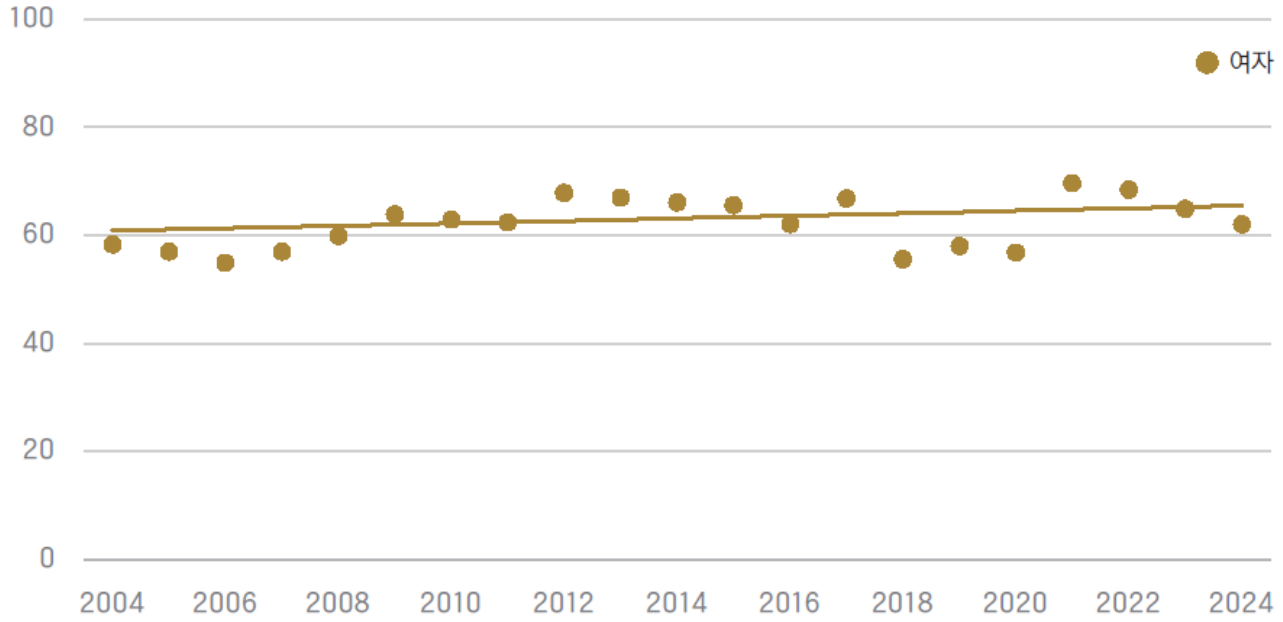


Issue	Guideline recommendation
Completion surgery	Not recommended after childbearing if no evidence of disease; consider hysterectomy only if follow-up is infeasible or persistent high-risk HPV positivity
Pregnancy care	Experienced obstetrician; assess cervical competence; permanent cerclage after large cervical excision; progesterone recommended; elective cesarean should be considered
Fertility treatment	If spontaneous conception is possible, try for at least 6 months before referral; earlier referral if infertility history

ESGO–ESHRE–ESGE guideline, Lancet Oncol 2024.

Cervical cancer

자궁경부암 검진
수검률 추이
(2004-2024)

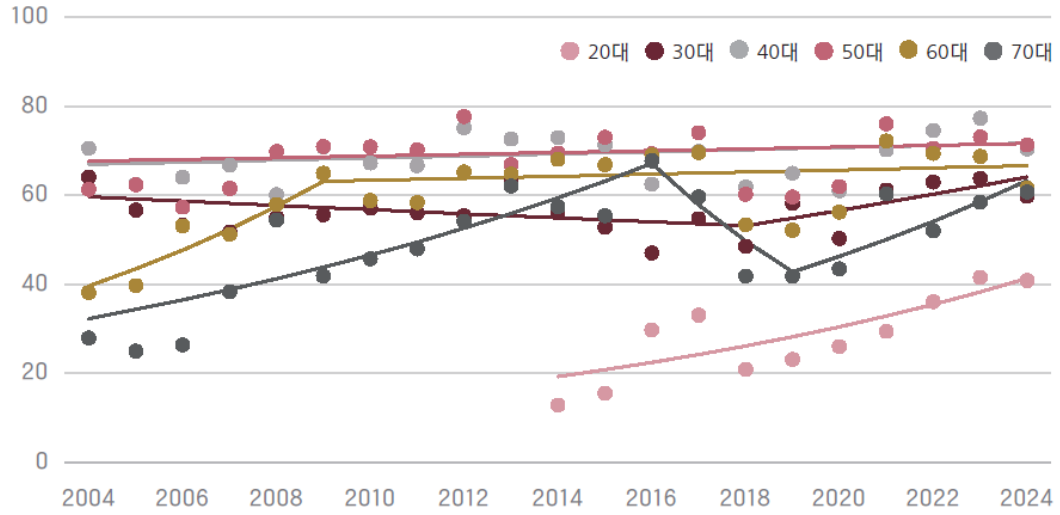


구분	과거(2004)			최신(2024)			최근 연간변화율 APC		
	대상자 수	%	95% CI	대상자 수	%	95% CI	기간	APC	95% CI
전체	-	-	-	-	-	-	-	-	-
남자	-	-	-	-	-	-	-	-	-
여자	1,545	58.3	(55.8, 60.8)	2,669	62.0	(60.2, 63.8)	2004-2024	0.4	(-0.2, 0.9)

Data 로 보는 암 동향 보고서 2026, 국립암센터

Cervical cancer

자궁경부암 검진의
연령대별 수검률 추이
(2004-2024)



구분	과거(2004)			최신(2024)			최근 연간변화율 APC		
	대상자 수	%	95% CI	대상자 수	%	95% CI	기간	APC	95% CI
20대	-	-	-	402	40.8	(36.0, 45.6)	2014-2024	7.9	(2.8, 13.2)
30대	505	64.0	(59.8, 68.2)	434	59.8	(55.1, 64.4)	2018-2024	3.2	(-0.8, 7.3)
40대	417	70.5	(66.1, 74.9)	528	70.4	(66.5, 74.3)	2004-2024	0.3	(-0.2, 0.9)
50대	266	61.3	(55.4, 67.2)	594	71.3	(67.7, 74.9)	2004-2024	0.3	(-0.4, 1.0)
60대	210	38.1	(31.5, 44.7)	542	61.6	(57.5, 65.7)	2009-2024	0.4	(-0.8, 1.5)
70대	84	27.9	(18.3, 37.5)	169	60.7	(53.3, 68.1)	2019-2024	8.1	(1.5, 15.2)

Data 로 보는 암 동향 보고서 2026, 국립암센터

Endometrial cancer


Human Reproduction Open, Vol.2023, No.1, hoac057, 2023
https://doi.org/10.1093/hropen/hoac057

human reproduction open | ESHRE PAGES

ESGO/ESHRE/ESGE Guidelines for the fertility-sparing treatment of patients with endometrial carcinoma†,‡

Favourable candidate	Selected / caution	Not appropriate
• Endometrioid histology • Grade 1 • Stage IA • No myometrial invasion • No metastatic disease • Strong adherence to follow-up	• Grade 2 stage IA • Minimal focal myometrial invasion (1-2 mm) • Obesity, PCOS, insulin resistance • Diminished ovarian reserve	• Non-endometrioid histology • Deep myometrial invasion • Extrauterine disease • p53-abnormal / copy-number high profile • Progression or non-response

Hum Reprod Open. 2023 Feb 6;2023(1):hoac057.

대한부인종양학회 Korean Society of Gynecologic Oncology

Endometrial cancer

Fertility-sparing **treatment options** include:

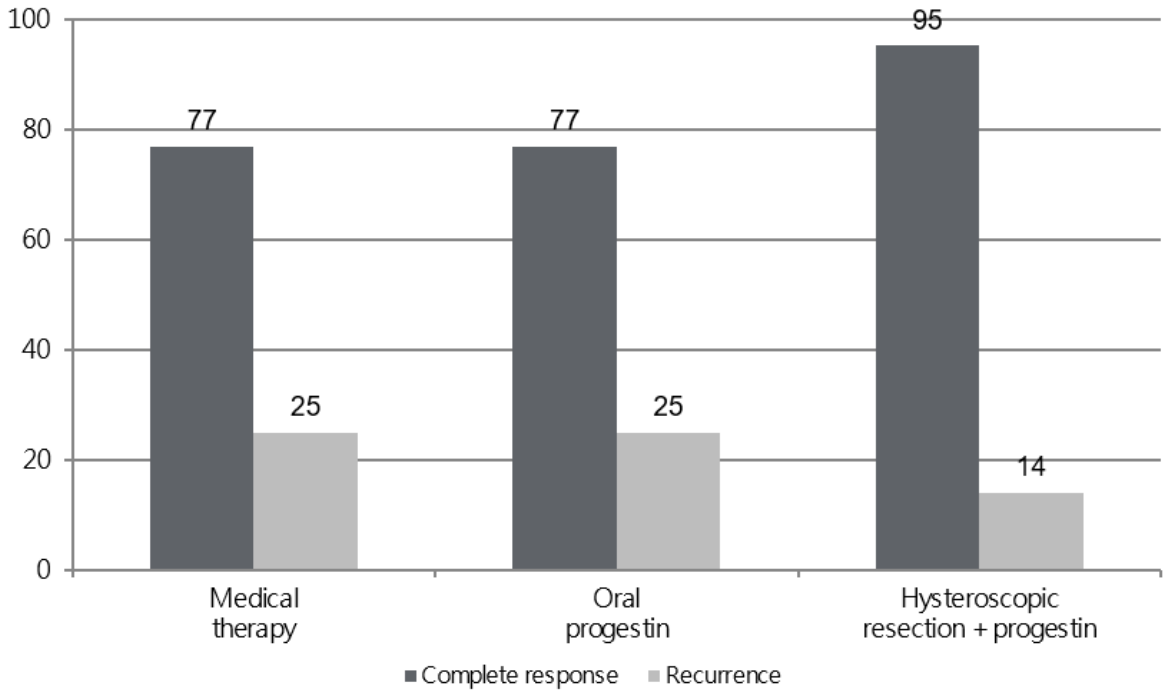
Oral Progestins
- Medroxyprogesterone acetate (MPA): 400 – 600 mg/day
- Megestrol acetate (MA): 160 – 320 mg/day
- Typical duration: 6 – 12 months

Levonorgestrel-releasing IUS (LNG-IUS)
- Releases 20 mcg/day directly into endometrium
- Avoids systemic side effects

Combination Approaches
- Progestins + LNG-IUS
- LNG-IUS + GnRH agonists
- Hysteroscopic tumor resection + hormonal therapy

- Duration target: complete response within 6–12 months; do not exceed 15 months.
- At 6 months with no response: re-discuss in MDT; consider hysterectomy if persistent disease.

Endometrial cancer

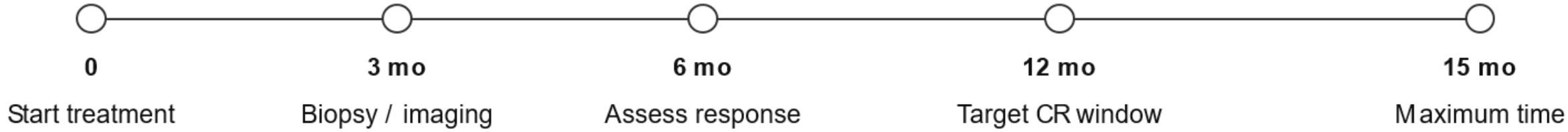


- "Response" is not cure; relapse remains possible.
- Obesity and insulin resistance can lower response; weight control is guideline-recommended.

"This approach buys time for pregnancy. It does not cure the disease."

Guillon 2019; Fan 2018; Rodolakis et al. 2023.

Endometrial cancer



Surveillance

Endometrial histology every 3–6 months by hysteroscopy; pelvic exam + ultrasound at 3-month visits.

Success definition

Two consecutive complete-response biopsies at least 3 months apart before pregnancy attempt.

Exit plan

Definitive surgery after childbearing, non-response, recurrence, or progression.

Hum Reprod Open. 2023 Feb 6;2023(1):hoac057.

Endometrial cancer

Once complete response is achieved

Good reproductive potential

Consider natural conception for a defined window: 6–9 months.

Infertility, older age, low reserve, or time pressure

Early ART referral to shorten time to conception.

No immediate pregnancy or interval between pregnancies

Maintenance therapy with LNG-IUD is recommended.

ART rationale Improve success rate and reduce interval to conception without a higher risk of recurrence.

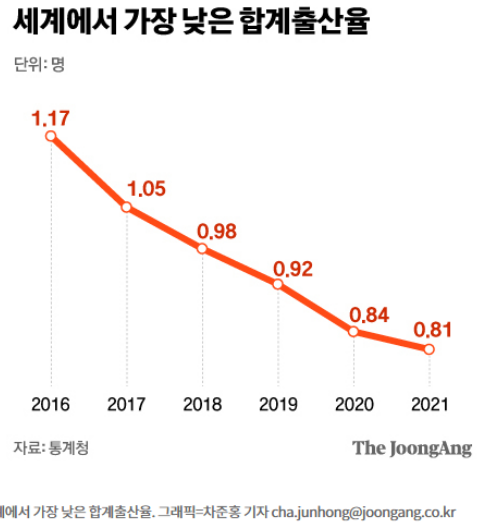
Counsel clearly: definitive surgery is recommended after completing childbearing.

Endometrial cancer

엄마 되는 나이 33.4세 OECD 최고, 저출산 출구가 없다

중앙일보 | 입력 2022.02.24 00:02 지면보기

정진호 기자 구독



세계에서 가장 낮은 합계출산율. 그래픽=차준홍 기자 cha.junhong@joongang.co.kr

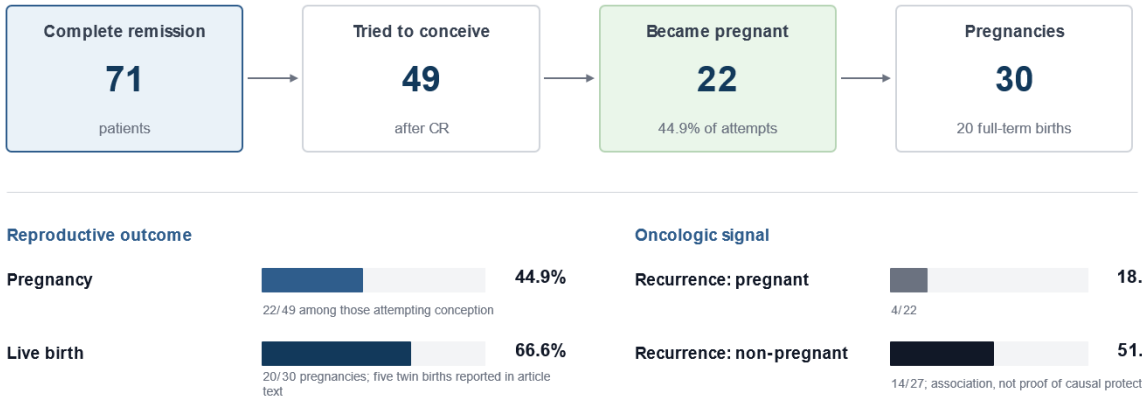
Endometrial cancer

Original Article

INTERNATIONAL JOURNAL OF GYNECOLOGICAL CANCER

Pregnancy and oncologic outcomes after fertility-sparing management for early stage endometrioid endometrial cancer

Su Hyun Chae,[1] Seung-Hyuk Shim,[1] Sun Joo Lee,[1] Ji Young Lee,[1] Soo-Nyung Kim,[1] Soon-Beom Kang[2]



Fertility-sparing hormonal treatment in patients with stage I endometrial cancer of grade 2 without myometrial invasion and grade 1–2 with superficial myometrial invasion: Gynecologic Oncology Research Investigators coLLaborAtion study (GORILLA-2001)

A Jin Lee[a], Eun Jung Yang[b], Nam Kyeong Kim[c], Yeorae Kim[c], Dong Hoon Suh[c], Jeeyeon Kim[d], Joo-Hyuk Son[d], Tae-Wook Kong[d], Suk-Joon Chang[d], Dong Won Hwang[e], Soo Jin Park[e], Hee Seung Kim[e], Ji Geun Yoo[f], Sung Jong Lee[g], Yoo-Young Lee[h], Seung-Hyuk Shim[a,*]

Studied population

Grade 2 No myometrial invasion
Grade 1–2 Superficial myometrial invasion

Key outcomes

Outcome	n/N	%	Interpretation
Complete response	39/54	72.2%	median 10 months to CR
Progressive disease	9/54	16.6%	during FST; clinically important
Recurrence after CR	15/39	38.5%	median RFS 23 months
Pregnancy after CR	7/15	46.7%	among those attempting conception
Live births	5		after CR and pregnancy attempt

Endometrial cancer

Comparison of preoperative endometrial biopsy grade and final pathologic diagnosis in patients with endometrioid endometrial cancer

Endometrioid endometriyum kanserli olgularda preoperatif endometriyal biyopsi grade ile postoperatif patolojik değerlendirmenin karşılaştırılması

Behiye Pınar Çilesiz Göksedef [1], Özgür Akbayır [2], Aytül Çorbacıoğlu[2], Hakan Güraslan[2], Fatmagül Şencan[2], Onur Erol[3], Ahmet Çetin[1]
[1]Department of Gynecology and Obstetrics, Haseki Teaching and Research Hospital, İstanbul, Turkey
[2]Department of Gynecology and Obstetrics, İstanbul Kanuni Sultan Süleyman Research and Teacing Hospital, İstanbul, Turkey
[3]Department of Gynecology and Obstetrics, Antalya Teaching and Research Hospital, Antalya, Turkey

Table 2. Comparison of the surgical outcomes according to preoperative FIGO grade

	Preoperative Grade		
	1 n (%)	2 n (%)	3 n (%)
Final Grade			
1 (n)	106 (63.5)	28 (22.8)	3 (6.7)
2 (n)	55 (32.9)	81 (65.9)	16 (35.6)
3 (n)	6 (3.6)	14 (11.4)	26 (57.8)
Final FIGO stage			
I	134 (80.2)	93 (75.6)	23 (51.1)
II	10 (6.0)	11 (8.9)	4 (8.9)
III	15 (9.0)	8 (6.5)	13 (28.9)
IV	8 (4.8)	11 (8.9)	5 (11.1)
Postoperative Histology			
Endometrioid	166 (99.4)	120 (97.6)	44(97.8)
Non-Endometrioid	1 (0.6)	3 (2.4)	1(2.2)
LNI	19 (11.4)	16 (13.0)	15 (33.3)
Positive Cytology	15 (9.0)	14 (11.4)	11 (24.4)
LVSI	40 (24.0)	29 (23.6)	19 (42.2)
Depth of MI			
<1/2	126 (75.4)	77 (62.6)	20 (44.4)
>1/2	41 (24.6)	46 (37.4)	25 (55.6)

LNI: lymph node invasion, LVSI: lymphovascular space invasion, MI: myometrial invasion

Endometrial cancer

ORIGINAL RESEARCH

Performance of molecular classification in predicting oncologic outcomes of fertility-sparing treatment for atypical endometrial hyperplasia and endometrial cancer

Filippo Alberto Ferrari[a,b,*], Stefano Uccella[a], Massimo Franchi[a], Giovanni Scambia[c], Francesco Fanfani[c], Anna Fagotti[c], Matteo Pavone[c,d,e], Francesco Raspagliesi[b], Giorgio Bogani[b]

[a]University of Verona, AOUI Verona, Department of Obstetrics and Gynaecology, Verona, Italy
[b]Nazionale dei Tumori di Milano, Fondazione IRCCS Istituto Gynecological Oncology Unit, Milan, Italy
[c]IRCCS, Fondazione Policlinico Universitario A. Gemelli, Dipartimento di Scienze per la salute della Donna e del Bambino e di Sanità Pubblica, Gynecological Oncology Unit, Rome, Italy
[d]Institute of Image-Guided Surgery (IHU) Strasbourg, Strasbourg, France
[e]Research Institute against Digestive Cancer (IRCAD) France, Strasbourg, France

Received 27 October 2024, Accepted 17 November 2024; Available online 18 December 2024

Table 1 Summary of the Included Studies

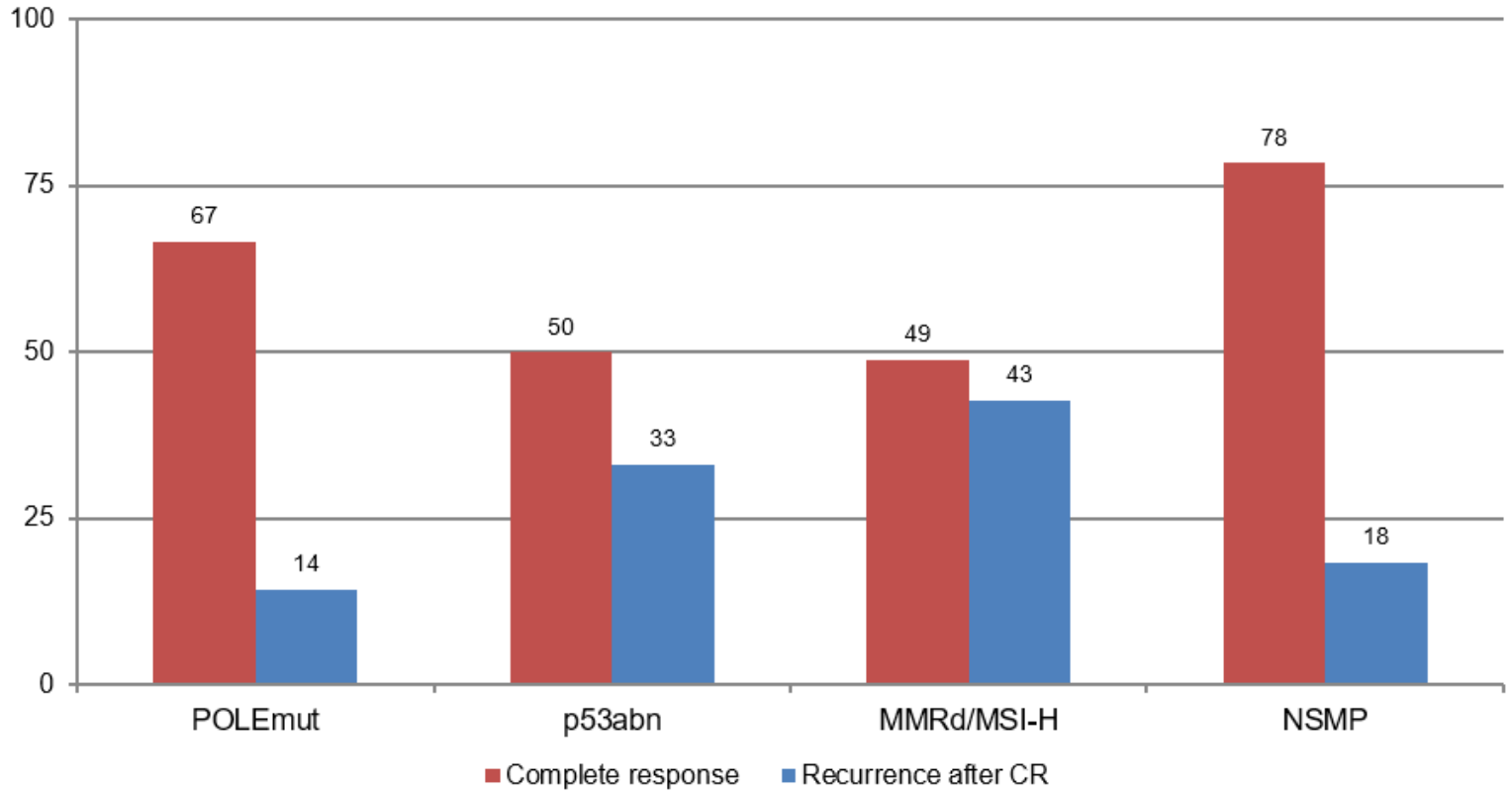
Author	Y	TGCA	Pre-operative Imaging	Biopsy Method	FU (Range)	*N*	FU Strategy	AEH/ EIN	EEC (G2)	POLEmut	MMRd/ MSI-H	p53abn	NSMP	Lynch Syndrome
Chung and colleagues[14]	2021	ProMisE	MRI	Hyst/D&C	38.4 (2.9-163.5)	57	Hyst/D&C every 3 mo until CR. Then every 3-6 mo	-	57 (5)	2	9	1	45	NR
Dagher and colleagues[15]	2023	NGS	MRI or TVS	Hyst/D&C/Pipelle	48 (12-123)	20	D&C every 3 mo until CR. Then every 3-6 mo	7	13 (2)	1	3	0	16	1
Falcone and colleagues[16]	2019	NGS	MRI or TVS	Hyst	106 (24-134)	15	Hyst: 3-monthly for 2 y, then 6-monthly	-	15	1	7	0	7	2
Puechl and colleagues[17]	2021	ProMisE	NR	Hyst/D&C	28.8 (3.3-141.5)	58	Hyst/D&C every 3 mo until CR. Then every 3-6 mo	36	22	4	6	4	44	NR
Ran and colleagues[18]	2022	ProMisE	NR	Hyst/D&C	46 (11-138)	12	Hyst/ D&C: 3-monthly for 2 y, then 6-monthly	-	12	0	3	1	8	0
Xu and colleagues[19]	2023	NGS	MRI or TVS	Hyst	59.8 (19.1-104.0)	90	Hyst every 3 mo	-	90 (2)	6	5	1	78	1
Zhang and colleagues[20]	2022	NGS	TVS	Hyst	16.8 (4-104)	59	Hyst every 3 mo	20	46 (7)	3	4	3	49	NR
Wang and colleagues[21]	2023	NGS	MRI or TVS	Hyst	9 (4.5-13)	52	Hyst every 3 mo	6	39	4	7	2	39	5

Abbreviations: AEH, atypical endometrial hyperplasia; D&C, dilatation and curettage; EEC, early endometrial cancer; EIN, endometrial in situ neoplasia; FU, follow-up; G2, grade 2; Hyst, hysteroscopy; MMRd/MSI-H, mismatch repair deficiency/ microsatellite-instable; MRI, magnetic resonance imaging; *N*, numbers of patients; NGS, next-generation sequencing; NR, not reported; NSMP, no specific mutational profile; POLEmut, POLE mutated; p53abn, TP53-mutant or p53 abnormal; ProMisE, The Proactive Molecular Risk Classifier for Endometrial Cancer; TGCA, The Cancer Genome Atlas; TVS, transvaginal ultrasonography.

Int J Gynecol Cancer. 2025 Jan;35(1):100016.

Endometrial cancer

Complete response and recurrence by molecular subtype



1. NSMP had the highest complete response rate.

2. MMRd/MSI-H showed both lower response and higher recurrence.

3. p53abn was uncommon but also showed an unfavorable signal.

4. POLEmut did not show clearly superior FST success in these pooled data.

Clinical practice needs to **adopt molecular profiling** as **a standard in pre-FST workup**, just as it is in adjuvant therapy planning.

Int J Gynecol Cancer. 2025 Jan;35(1):100016.

Endometrial cancer

Review

Fertility-Sparing Treatments in Endometrial Cancer: A Comprehensive Review on Efficacy, Oncological Outcomes, and Reproductive Potential

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No consensus on:

- Optimal dose
- Duration of treatment
- Maintenance therapy post-CR

In this study (18 studies, n = 23,976), CRRs varied **from 18% to 100%** across regimens; RRs from **0% to 81.8%**.

Table 1. Characteristics of included studies.

Author(s), Year	Country	Study Design	Period of Enrollment	Median Age (Years)	FIGO Stage	No.	FST	Median FU (Months)
Signorelli, 2009 [15] ^	Italy	Prospective monocenter cohort study	1992–2004	32.0	IA	11	Oral MPA/GnRHa/Danazole	98.0
Park, 2012 [16]	Korea	Retrospective monocenter cohort study	N/A	30.0	I-II	14	Oral MPA/MA	47.3
Kim, 2013 [17]	Korea	Prospective monocenter cohort study	2008–2012	34.8	I-II	16	Oral MPA and LNG-IUS	31.1
Park, 2013 [18]	Korea	Prospective multicenter cohort study	1996–2010	31.3	IA	148	Oral MPA/MA	66.0
Kudesia, 2014 [19] ^	USA	Prospective monocenter cohort study	2000–2011	38.5	I	10	Oral progesterone and/or LNG-IUS	13.0
Mitsuhashi, 2015 [20] ^	Japan	Prospective monocenter cohort study	2009–2012	33.0	IA	19	MPA and metformin	38.0
Ohyagi-Hara, 2015 [21] ^	Japan	Prospective monocenter cohort study	2000–2011	34.2	IA	16	Oral MPA	39.2
Chen, 2016 [22] ^	China	Retrospective monocenter cohort	2000–2011	32.0	IA	53	Oral MPA/MA	6.0
Hwang, 2017 [23]	Korea	Retrospective monocenter cohort study	2011–2015	30.4	IA	5	Oral MPA and LNG-IUS	44.4
Ruiz, 2017 [24]	USA	Retrospective multicenter cohort study	2004–2014	N/A	I	23231	Oral progesterone	54.0
Yamagami, 2018 [25] ^	Japan	Prospective monocenter cohort study	1998–2013	35.0	IA	97	Oral MPA	71.3
Chae, 2019 [26]	Korea	Retrospective multicenter cohort study	2005–2017	37.0	IA	118	Oral MPA and LNG-IUS	9.0
Kim, 2019 [27]	Korea	Prospective multicenter cohort study	2012–2017	32.9	I-II	44	Oral MPA and LNG-IUS	6.0
Yang, 2019 [28]	Taiwan	Prospective monocenter cohort study	2013–2017	33.6	IA	6	Oral MPA/MA	32.0
He, 2020 [29] ^	China	Retrospective monocenter cohort study	2005–2019	32.8	IA	16	Oral MPA/MA or in combination with LNG-IUS/GnRHa	61.0
Xu, 2020 [30] ^	China	Prospective monocenter case-control study	2014–2016	33.3	I-II	96	LNG IUS and/or high-efficient MA	N/A
İşçi Bostancı, 2021 [31]	Turkey	Retrospective monocenter cohort study	2005–2020	34.8	IA-IC-IIIC2	38	Oral MPA/MA	40.5
Piatek, 2021 [32] ^	Poland	Retrospective multicenter cohort study	2010–2019	30.6	I-II	38	Intramuscular MPA/Oral MA/LNG-IUS	36.5

Medicina (Kaunas). 2025 Mar 7;61(3):471.

Ovarian cancer

USO + staging

Most common fertility-sparing operation

BOT, MGCT, sex cord–stromal, selected EOC

BSO + uterus preservation

When both ovaries must be removed

Future pregnancy requires prior/donor oocytes or embryos

Cystectomy

Usually BOT or unavoidable situations

Higher ovarian recurrence; rarely for invasive EOC

Why this section is different

- Ovarian cancer is a spectrum of diseases, not one disease.
- Treatment removes the organ that contains the gametes.
- The fertility-sparing operation itself can alter staging accuracy and recurrence risk.

→

Clinical variables

- Histology
- FIGO stage
- Tumor laterality
- Grade / invasion pattern
- Genetic predisposition
- Need for adjuvant chemotherapy

→

Teaching frame

- **Green zone**
  BOT, MGCT, selected stage I
- **Yellow zone**
  Selected stage IC / histology-specific
- **Red zone**
  Advanced, bilateral high-risk, poor biology

Ovarian cancer

Favourable oncological selection criteria for fertility-sparing management (based on the favourable survival and recurrence rates observed in cohorts or comparative studies [radical *vs* conservative] of patients treated with such characteristics)

Oncological selection criteria acceptable in selected cases (insufficient or conflicting data to accurately evaluate the results of ovarian preservation in this subgroup of patients)

Unfavourable oncological selection criteria for ovarian preservation (poorest survival observed in patients having an ovarian preservation in these subgroups. Poor survival rates could be related to the use of ovarian preservation itself or the natural history of cancer [whatever the type of surgery: conservative or radical] in these patients)

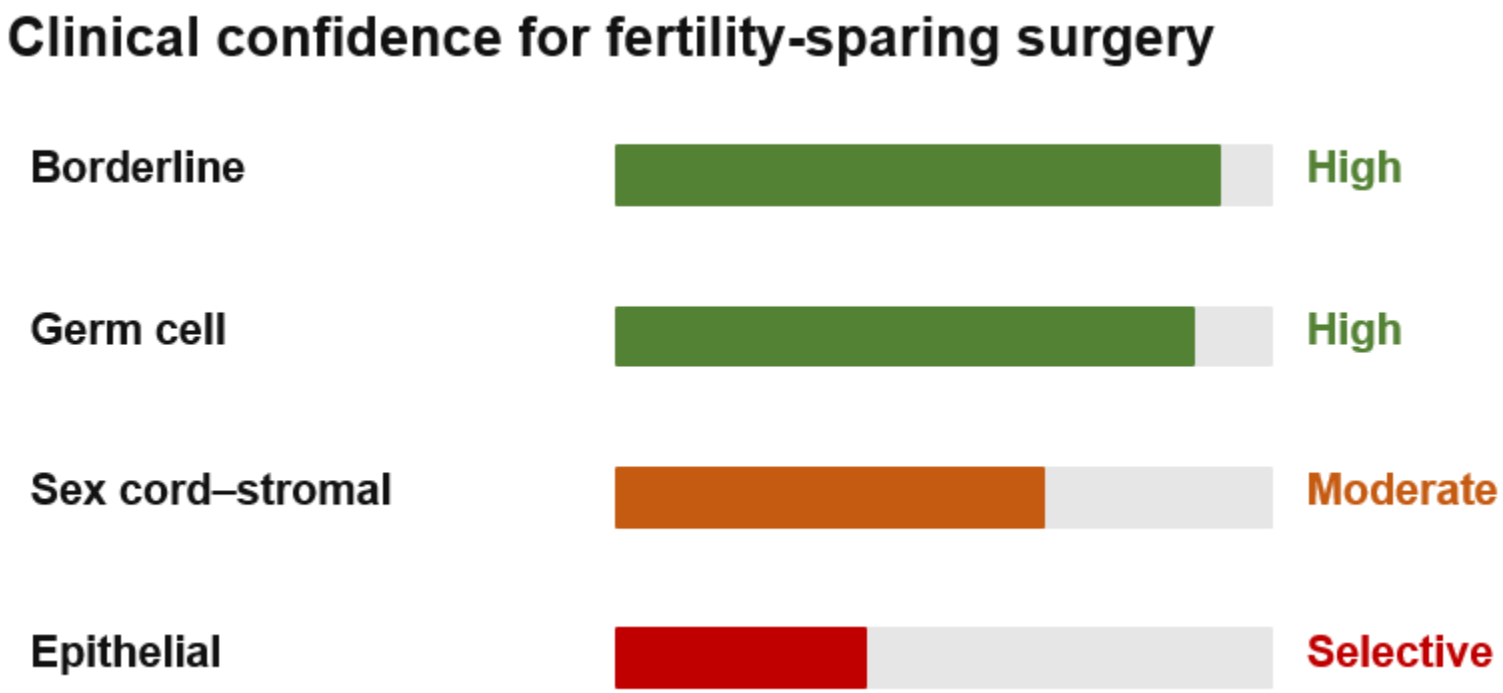
	Epithelial ovarian neoplasms								Non-epithelial ovarian neoplasms				
	Borderline ovarian tumour*	Low-grade serous carcinoma	Low-grade endometrioid carcinoma	Mucinous carcinoma with expansile invasion	Clear-cell carcinoma	High-grade serous carcinoma	High-grade endometrioid carcinoma	Mucinous carcinoma with infiltrative invasion	Germ cell tumour†	Small-cell carcinoma	Granulosa cell tumour	Sertoli-Leydig cell tumour‡	Sertoli-Leydig cell tumour§
IA													
IB													
IC1													
IC2												||	
IC3												||	
II–IV									¶				

***Figure 3*: Indications for in vivo ovarian tissue preservation in ovarian neoplasms according to histological type and stage of the disease**

*Non-invasive peritoneal implants. †Includes immature teratoma, dysgerminoma, and yolk-sac tumours. ‡Well-and-moderately differentiated. §Poorly differentiated. ¶For grades 2 and 3 immature teratoma stage II–IV, fertility-sparing data are scarce. ||For Sertoli-Leydig cell tumour stage IC2 and IC3, fertility-sparing data are scarce.

Morice et al. Lancet Oncol. 2024;25:e602–e610. Figure 3.

Ovarian cancer



Ovarian cancer

Contents lists available at ScienceDirect

European Journal of Obstetrics & Gynecology and Reproductive Biology

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Full length article

Fertility-sparing strategies in borderline and malignant ovarian tumors: a comparative analysis of international guideline recommendations

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Area	Consensus / variability
Staging	Consensus: peritoneal washings, omental biopsy/omentectomy, random peritoneal biopsies
Lymphadenectomy	Varies by histology; often omitted for BOT, sex cord–stromal, expansile mucinous or low-grade endometrioid
Eligibility for FSS	BOT and MGCT broadly accepted; EOC is stage/histology-dependent
Completion surgery	Major interguideline variability; ESGO–ESHRE–ESGE is more conservative about routine completion surgery

Table 4
Comparison of guideline recommendations regarding completion surgery following FSS and childbearing completion.

Guidelines	BOTs	EOCs	MSCSTs	MGCTs
NCCN	Recommended	Recommended	Recommended	Recommended
ESGO-ESHRE-ESGE	Not recommended	Recommended on a case-by-case basis	Recommended on a case-by-case basis	Not recommended
BGCS	Recommended on a case-by-case basis	Recommended on a case-by-case basis	/	Recommended
SEOM–GEICO	/	/	/	/
ESGO-ESMO-ESP	/	/	/	/
ESMO	/	/	/	/
LGSOC-Consensus	/	/	/	/

Ovarian cancer

Tumor group	Main message	Evidence
Borderline ovarian tumors	FSS is generally safe; cystectomy may improve fertility but increases ovarian recurrence	5-year survival ≈99%; cystectomy recurrence 34% vs 20% with oophorectomy; 106 pregnancies / 203 women in one review
Malignant germ cell tumors	FSS is standard of care for early-stage and selected advanced-stage disease	Recurrence 8.7% in >2000 FSS patients; OS ≈97%; 382/474 attempting pregnancy had ≥1 pregnancy
Sex cord–stromal tumors	FSS reasonable in selected early-stage tumors; rupture matters	Lymph node metastasis rare; routine lymphadenectomy generally not recommended
Epithelial ovarian cancer	Consider only in carefully selected unilateral, early-stage, favorable histology disease	Stage IA EOC recurrence after FSS 5–29%; OS ≈94%; 10-year OS similar in selected stage IA/IC in NCDB analysis

Kohn et al. J Minim Invasive Gynecol. 2021;28:392–402; Bercow et al. J Minim Invasive Gynecol. 2021;28:527–536.

Ovarian cancer

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ORIGINAL ARTICLE

Oncologic and reproductive outcomes of cystectomy as a fertility-sparing treatment for early-stage epithelial ovarian cancer

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Table 1 Clinical characteristics of patients

Case	Age	FIGO stage	Surgery	Tumor size# (mm)	Cytology	Histology	Grade	Chemotherapy
1	27	IC1	Rt-cystec	50	Negative	Mucinous	1	None
2	25	IA	Lt-cystec + Rt-W	110	Negative	Mucinous	1	Platinum-based
3	38	IA	U-cystec	120	Negative	Mucinous	1	NA
4	30	IC1	Rt-cystec	39	Negative	Mucinous	1	Taxane + platinum
5	32	IA	Rt-cystec	NA	Negative	Endometrioid	1	Taxane + platinum
6	28	IC1	U-cystec	NA	Negative	Endometrioid	1	Platinum-based
7	26	IC1	Lt-cystec	NA	Negative	Mucinous	1	Taxane + platinum
8	32	IC3	Bil-cystec	60, 34	Positive	Mucinous	1	None

Rt-cystec right cystectomy, *Lt-cystec* left cystectomy, *U-cystec* unilateral cystectomy, *Bil-cystec* bilateral cystectomy, *Rt-W* right wedge resection, # larger diameter (mm), *NA* not applicable

Ovarian cancer

Case	Recurrence	Recurrence site	Recurrence type	RFS	OS	Outcome	Pregnancy
1	No	(−)		88	88	NED	P2
2	No	(−)		119	119	NED	
3	No	(−)		135	135	NED	
4	No	(−)		45	45	NED	
5	Yes	Pelvis	IOC	21	42	DOD	
6	No	(−)		218	218	NED	
7	No	(−)		147	147	NED	P1
8	Yes	Bil ovary	BOT	30	61	NED	P1

IOC invasive ovarian carcinoma, *BOT* borderline ovarian tumor, *RFS* recurrence-free survival, *OS* overall survival, *NED* no evidence of disease, *DOD* died of disease

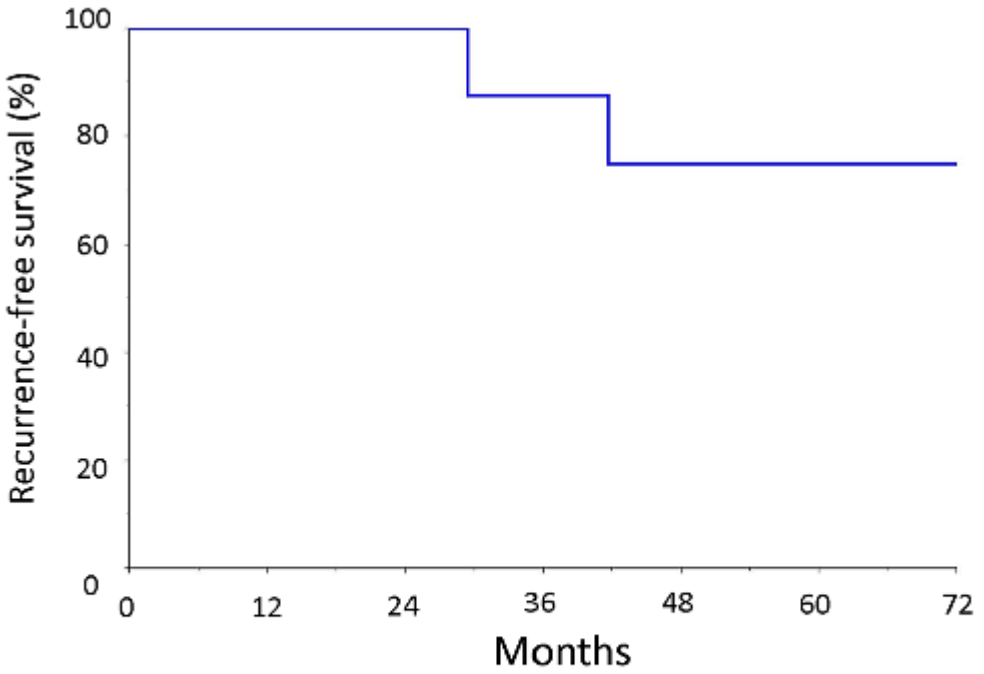

Fig. 1 Kaplan–Meier estimated recurrence-free survival of all EOC patients at stage I who underwent cystectomy

Conclusions Although oophorectomy is considered as an appropriate fertility-preserving operation, cystectomy may be an unavoidable option when it is the only surgical procedure available. It is desirable to verify the utility by accumulating larger numbers of patients through a future registry system.

Ovarian cancer

Clinical situation	Guideline-consistent approach
Suspicious ovarian mass before final histology	Do not perform ovarian stimulation/egg retrieval before final diagnosis of possibly malignant or borderline ovarian mass
After staging surgery confirms favorable prognosis	Ovarian stimulation and oocyte/embryo cryopreservation can be considered based on histology, stage, and hormone sensitivity
Adjuvant chemotherapy planned	Discuss timing in MDT: ideally before chemotherapy, or rescue fertility preservation ≥6 months after chemotherapy
Low-grade serous / endometrioid / granulosa cell tumor	Aromatase inhibitor co-treatment during stimulation should be first choice
High-risk germline predisposition	Counsel on transmission and consider PGT; ovarian stimulation is treatment of choice; no safety data for ovarian tissue reimplantation

Ovarian cancer

Question	Guideline message
When to try pregnancy?	BOT: immediately after FSS • EOC: consider after 1 year of negative follow-up • Early non-epithelial ovarian cancer: after 6 months of negative follow-up
ART allowed?	Yes, when needed. Timing should be individualized according to histology, stage, oncologic prognosis, and follow-up status.
How often follow-up?	Every 3–4 months for 2 years, then every 6 months for another 3–5 years, then annually for at least 10 years.
Pregnancy surveillance?	Experienced ultrasonography in early pregnancy; routine tumor-marker surveillance is not recommended during pregnancy.

Morice et al. Lancet Oncol. 2024;25:e602–e610.

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GLP-1 agonist

Contents lists available at ScienceDirect

Gynecologic Oncology

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

Impact of GLP-1 RA plus progestin therapy on fertility-sparing management of endometrial intraepithelial neoplasia and endometrial cancer☆

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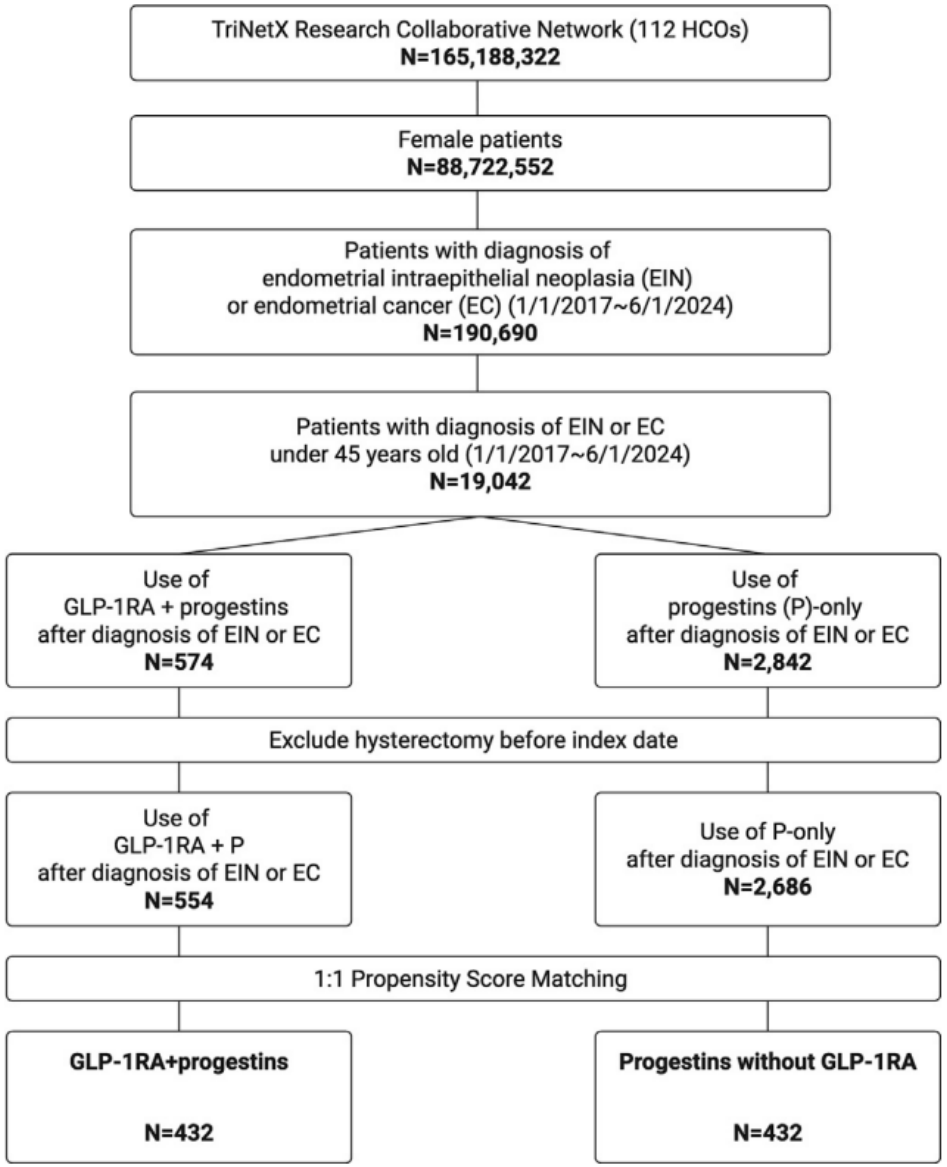

Fig. 1. Cohort inclusion flowchart.

GLP-1 agonist

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Impact of GLP-1 RA plus progestin therapy on fertility-sparing management of endometrial intraepithelial neoplasia and endometrial cancer☆

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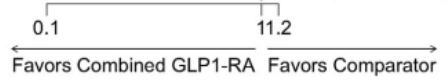
Comparison Groups	Event / Total, N (%)	Event / Total, N (%)	HR (95% CI)
Main Analysis	**GLP-1RA+P**	**P-only**	
Hysterectomy -6 months	28/432(6.5)	77/432(17.8)	0.34 (0.22 to 0.53)
Hysterectomy -12 months	39/432(9.0)	97/432(22.5)	0.38 (0.26 to 0.54)
Hysterectomy -18 months	44/432(10.2)	101/432(23.4)	0.41 (0.29 to 0.58)
Subgroup (Age)			
Younger (<40 yrs)	**GLP-1RA+P**	**P-only**	
Hysterectomy -6 months	13/307(4.2)	47/307(15.3)	0.26 (0.13 to 0.49)
Hysterectomy -12 months	22/307(7.2)	56/307(18.2)	0.37 (0.23 to 0.61)
Hysterectomy -18 months	27/307(8.8)	65/307(21.2)	0.40 (0.25 to 0.62)
Subgroup (Diagnosis)			
EC	**GLP-1RA+P**	**P-only**	
Hysterectomy -6 months	15/192(7.8)	44/192(22.9)	0.31 (0.17 to 0.56)
Hysterectomy -12 months	19/192(9.9)	55/192(28.6)	0.31 (0.18 to 0.52)
Hysterectomy -18 months	22/192(11.5)	58/192(30.2)	0.33 (0.20 to 0.55)
Subgroup(Progestin Type)			
LNG-IUD	**GLP-1RA+LNG-IUD**	**LNG-IUD only**	
Hysterectomy -6 months	20/309(6.5)	45/309(14.6)	0.43 (0.25 to 0.73)
Hysterectomy -12 months	25/309(8.1)	61/309(19.7)	0.40 (0.25 to 0.64)
Hysterectomy -18 months	29/309(9.4)	69/309(22.3)	0.41 (0.27 to 0.64)
Oral P	**GLP-1RA+Oral P**	**Oral P only**	
Hysterectomy -6 months	16/208(7.7)	46/208(22.1)	0.32 (0.18 to 0.57)
Hysterectomy -12 months	21/208(10.1)	52/208(25)	0.37 (0.22 to 0.62)
Hysterectomy -18 months	23/208(11.1)	54/208(26)	0.39 (0.24 to 0.64)
Subgroup (GLP-1RA Type)			
Semaglutide	**Semaglutide + P**	**P-only**	
Hysterectomy -6 months	18/296(6.1)	61/296(20.6)	0.29 (0.16 to 0.45)
Hysterectomy -12 months	24/296(8.1)	73/296(24.7)	0.30 (0.19 to 0.47)
Hysterectomy -18 months	28/296(9.5)	78/296(26.4)	0.32 (0.21 to 0.50)
Tirzepatide	**Tirzepatide + P**	**P-only**	
Hysterectomy -18 months	<10*/189(5.3)	51/189(27.0)	0.20 (0.10 to 0.40)



GLP-1 agonist

WE-FiERCE (NCT06073184)	Phase II, multicenter, single-arm, open-label study	Premenopausal women with BMI ≥ 27, AEH, or grade 1 EC desiring fertility preservation	Tirzepatide (SC weekly, ≤15 mg × 4 weeks) + progestin-releasing IUD	**Primary:** Complete pathologic response at 48 weeks; **Secondary:** recurrence, pregnancy rates, metabolic outcomes, QoL, and adverse events	Not yet recruiting
Leipold and colleagues (45)	Randomized, open-label study	Women 18–45 years, BMI > 30, with AEH or early-stage EC, desiring uterine preservation	LNG-IUD alone; LNG-IUD + metformin; LNG-IUD + metformin + liraglutide	**Primary:** Complete pathologic remission; **Secondary:** Histologic changes, weight loss, and glucose/insulin levels	Not yet recruiting

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Gynecologic Oncology

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제1차 부인종양간호사 연수강좌
& 카데바 워크숍

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