

# 부인과 질환에서 내시경 수술의 적용

## The Application of Endoscopic Surgery to Gynecologic Conditions

134

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### Abstract

The advancements in optics, video technologies and endoscopic instrumentations have led to the expansion of endoscopy into the current therapeutic surgical practice of benign and malignant gynecologic conditions. So, minimally invasive and organ - preserving surgery can be performed in terms of organ-specific difficulties in the field of gynecology instead of conventional surgical techniques that require laparotomy and uterotomy. Also, the recent introduction of computer - aided instruments seems to have the potential to revolutionize endoscopic surgery. Major advantages of an endoscopic surgery include minimization of patient discomfort and analgesics requirements, a short period of hospitalization, rapid recuperation, superior cosmetics, easier intra - operative access to the pelvic floor, cul - de sac and intrauterine cavity, less blood loss and less postoperative adhesion. Today every gynecologists should have the knowledge and skill of the endoscopic surgery in order to gain great benefits from endoscopic surgery. In this article, recent advancements in the endoscopic surgery of gynecological conditions are reviewed.

**Keywords :** Endoscopic surgery; Laparoscopy; Hysteroscopy

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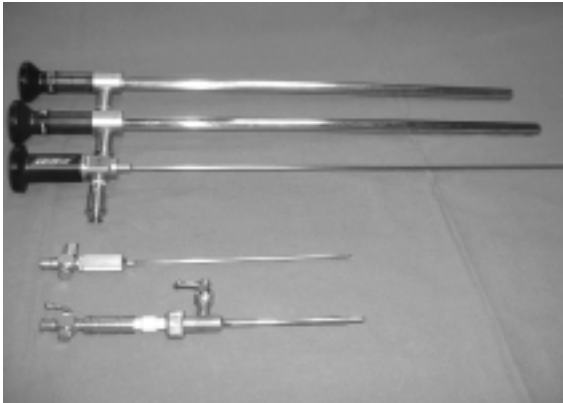
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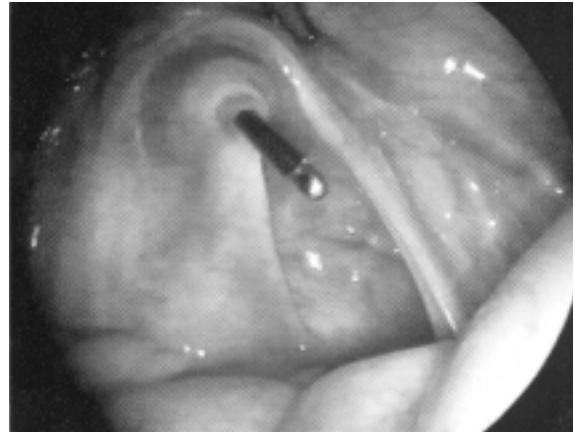
learning curve

가

가



1.



2. Transvaginal hydrolaparoscope

Dr. Semm

1989 Dr.

Reich가

(2).

1976 Neuwirth

1869 Dr. Amin

, 1981 Goldrath Nd:

photovaporization

YAG

(3).

1910 Dr. Jacobaeus ,

1938 가 Dr. Veress가 CO<sub>2</sub>

veress . 1944

Dr. Palmer가 trendelenburg position

1960 Dr. Steptoe가

two - puncture sterilization ,

Dr. Wheeler가 single - puncture sterilization

(1). 1970

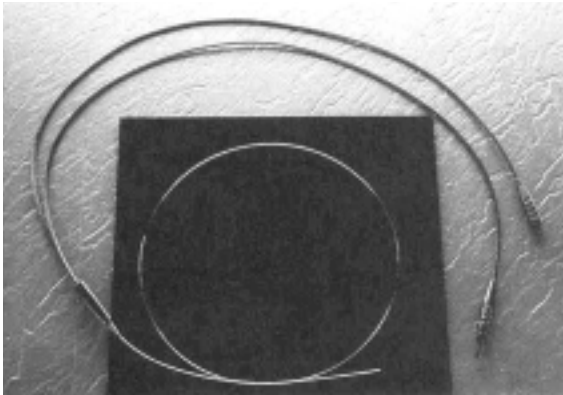
1.

( 1) 가 1.6 13mm ,

가 0° , 12° , 30° .

1.6 4mm micro - laparoscope

(4).



3. Falloposcope

10 13mm



4. Rigid hysteroscope

## 2. Transvaginal Hydrolaparoscopy

2.7 2.9mm needle - trocar system trans-  
vaginal hydrolaparoscopy( 2)



5. Flexible hysteroscope

scope

가 (5).

3.

가 ,

uterotubal ostium

falloposcope

salpingoscope

. Sal-

pingoscope

가

가

fallo-

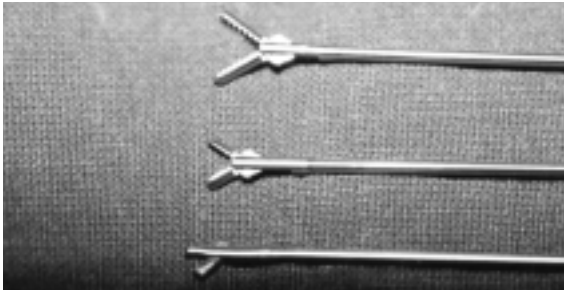
poscope( 3)

(6).

4.

rigid panoramic, rigid contact, flexible

panoramic 3 가 . Panoramic ( 4)



6.

contact

150

. Flexible

( 5)

1.8 5 mm

가 , ( 6)



7. Harmonic scalpel



8.

1.

150

250 Watt

, 300 Watt

가

가

electrode

light cable

CO<sub>2</sub>

laparolifter

25 30 Watt

CO<sub>2</sub>, argon, Nd : YAG, KTP

. CO<sub>2</sub>

9 20

가 . CO<sub>2</sub>

가

12 14 mmHg

,

0.1 mm

CO<sub>2</sub>

가

. En-

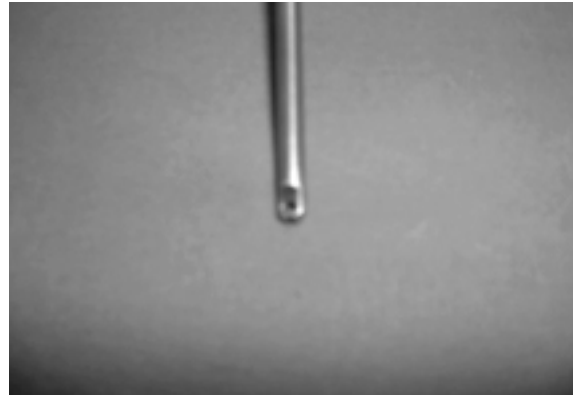
가

docoagulator

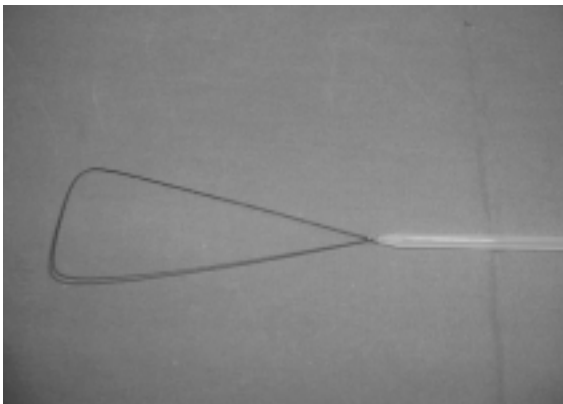
가 100 140



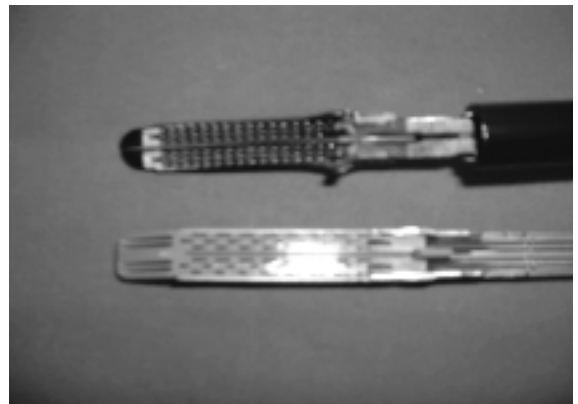
9.



11. Knot pusher



10. Pretied loop



12. Stapler

. ultrasonic energy 가  
surgical tip

. harmonic scalpel  
( 7) 가

. grasping forceps, scissors, suction - irrigator, dissector

( 8)가 .

가

. ( 9)

.  
Pretied loop( 10) knot pusher( 11)

. , polydioxanone clip  
stapler( 12)

13) port

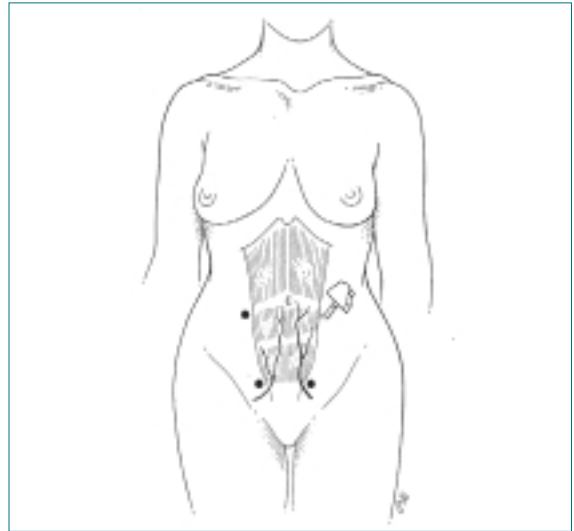
. (endopuch)(

가



13. Endopouch

가



14. port

sleeve      veress      sleeve  
ve      trocar      trocar  
, trocar      threaded cannula

port

2.

가

port      trocar      sheath가  
5, 10, 15, 20 mm가      disposable, reusable  
trocars      가      . port  
10 mm trocar  
(inferior epigastric vessels)      5 mm trocar

1, 2

1,322

15

( 14).

가

44 75%가

(7)

“open laparoscopy”

veress

가

. , 1.9 mm

veress

83%

, 가

1.

1.

1)

, ,

2)

ART(assisted reproductive technology)

2.

1) : , , ,

2)

: ,

3)

,

3.

4.

1)

2)

3)

2.

1.

2.

3.

1)

2) hiatal hernia

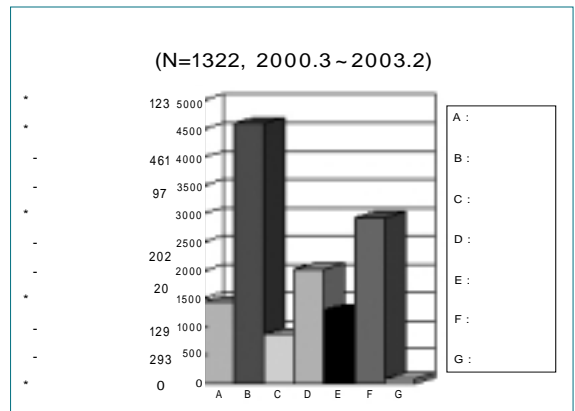
4.

1)

2)

3)

4)



15. 3

가 가

(8)

가

가

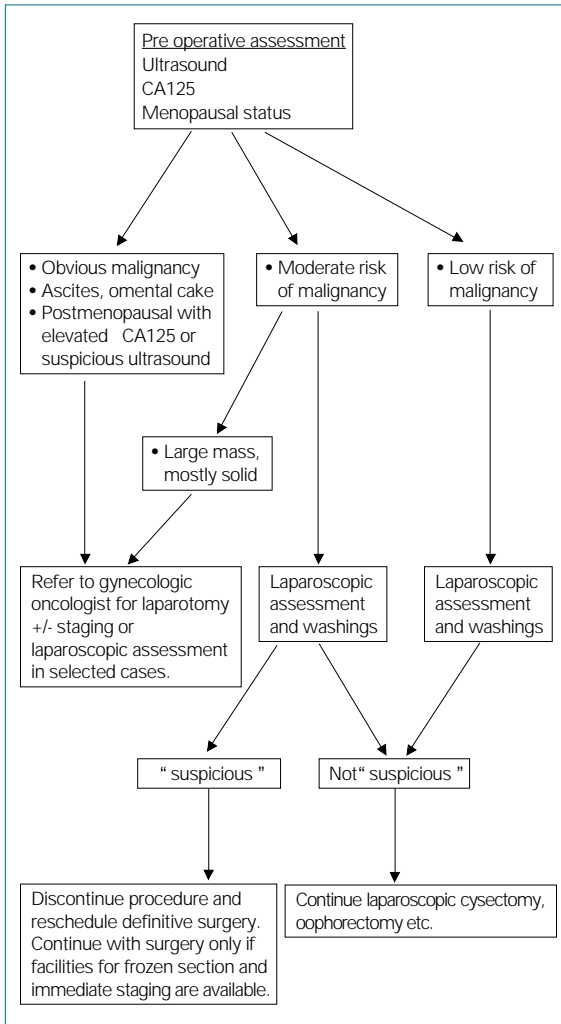
3.

1)

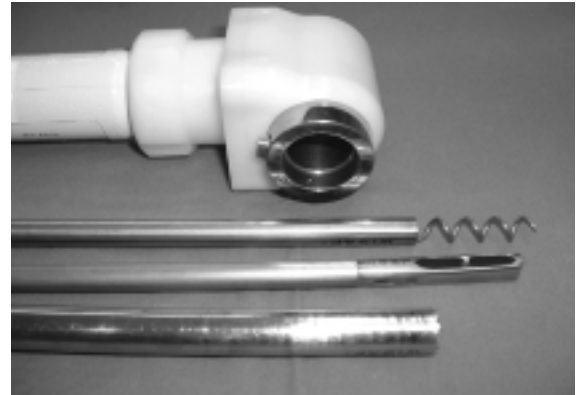
(1)

(9).

(2)



16.



17. Electrical moecellator

16

endopouch

endopouch

가

가

가

가

1

free survival

1,545

가 5 year disease -

가

(10),





18. Controlled distension irrigation system

port 가 1 16%  
(11).

(3)

(12).

(4)

1992 Koh가

(13).

2)

(1)

가  
가  
laparo-  
scopic suturing  
17 (electrical morcel-  
lator)

8 10cm

(14).

5 cm 가

(laparoscopically assisted mini - laparotomy  
myomectomy) (16),

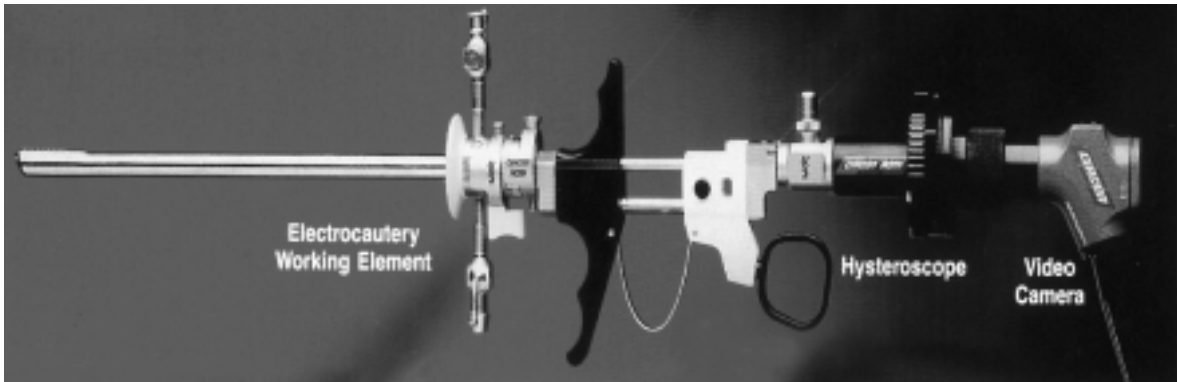
## 3.

Type O	Laparoscopic - directed preparation for vaginal hysterectomy
Type I	Occlusion and division of at least one ovarian pedicle, but not including uterine artery(ies)
Type II	Type I plus occlusion and division of the uterine artery, unilateral or bilateral
Type III	Type II plus a portion of the cardinal-uterosacral ligament complex, unilateral or bilateral
Type IV	Complete detachment of cardinal-uterosacral ligament complex, unilateral or bilateral, with or without entry into the vagina

## 4.

Type LSH I *	Occlusion and division of at least one ovarian artery with or without dissection to, but not including, uterine arteries
Type LSH II ★	LSH I plus occlusion of uterine artery(ies)
Type LSH III ★	LSH II plus division of uterine artery(ies)

(laparoscopic - assisted vaginal myomectomy) (17). , 가 LAVH (laparoscopic assisted vaginal hysterectomy) . , laparoscopic suturing 가 가 stapler , LH(laparoscopic hysterectomy), 가 LSH(laparoscopic subtotal hysterectomy) , 가 5 3 3, 4 (18).



19.

humidified gas

8 mmHg

(20).

3)

, , ,

(19).

가

가

가

가

(21).

, laparoscopic suturing

trocar

가

가 가

4)

4.

가

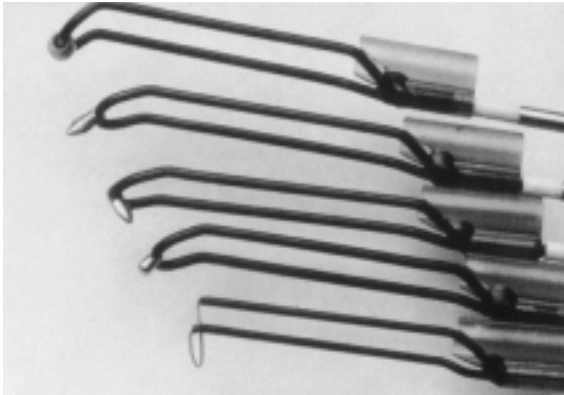
가

가

5)

15

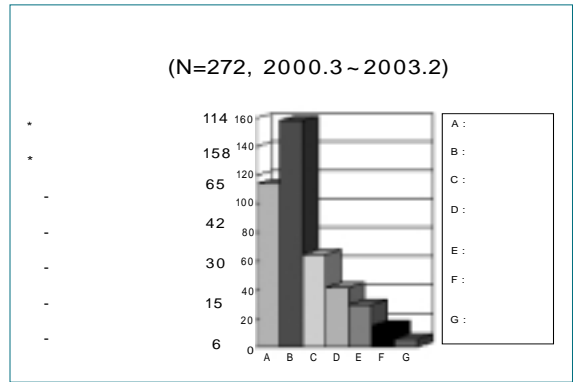
, laparoscopic lym-  
phadenectomy laparoscopic radical hysterectomy,  
laparo - vaginal radical hysterectomy laparo-  
scopic assisted vaginal(schauta) hysterectomy, la-



20. roller ball,  
knife electrode, cutting loop



21. Versapoint electrocautery system



22. 3

paroscopic vaginal radical trachelectomy

(22).

laparoscopic surgical staging

laparoscopic assisted vaginal hysterectomy

(LAVH), laparo - vaginal radical hysterectomy

(23).

surgical staging,

가

가가

CO<sub>2</sub>

가 , port

가

가

가

1.

가

가

100 mL

가

CO<sub>2</sub> 가 ,

. CO<sub>2</sub> 가

100 mmHg,

5.
1.
1)
2)
3)
DES(diethylstilbesterol)
4)
5)
6)
2.
1)
2)
3)
4)
5)
6)
7)
8)

, , controlled disten-  
sion irrigation system( 18)  
가  
1,000 Mℓ  
4  
misoprostol(prostaglandin E<sub>2</sub>) 400 μg

6.
1.
1)
2)
2.
1)
2)
3.
4.
5.
6.

2.  
1.8 5  
mm 12 °, 30 ° ,  
가  
25 27 Fr  
( 19) cutting loop, roller  
bar, vaporode ( 20) 가  
versapoint electrosurgical system( 21)  
3  
272 22  
5, 6

7.

1.
2. , 가 10 cm
3.
4.
5.
6.

8.

Technique	Method
Endometrial ablation	Nd: YAG laser
hysteroscopic	Electrosurgical ball
	Vaporizing electrode
Endometrial ablation	Cryoablation
nonhysteroscopic,	Thermal balloon ablation
or global	VestaBlate system
	Hydrothermal ablation
Endometrial resection,	Transcervical resection
hysteroscopic	of endometrium
	Endomyometrial resection

3.

1)

가

GnRHa(gonadotropin re-

leasing hormone agonist) , 2

,

3)

,

.

가

4)

6

,

가 2

,

7, 8

.

(24).

,

,

가 12 cm

,

,

,

2)

가 ,

(25).

knife electrode

.

80 90%

.

가

,

,

가

가

,

.



23. Zeus system



24. da Vinci system

## Robot - assisted Laparoscopic Surgery

2 port 3 robotic surgery tele -  
robotic laparoscopic surgery가 2001 9  
(26).

. 가  
가  
1994  
robot arm AESOP  
(automated endoscopic system for  
optimal positioning)  
, 가 robot arm  
가  
.

robot  
instrument (Fips endoarm)가  
가  
(mas-  
ter - slave telemanipulator)  
.  
robot sys-  
tem Zeus system( 23)  
da Vinci system( 24) 2  
가 3  
robot arm  
. 1997 3

, , ,  
1,000 .

## Robot - assisted laparoscopic surgery가

가 가

“robot

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## 4 ( 가 )

- |       |       |
|-------|-------|
| 1. 가) | 6. )  |
| 2. )  | 7. 가) |
| 3. )  | 8. )  |
| 4. 가) | 9. 가) |
| 5. )  | 10. ) |