

# 부인과 질환에서 내시경 수술의 적용

## The Application of Endoscopic Surgery to Gynecologic Conditions

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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

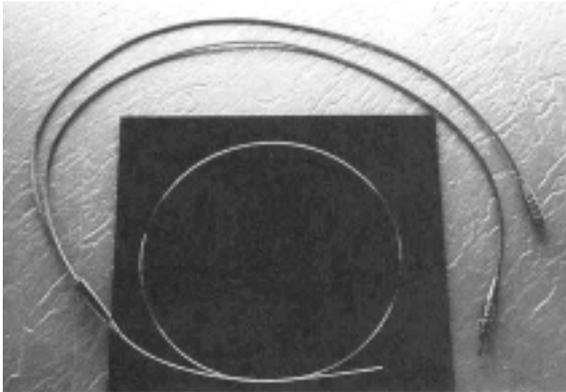
가  
가  
가  
“

가  
learning curve

가

가





3. Falloposcope

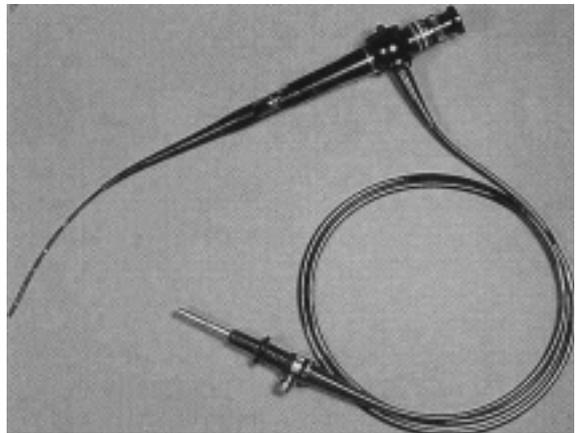
10 13mm



4. Rigid hysteroscope

2. Transvaginal Hydrolaparoscopy

2.7 2.9mm needle - trocar system transvaginal hydrolaparoscopy( 2)



5. Flexible hysteroscope

transvaginal hydrolaparoscopy

가 (5).

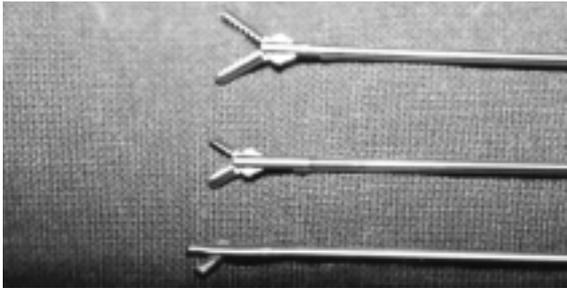
3.

가 ,

uterotubal ostium  
falloscope  
salpingoscope . Sal-  
pingoscope 가  
가 fallo-  
poscope( 3) (6).

4.

rigid panoramic, rigid contact, flexible panoramic 3 가 . Panoramic ( 4)



6.

contact

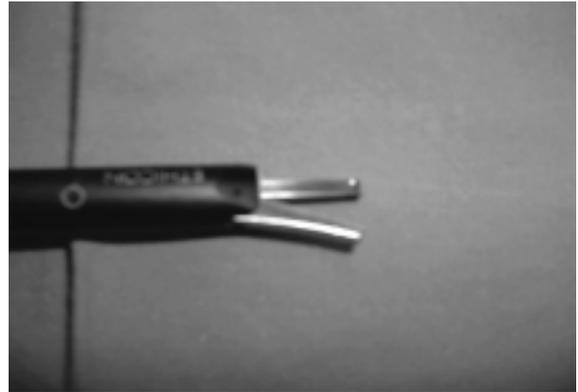
150

. 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-

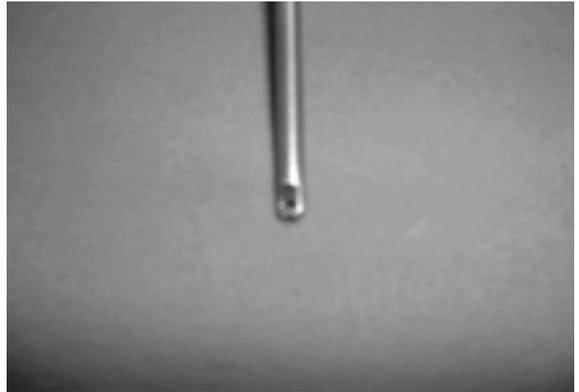
가

docoagulator

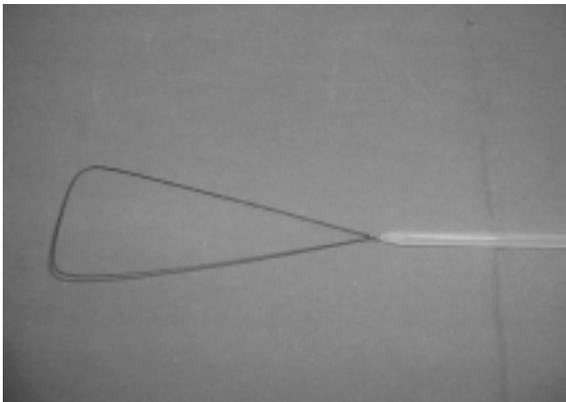
가 100 140



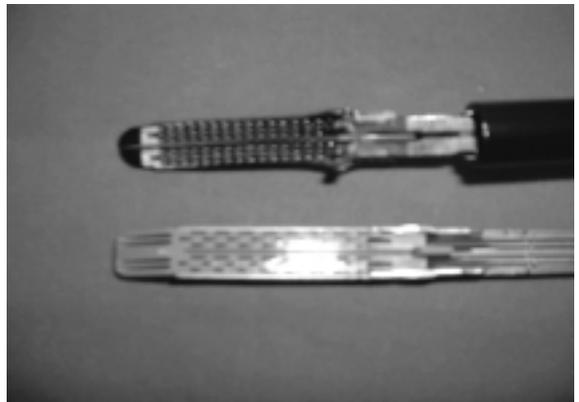
9.



11. Knot pusher



10. Pretied loop



12. Stapler

. ultrasonic energy 가  
surgical tip

( 7) . harmonic scalpel  
가

grasping forceps, scissors, suction - irrigator, dissector

( 8)가 .  
가  
( 9)

Pretied loop( 10) knot pusher( 11)

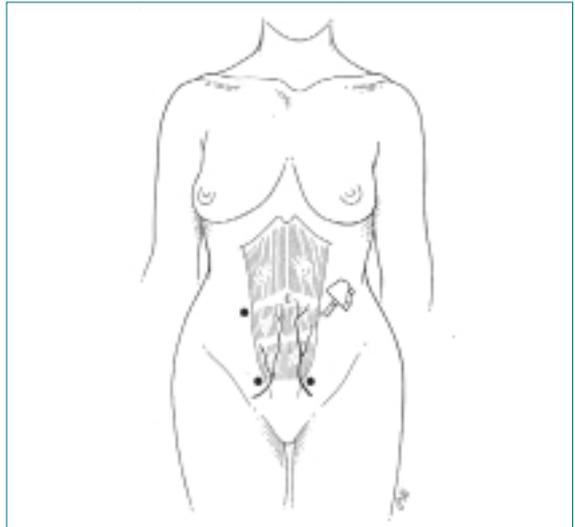
. , polydioxanone clip  
stapler( 12)

13) port (endopuch)(  
가



13. Endopouch

가



14. port

sleeve trocar  
veress trocar  
sleeve threaded cannula

2.

가

port trocar sheath가  
5, 10, 15, 20 mm가 disposable, reusable  
trocars 가 . port

10 mm trocar  
(inferior epigastric vessels) 5 mm trocar

( 14).

“open laparoscopy”

veress 가  
. , 1.9 mm veress

port

1, 2

1,322

가

83%

3

15

가

44 75%가

(7)

, 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

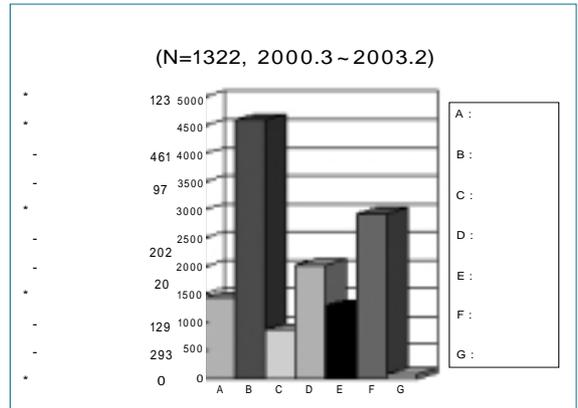
4.

1)

2)

3)

4)



15. 3

가 가

(8)

가

가

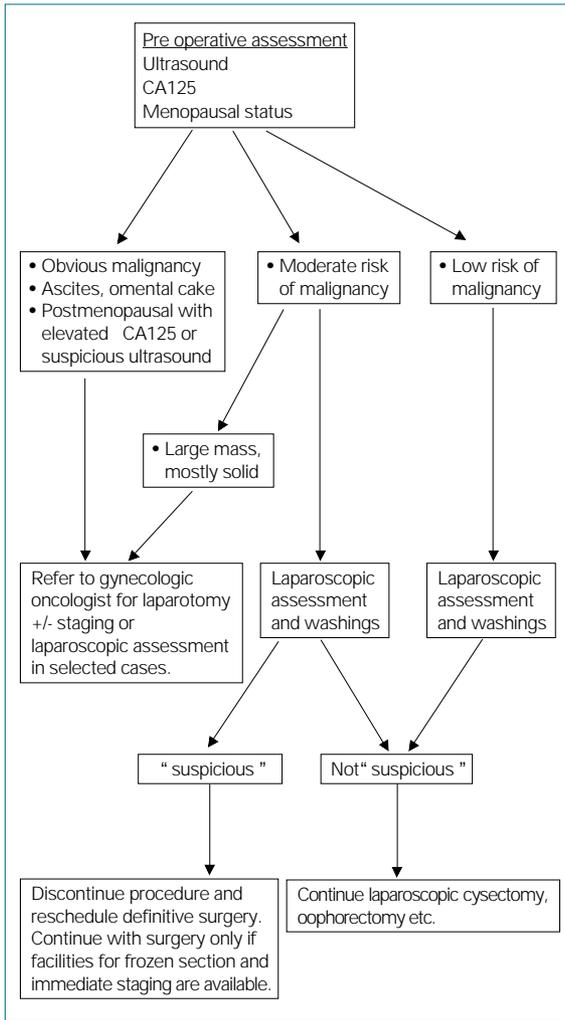
3.

1)

(1)

(9).

(2)



16.



17. Electrical moecellator

16

endopouch

endopouch

가

가

가

가

1,545

1

가 5 year disease -

free survival

가

(10),



18. Controlled distension irrigation system

port 가 1 16% (11).

(3)

(12).

(4)

1992 Koh가

(13).

2)

(1)

가

scopis suturing

17

lator)

8 10cm

가

laparo-

(electrical morcel-

가

가

3 4

(14).

(15).

4

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

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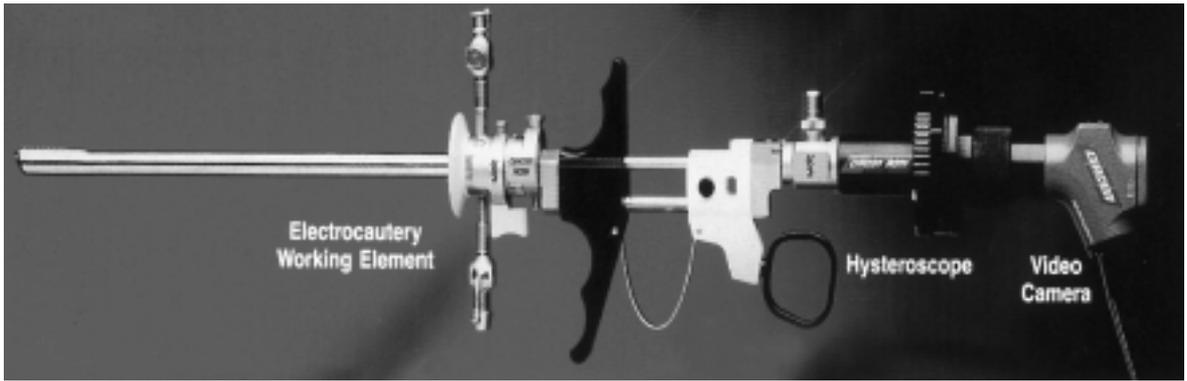
4.

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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 *형	LSH I plus occlusion of uterine artery(ies)
Type LSH III *형	LSH II plus division of uterine artery(ies)

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(laparoscopic - assisted vaginal myomectomy) (17). , 가 LAVH (laparoscopic assisted vaginal hysterectomy) , laparoscopic suturing 가 가 stapler , 가 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

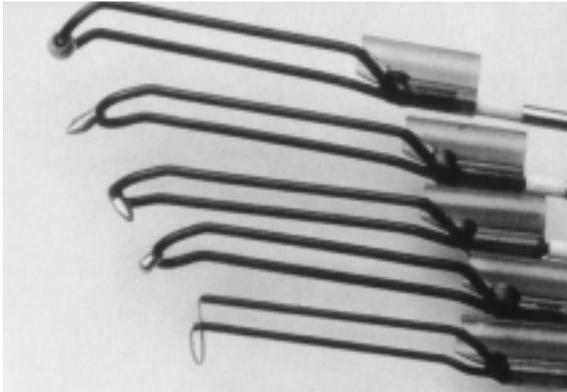
가

가

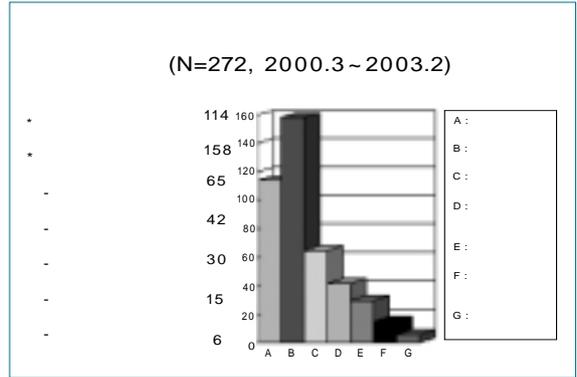
5)

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



22. 3



21. Versapoint electro-surgical system

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.

CO<sub>2</sub> 가 ,  
. CO<sub>2</sub> 가

가

가

, 100 mmHg,

100 mL

가

5.

6.

1.

1)

2)

3)

DES(diethylstilbesterol)

4)

5)

6)

2.

1)

2)

3)

4)

5)

6)

7)

8)

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

controlled disten-

sion irrigation system( 18)

가

versapoint electrosurgical system( 21)

1,000 Ml

3

4

272

22

misoprostol(prostaglandin E<sub>2</sub>) 400 µg

5, 6

7.

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1.	
2.	가 10 cm
3.	
4.	
5.	
6.	

---

8.

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

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3.

1)  
가  
GnRHa(gonadotropin releasing 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

Robot - assisted laparoscopic surgery가

가 가

“robot

1. Hulka JF, Reich H, eds. Textbook of laparoscopy. 2nd ed. Philadelphia : WB Saunders, 1994 : 3 - 7
2. Reich H, DeCaprio J, McGlynn F. Laparoscopic hysterectomy. J Gynecol Surg 1989 ; 5 : 213 - 6
3. Baggish MS, Barbot J, et al. eds. Diagnostic and operative hysteroscopy. 2nd ed. St. Louis : Mosby, 1999 : 1 - 10
4. Palter SF, Olive DL. Office microlaparoscopy under local anesthesia for chronic pelvic pain. J Am Assoc Gynec Laparosc 1996 ; 3 : 359 - 64
5. Campo R, Gordts S, Rombauts L, Brosens I. Diagnostic accuracy of transvaginal hydrolaparoscopy in infertility. Fertil Steril 1999 ; 71 : 1157 - 60
6. Sueoka K, Asada H, Tsuchiya S, Kobayashi N, Kuroshima M, Yoshimura Y. Falloposcopic tuboplasty for bilateral tubal occlusion. A novel infertility as an alternative for in - vitro fertilization? Hum Reprod 1998 ; 13 : 71 - 4
7. Wood GP. Laparoscopic examination of the normal infertile woman. Obstet Gynecol 1983 ; 62 : 642 - 3
8. Kresch AJ, Seifer DB, Sachs LB, Barrese I. Laparoscopy in 100 women with chronic pelvic pain. Obstet Gynecol 1984 ; 64 : 672 - 4
9. Tulandi T, Sammour A. Evidence - based management of ectopic pregnancy. Curr Opin Obstet Gynecol 2000 ; 12 : 289 - 92
10. Vergote I, De Brabanterb J, Fylesc A, Bertelsend K, Einhorn N, Tropea CG, et al. Prognostic importance of degree of differentiation and cyst rupture in stage I invasive epithelial ovarian carcinoma. Lancet 2001 ; 357 : 176 - 82
11. VanDam PA, DeCloedt J, Tjalma A, Buytaert P, Becquart D, Vergote I. Trocar implantation metastasis after laparoscopy in patients with advanced ovarian cancer : Can the risk be reduced? Am J Obstet Gynecol 1999 ; 181 : 536 - 41
12. Favez JA. An assessment of the role of operative laparoscopy in tuboplasty. Fertil Steril 1983 ; 39 : 476 - 80
13. Yoon TK, Sung HR, Cha SH, Lee CN, Cha KY. Fertility outcome after laparoscopic microsurgical tubal anastomosis. Fertil Steril 1997 ; 67 : 18 - 22
14. Dessolle L, Soriano D, Poncelet C, Benifla JL, Madelenat P, Darai E. Determinants of pregnancy rate and obstetric outcome after laparoscopic myomectomy for infertility. Fertil Steril 2001 ; 76 : 370 - 4
15. Doridot V, Dubuisson JB, Chapron C, Fauconnier A, Babakifard K. Recurrence of leiomyomata after laparoscopic myomectomy. J Am Assoc Gynecol Laparosc 2001 ; 8 : 495 - 500
16. Nezhat C, Nezhat F, Bess O, Nezhat CH, Mashiach R. Laparoscopically assisted myomectomy : a report of a new technique in 57 cases. Int J Fertil Menopausal Stud 1994 ; 39 : 39 - 44
17. Wang CJ, Yen CF, Lee CL, Soong YK. Laparoscopic - assisted vaginal myomectomy. J Am Assoc Gynecol Laparosc 2000 ; 7 : 510 - 4
18. Olive DL, Parker WH, Cooper JM, Levine RL. The AAGL classification system for laparoscopic hysterectomy. J Am Assoc Gynecol Laparosc 2000 ; 7(1) : 9 - 15
19. Wattiez A, Canis M, Mage G, Pouly JL, Bruhat MA. Promontofixation for the treatment of prolapse. Urol Clin North Am 2001 ; 28 : 151 - 7
20. Esposito C, Garipoli V, Di Matteo G, De Pasquale M. Laparoscopic management of ovarian cysts in newborns. Surg Endosc 1998 ; 12 : 1152 - 4

21. Fatum M, Rojansky N. Laparoscopic surgery during pregnancy. *Obstet Gynecol Surv* 2001 ; 56 : 50 - 9
22. Dargent DF. Laparoscopic surgery in gynecologic oncology. *Surg Clin Nor Am* 2001 ; 81 : 949 - 65
23. Magrina JF. Laparoscopic surgery for gynecologic cancers. *Clin Obstet Gynecol* 2000 ; 43 : 619 - 40
24. Emanuel MH, Wamsteker K, Hart AA, Metz G, Lammes FB. Long - term results of hysteroscopic myomectomy for abnormal uterine bleeding. *Obstet Gynecol* 1999 ; 93 : 743 - 8
25. Lewis BV, Magos AL. Endometrial ablation. 1st ed. New York : Churchill livingstone, 1993 : 19 - 26
26. Ballantyne GH. Robotic surgery, telerobotic surgery, telepresence, and telementoring. *Surg Endosc* 2002 ; 116 : 1389 - 402

## 4 ( 가 )

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