

대장 병변의 정확한 진단법

대장의 용기성 병변

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상 병 명	기타 결장의 폴립			분류기호	K6358
진료기간			진료구분	☐ 입원 ☒ 외래	
환자상태및 진료소견	상기환자 상기병명으로 polypectomy를 해 의뢰드리오니 고전선처바랍니다.				
발급일 2014-03-29					

대한소화기내시경학회 부속정지회

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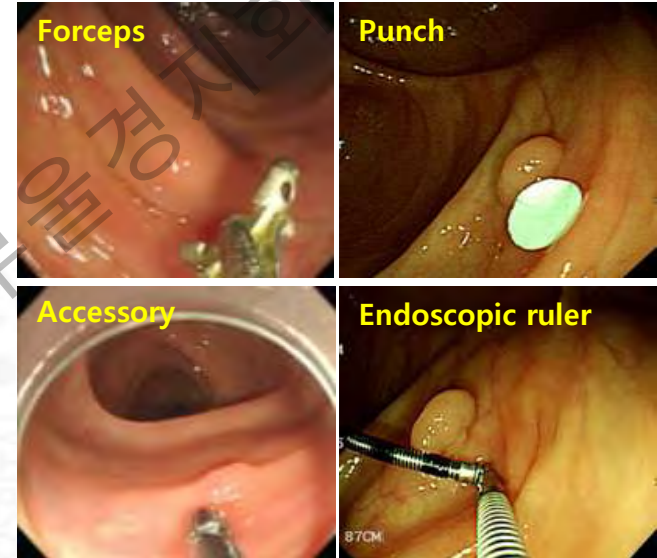
- **정확한 내시경적 기술**
- **융기성 병변의 종류**
- **내시경적 감별 포인트**

대한소화기내시경학회 부울경지회

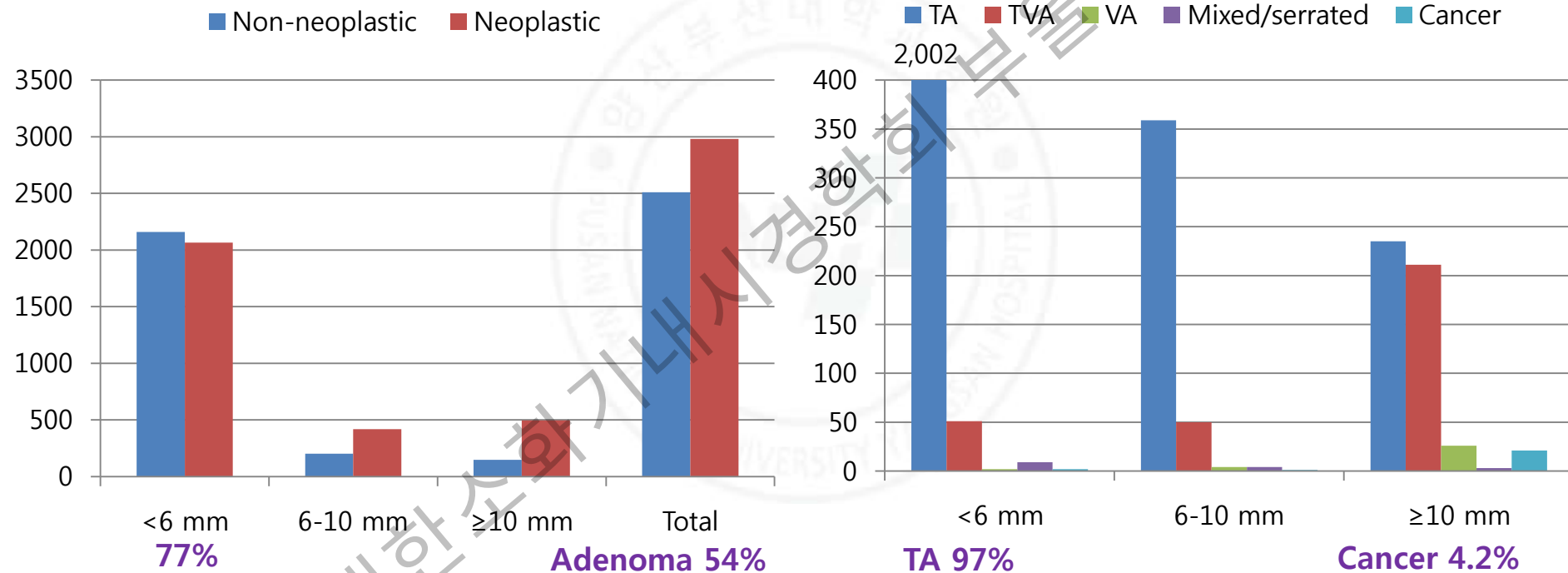
정확한 내시경적 기술

폴립의 크기 측정

- 크기에 따른 분류
 - 미세 폴립, Diminutive polyp: ≤ 5 mm
 - 작은 폴립, Small polyp: 6-9 mm
 - 큰 폴립, Large polyp: ≥ 10 mm
- 대장내시경의 캡을 이용한 크기 측정
- Definition of Defiant polyp (size): ≥ 2 cm¹
- The definition of a defiant polyp is in the eye of the beholder. Some experts say that **"if you think it is large, it is."**²



폴립의 크기: 왜 중요한가 ?



대장 폴립의 형태학적 분류

- Yamada (山田)의 분류 -



I 형 : 용기의 기시부가 완만하여 경계가
명료하지 않은 것 (무경성)



II 형 : 용기의 기시부가 예각으로 경계는
명료하나 잘룩함이 없는 것 (무경성)



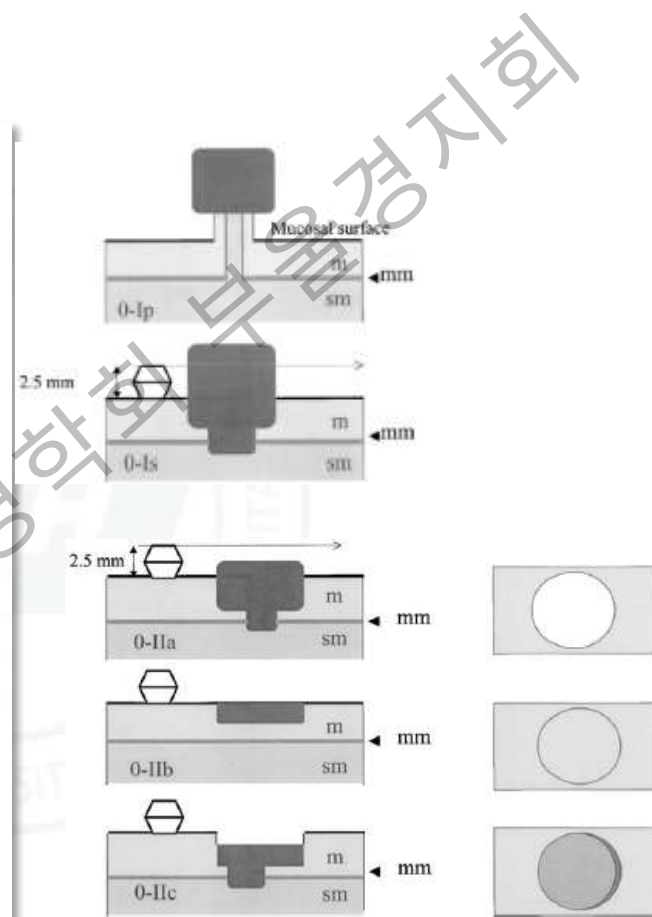
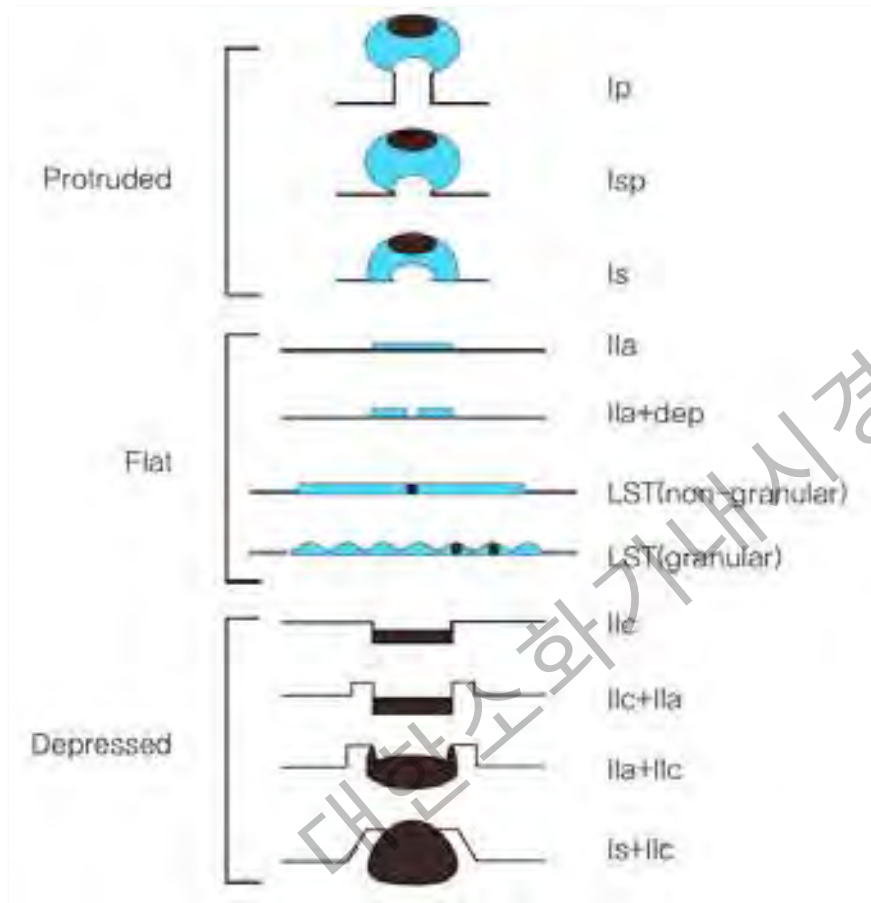
III 형 : 용기의 기시부는 잘룩해 있으나
경이 없는 것 (아유경성)



IV형 : 유경성의 용기 (유경성)

대장 폴립의 형태학적 분류

- Paris-Japanese 분류 -



용기형 병변이란?

TABLE 1. Morphologic classification of type 0 lesions with superficial appearance at colonoscopy (Paris-Japanese classification)

Polypoid type*	Pedunculated (0-Ip)
	Sessile (0-Is)
	Mixed (0-Isp)
Nonpolypoid type	Slightly elevated (0-IIa)
	Completely flat (0-IIb)
	Slightly depressed (0-IIc)
Mixed types	Elevated and depressed (0-IIa + IIc)
	Depressed and elevated (0-IIc + IIa)
	Sessile and depressed (0-Is + IIc)



TABLE 2. Subtypes of LST lesions: morphologic classification of LST lesions and their correspondence in the Paris-Japanese classification*

Subtypes of LST	Classification in type 0
LST granular	
Homogenous type	0-IIa
Nodular mixed type	0-IIa, 0-Is + IIa, 0-IIa + Is
LST nongranular	
Elevated type	0-IIa
Pseudodepressed type	0-IIa + IIc, 0-IIc + IIa

*The term "laterally spreading type (LST)" refers to the lateral growth of lesions at least 10 mm in diameter; this is in opposition to traditional polypoid (upward growth) or flat and depressed lesions (downward growth).



폴립의 형태: 왜 중요한가 ?

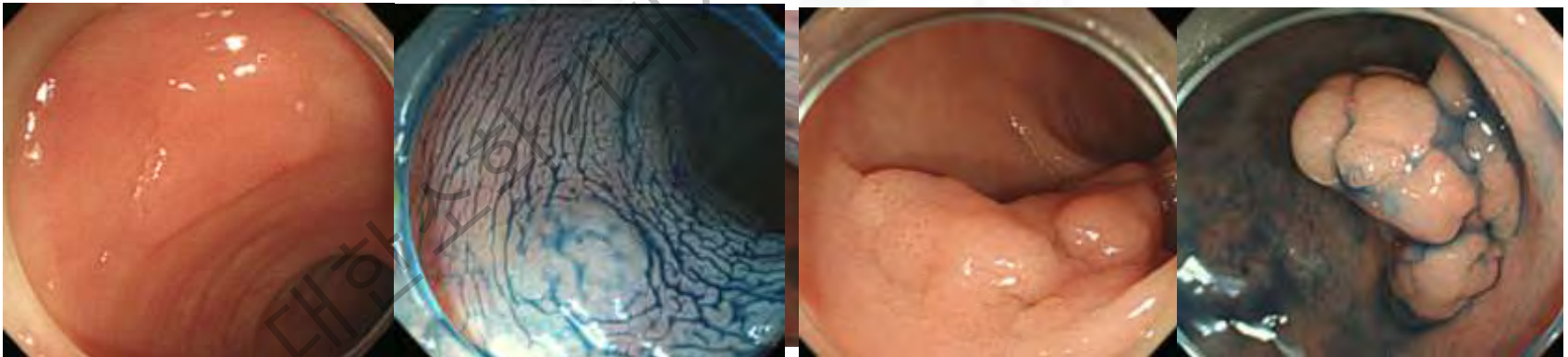
- 점막하 침윤암과 연관된 형태
 - 용기형 (Is)
 - 표면 함몰형 (IIC)

Table 4 Relative frequency (%) of submucosal invasion in subtypes of type 0 lesions in Japan. Series based on endoscopic analysis and a pathology specimen

Subtype	Esophagus ¹ (n = 1562)	Stomach ² (n = 2098)	Large bowel ³ (n = 3644) %	n
0-I *	79%	57%		
0-Ip			5%	69/1303
0-Is			34%	185/504
0-IIa	48%	29%	4%	64/160
0-IIb	15%	20%	0	-
0-IIc **	27%	40%	61%	23/200
0-III	84%	-	-	

색소내시경 Chromoendoscopy (CE)

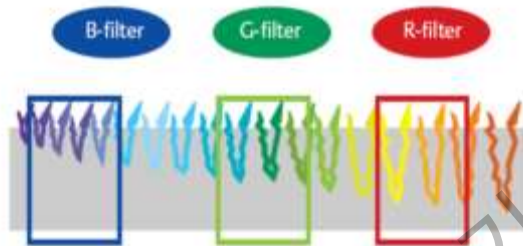
- **Contrast dye: Indigo-carmine (0.1-0.4%) 2-5 ml**
 - Not absorbable, not react with mucosa
- **Enhance the visualization of surface pattern**
 - Usefulness of detection: Flat or Diminutive polyp
 - Enhanced pit pattern: HP vs Adenoma



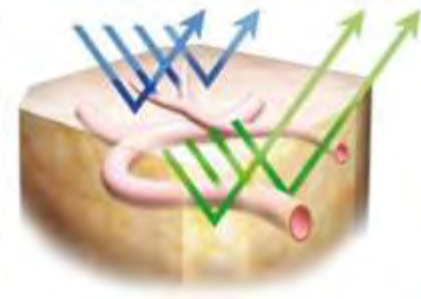
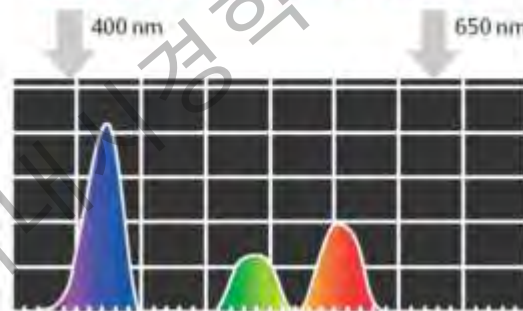
Virtual CE: Narrow band imaging (NBI)

- Blue (440-460nm) and green (540-560nm)
- Highlight microvessels of shallow layer of colorectal lesion

❖ Use of narrow band



❖ Focus on blue band



- No additional dye spray
- Easy to use

❖ Observation of detailed surface pattern



NBI colonoscopy



Chromoscopy

용기성 병변의 종류와 내시경적 특징

대장의 용기성 병변의 분류

- 점막 병변

- 증식성 폴립
- 염증성 폴립
- 톱니모양 폴립/선종
- 과오종
- 선종
- 악성 폴립 (침윤성 선암)

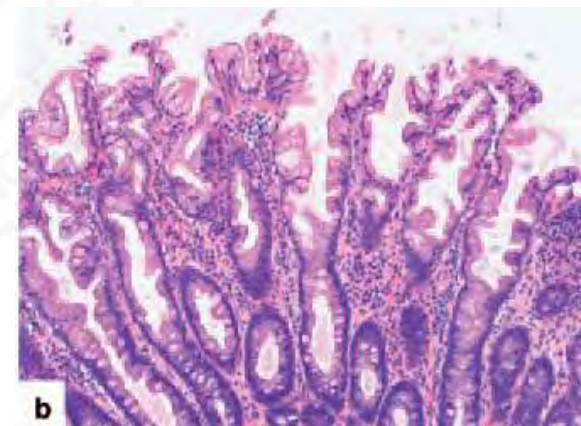
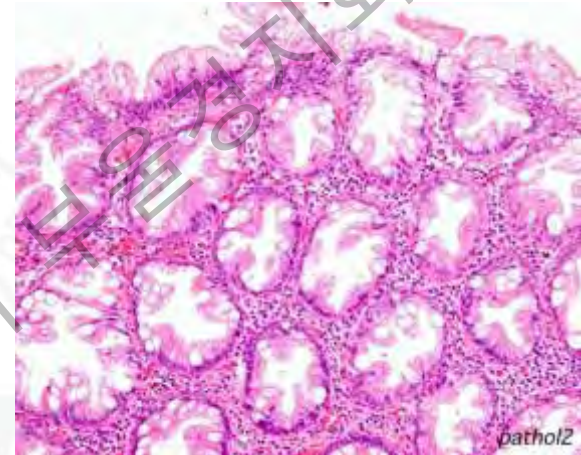
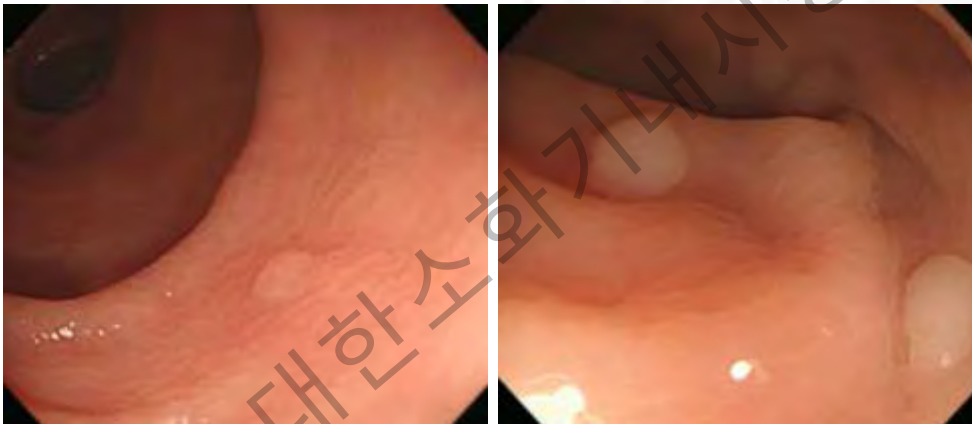
- 상피하(점막하) 병변

- 지방종
- 카르시노이드종양
- 과립세포종
- GIST/Leiomyoma
- 악성 림프종
- 장관 포상 기종
- 림프관종

점막 병변의 내시경적 특징

증식성 폴립(Hyperplastic polyps)

- 크기 5 mm 이하
- 대부분 편평하고 창백한 용종
- 주로 직장과 구불결장에 호발
- 다발성



톱니모양폴립(Serrated polyps)

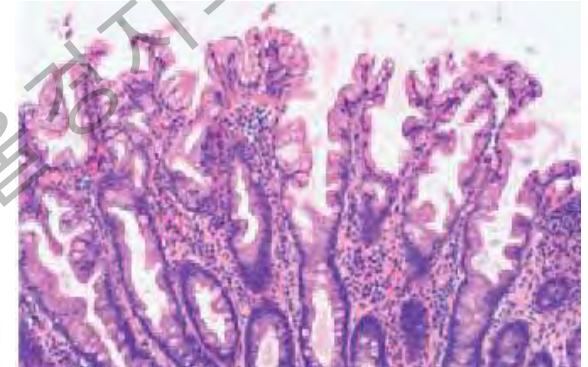
- Epithelial lesions, which demonstrate a “ **saw-toothed** ” or **serrated appearance** on histologic section due to infolding of crypt epithelium
- **Classification**
 - **Non-dysplastic**
 - **Hyperplastic polyps**
 - Goblet cell serrated polyps (GCSP)
 - Microvesicular serrated polyps (MVSP)
 - **Sessile serrated adenomas (SSA)**
 - **Dysplastic**
 - **SSA dysplastic (SSAD)**
 - **Traditional serrated adenomas**



편평 톱니모양선종

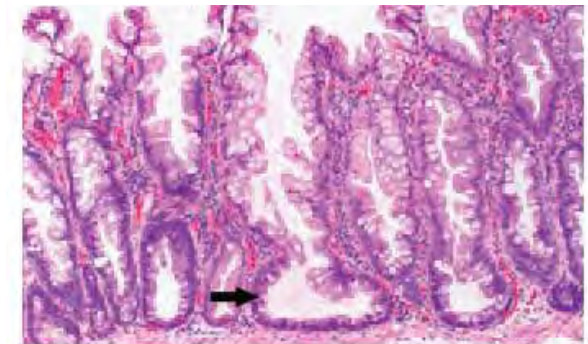
Sessile serrated adenoma (SSA)

- crypts whose serrations extend all the way to the crypt base, with a widened base that may extend laterally in a '**boot shape**'
- **Traditional adenoma: not essential**
- **Large, sessile, proximal location**
- **Serrated pathway: MSI cancer, CIMP high, BRAF mutation**
- **Interval colon cancer**



Typical hyperplastic polyp

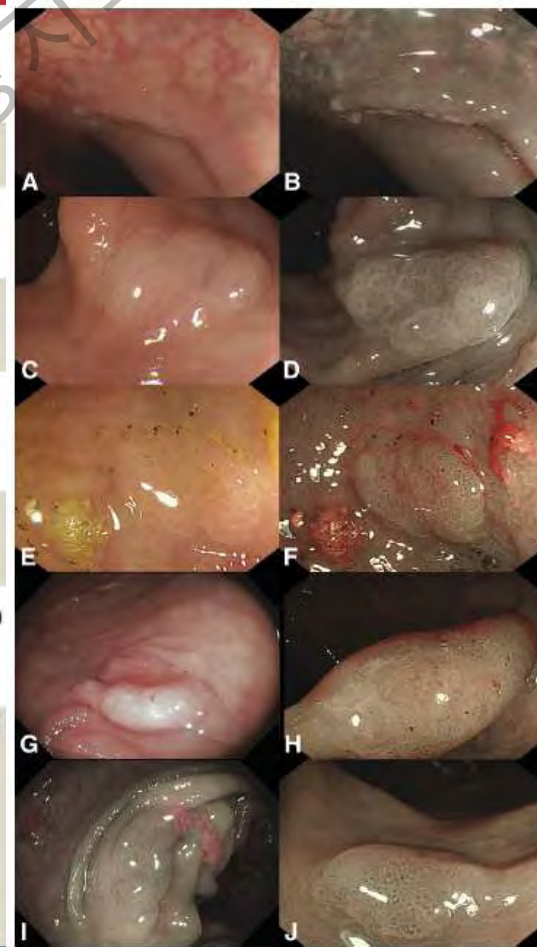
Sessile serrated adenomas



SSA의 내시경적 소견

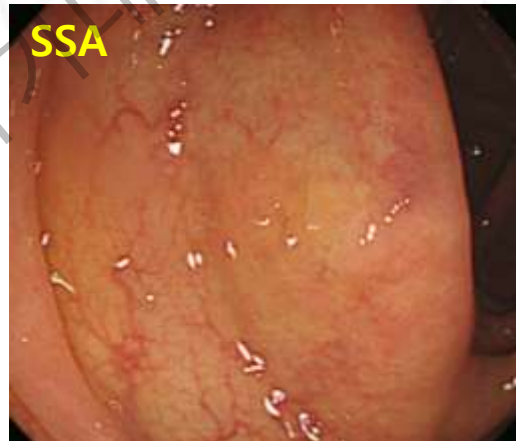
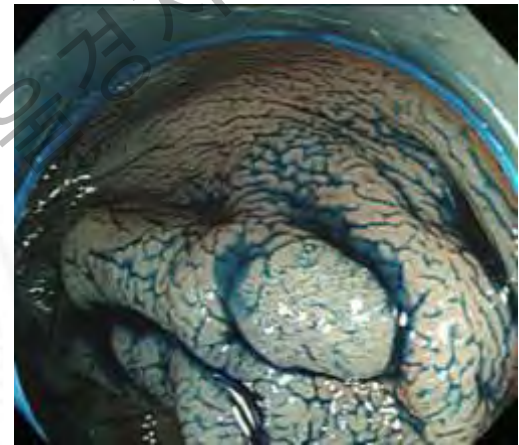
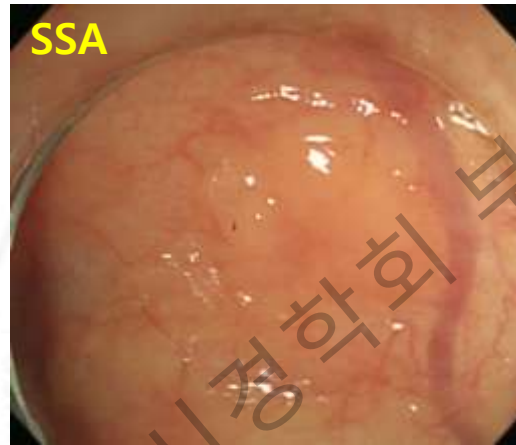
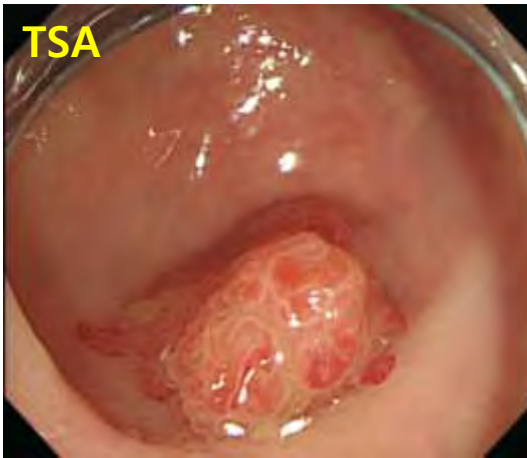
TABLE 1. Consensus meeting: various potential endoscopic features of SSAs/Ps.

Feature	Description	Outcome	Examples of each endoscopic feature as shown on Figure 1
Indistinctive borders	Vague demarcation of a border of a lesion	Present/not present	A, B, I
Cloud-like surface	A bumpy, soft-looking nodular surface resembling a cumulus cloud	Present/not present	C, D, E, F, I
Dark spots inside the crypts	Small dark dots inside the open crypts. On HR-WLE they can also appear as red dots	Present/not present	D, F, J
Irregular shape	An asymmetric shape, in contrast to the oval, circular shape of small HPs and conventional adenomas	Present/not present	A, B, C, D, G, I
Absence of tiny microvessels crossing the surface	Small superficial vessels or telangiectasias occasionally seen on the surface of particular distal HPs	Present/not present	A-J
Pit pattern	Kudo pit pattern I-V or pit pattern II SSA/P (defined as a mixture of open crypts and small elongated star-shaped pits)	Kudo type I-V or pit pattern II SSA/P	H (pit pattern II SSA/P)
Vascular pattern intensity	Assessment of the darkness of the lines that outline each colonic crypt compared with the normal background mucosa A darker (strong) VPI indicates neoplasia, whereas a same (normal) or lighter (weak) VPI suggests a non-neoplastic lesion ¹⁹	Weak, normal, or strong	B, D, F, H, J (same VPI)



SSA/P, Sessile serrated adenoma/polyp; HP, hyperplastic polyp; VPI, vascular pattern intensity; HR-WLE, high-resolution white-light endoscopy.

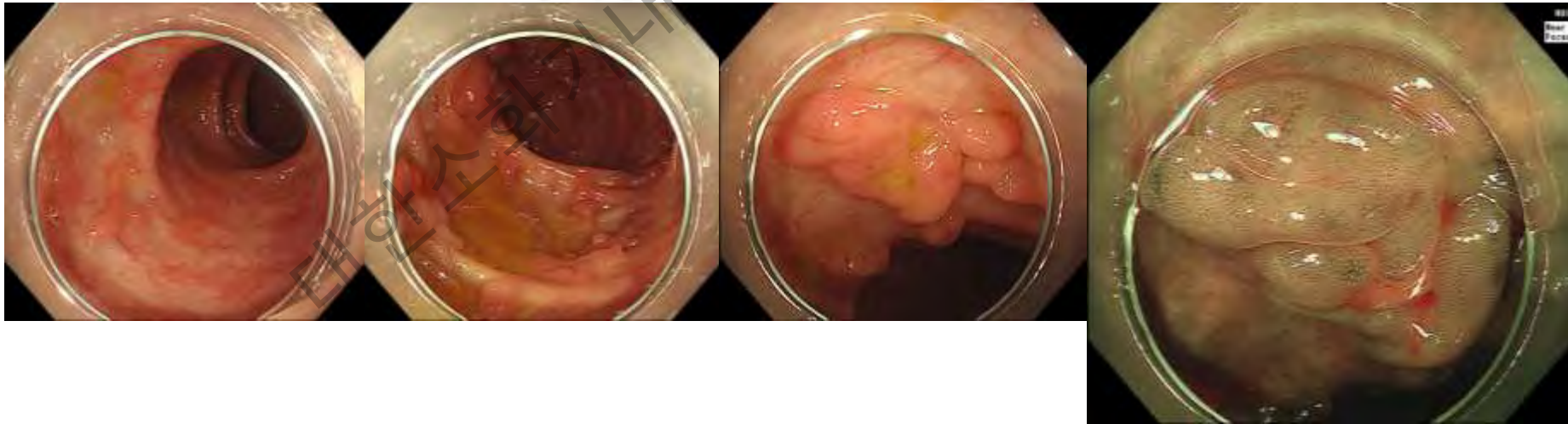
발견이 어려운 SSA



대한소화기내시경학회

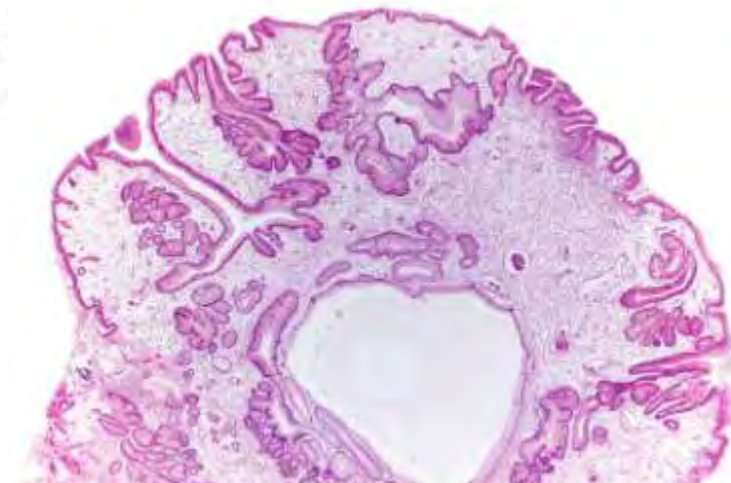
염증성 폴립(Inflammatory polyps)

- 염증성 장질환이나 결핵성 장염과 연관
- 가성 용종(pseudopolyp)
- 염증으로 인해 점막탈락 후 남은 정상 점막이 손가락 혹은 나뭇가지 형태의 다양한 형태로 남음
- 주변 반흔을 동반

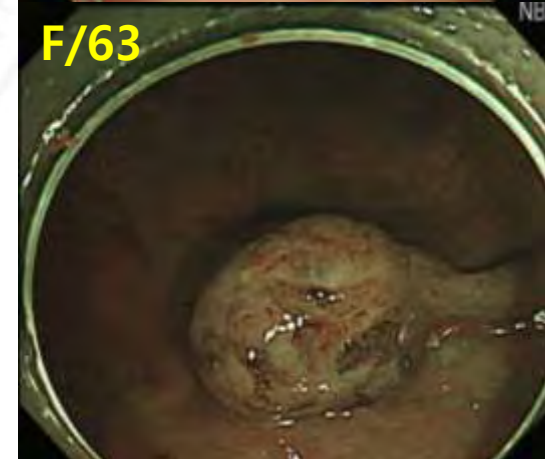
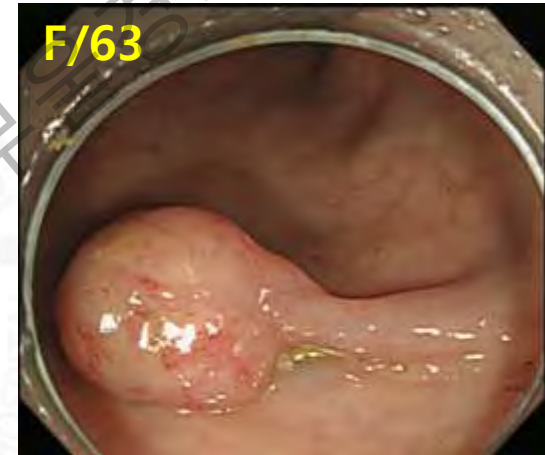
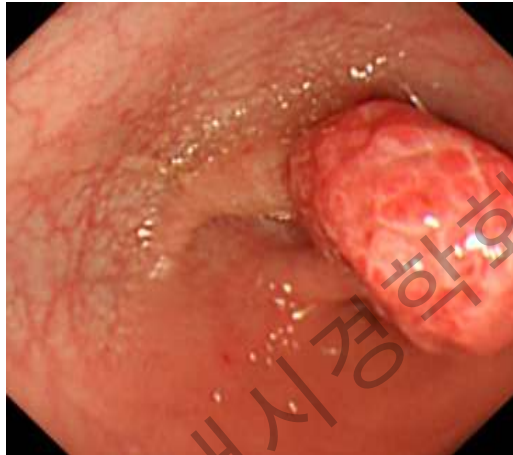


연소성 폴립(Juvenile polyp)

- 주로 소아와 청소년기에 발생(3-4에 가장 흔함)
- 후천성 (생후 1년 이내에는 드뭄)
- 소아 및 청소년에서 대장 출혈의 흔한 질환
- 내시경 소견
 - 수 mm ~ 3cm, 유경성 > 무경성
 - 표면은 분엽상을 보이지 않고 둥글면서 특징적으로 강한 발적
 - 미란 또는 얇은 궤양과 점액 부착을 동반
- **Hamartomatous lesions**
 - dilated cystic glands in lamina propria
- Isolated type: not increased cancer risk
- **Juvenile Polyposis: Cancer change: 10-38%**

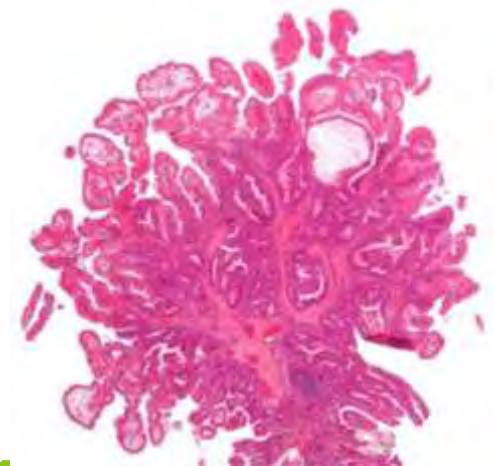
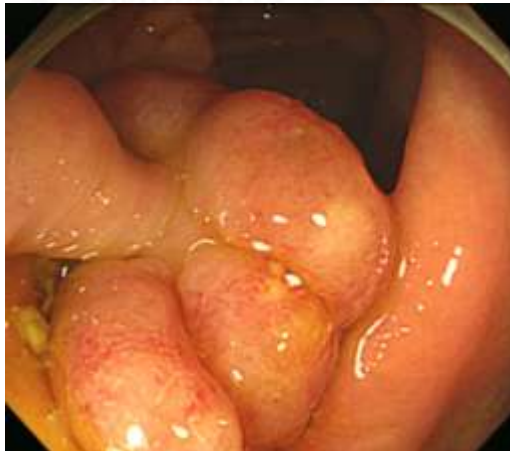


연소성 폴립의 내시경 소견



포이츠-예거 폴립(Peutz-Jeghers polyp)

- 소화관 용종(다발성)과 점막, 피부의 색소반을 특징으로 하는 유전질환
- 20-30대에 bleeding, obstruction 등으로 인지
 - Poylps (Harmatomas) in Small and Large bowel & Stomach
- **Hamartomatous lesion** of glandular epithelium supported by smooth muscle cells (contiguous with muscularis mucosa)
 - 점막근판의 나뭇가지 모양의 증식과 선관의 과형성으로 만들어지는 과오종
 - 근판의 나뭇가지 모양 증식때문에 커지면서 분열
- **Usually benign, Cancer changes; 2-13%**
- Almost always associated **Peutz-Jeghers syndrome**



선종(Adenoma)

- **조직학적 분류 Glandular architecture (WHO)**
 - 관상선종(tubular adenoma): 80% 차지, 용모조직 0-25%
 - 관상용모선종(tubulovillous): 용모조직 25-75%
 - 용모선종(villous): 용모조직 75-100%
- **Dysplasia grade**
 - 3 grade system
 - Mild, Moderate, Severe
 - **2 grade system**
 - Low grade, High grade
 - Preferable ← Less interobserver variation

선종의 내시경적 소견

- 미세선종(diminutive adenoma): 대부분 무경성, 주변 점막과 비슷한 색조
- 1 cm 이상의 선종: 표면이 불규칙해지고 분엽상을 보임
- 긴 경을 가지고 상대적으로 두부의 크기가 클 경우 양성 선종
- 두부가 작고 취약성이 있거나 붕괴되어 한쪽이 도려내어져 있는 경우는 악성 선종
- **Malignant Potential of Adenoma (Advanced Adenoma)**
 - Size >1 cm
 - Villous architecture
 - High grade dysplasia

New Paradigms for Endoscopic Management of Diminutive Colorectal Polyp

- “Resect and Discard” strategy



- Diminutive polyps anywhere in colorectum
- Determination of next post-polypectomy surveillance interval without pathologic assessment
- Reduction in costs for pathologic assessment

- “Do not resect” strategy

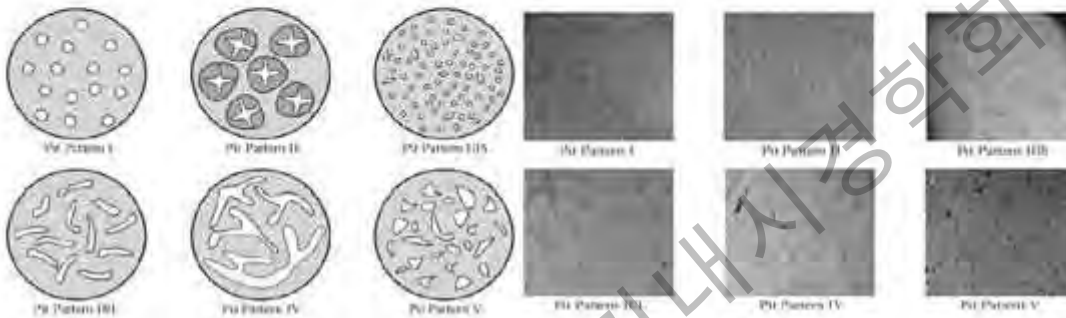


- Only diminutive hyperplastic-appearing polyps in rectosigmoid colon
- Real-time endoscopic assessment and photography, without need for sampling or resection
- Reduction in costs and risks associated with polypectomy
- Reduction in costs associated with pathologic assessment

Pit Patterns and High Definition Colonoscopy

Pit pattern classification by Kudo et al. (J Clin Pathol. 1994 October; 47(10): 880-885)

- I roundish pits
- II stellar or papillary pits
- III S small roundish or tubular pits (smaller than type I pits)
- III L large roundish or tubular pits (larger than type I pits)
- IV branch-like or gyrus-like pits
- V non-structured pits



Conventional HD colonoscopy

Magnification colonoscopy

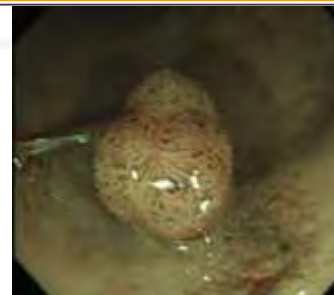
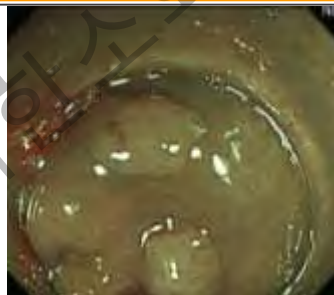


NICE classification

NBI International Colorectal Endoscopic Classification

- Simple category classification
- High definition viedocolonoscope with/without magnifying

	Type 1	Type 2	Type 3
Color	Same or lighter than background	Browner relative to background (verify color arises from vessels)	Brown to dark brown relative to background; sometimes patchy whiter areas
Vessels	None, or isolated lacy vessels might be present coursing across the lesion	Thick brown vessels surrounding white structures [‡]	Has area(s) with markedly distorted or missing vessels
Surface pattern	Dark or white spots of uniform size, or homogenous absence of pattern	Oval, tubular or branched white structures [‡] surrounded by brown vessels	Areas of distortion or absence of pattern
Most likely pathology	Hyperplastic	Adenoma [§]	Deep submucosal invasive cancer



악성 폴립의 내시경 소견

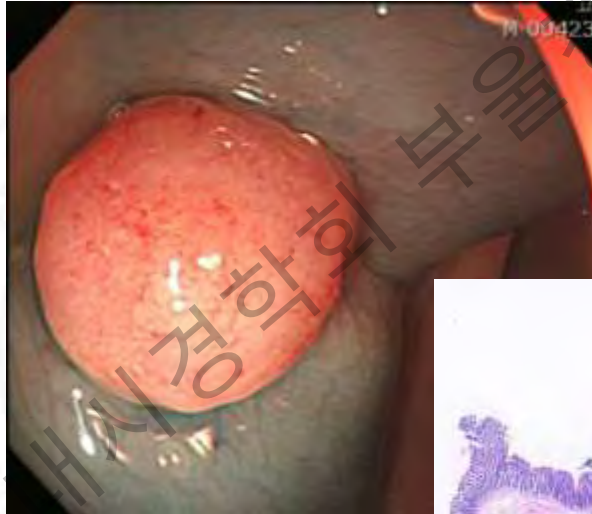
• Morphologic changes

- Spontaneous bleeding (자발 출혈)
- Hardness (단단함)
- Depression (함몰)
- Expansion (긴만감, 팽만감)
- Wall deformity (벽변형)
- Mucosal convergence (주름 집중)

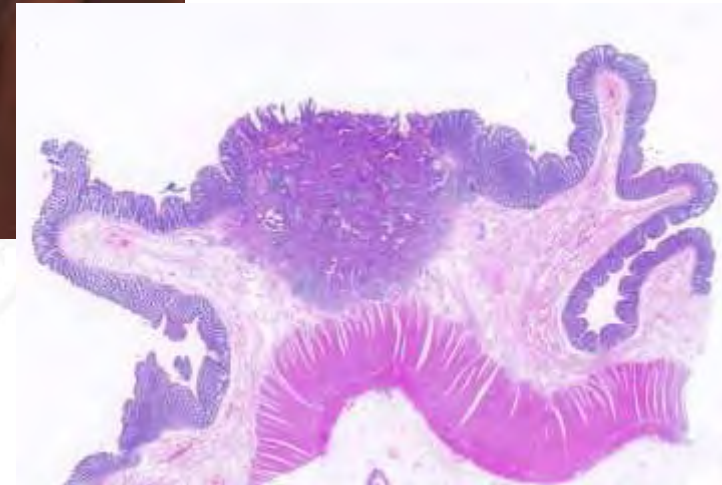
➡ > deep SM invasion ($\geq 1000 \mu\text{m}$)



악성 폴립: Non-Lifting Sign



➡ >deep SM invasion ($\geq 1000 \mu\text{m}$)

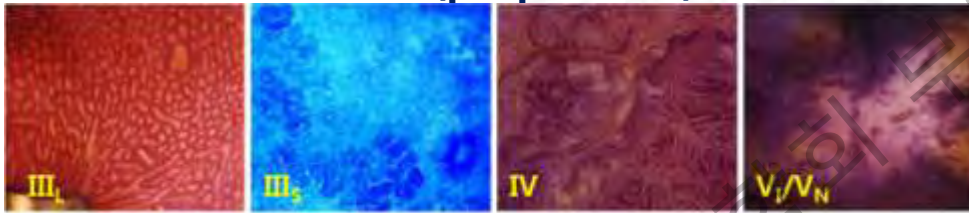


점막하 침윤암의 평가

NBI/Magnifying, 선구형태나 표면혈관 변화

- Surface and Capillary patterns**

- Kudo's classification (pit patterns) Kudo et al. GIE 2008



- Sano Classifications (capillary patterns) Ikematsu H, et al. BMC Gastroenterol 2010



- Showa classification (pit-like and capillary patterns) Wada Y, et al. GIE 2009



SM invasion

상피하 병변의 내시경적 특징

대장의 상피하 종양(Subepithelial tumor, SET)

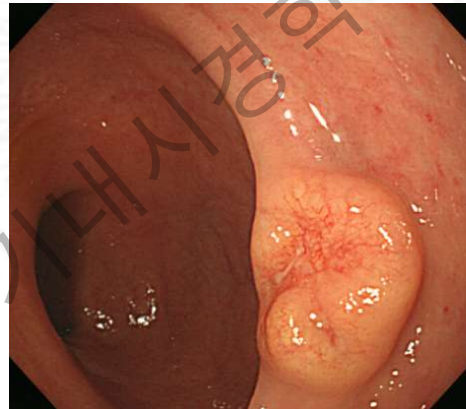
	Zhou et al. (2004) -large intestine	Polkowski et al. (2005) -colon, rectum
Lipoma	35%	14%
GIST or leiomyoma	24%	14%
Lymphangioma or haemangioma	17%	13%
Carcinoid	6%	43%
Leiomyosarcoma	6%	
Pneumatosis cystoides intestinalis	6%	
Malignant lymphoma	6%	2%
Other lesions		14%

*Leiomyomas

†Endometriosis, suture granuloma, unclassified

상피하 종양의 모양 관찰

- 대부분 덮고 있는 점막은 정상
- 미란, 발적, 함몰의 동반유무를 확인



상피하 종양의 색조 관찰

- 대부분의 SET는 주위 점막과 동일한 색조를 띤다

- 황색조



- 청색이나 검푸른색

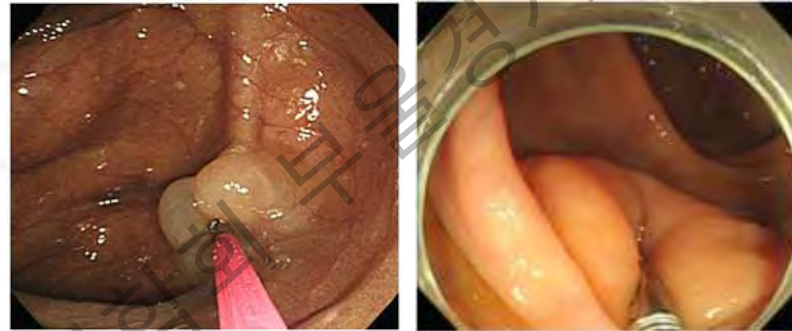


- 투명한 느낌의 회백색



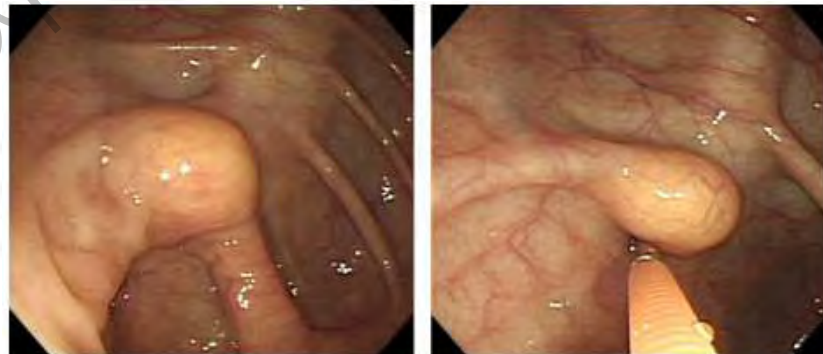
상피하 종양의 정도와 이동성

- Pillow or Cushion sign 양성



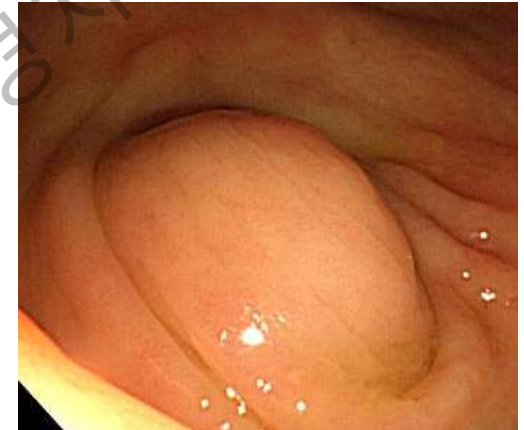
- Rolling sign

- 양성: 점막근판이나 점막 기원
- 음성: 고유근층에서 기원



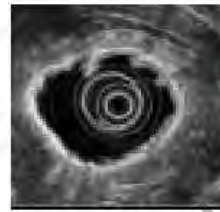
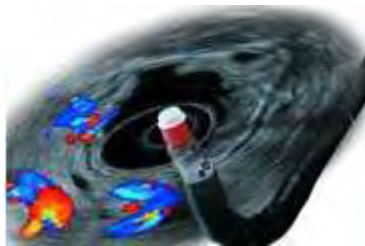
상피하 종양의 위치를 고려한 추정진단

- 지방종
 - 우측대장, 특히 회맹판 주위
- 충수 점액낭종
 - 충수개구부
- 유암종
 - 직장
- 과립세포종
 - 상행결장

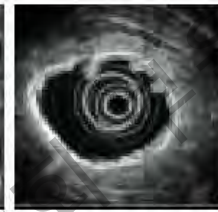


내시경초음파를 이용한 감별진단

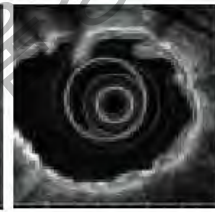
Diagnostic accuracy: 43-79%*



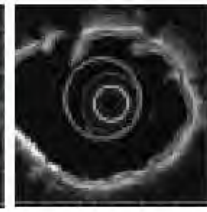
C5/9-cm range



C7.5/9-cm range



C12/6-cm range



C20/6-cm range



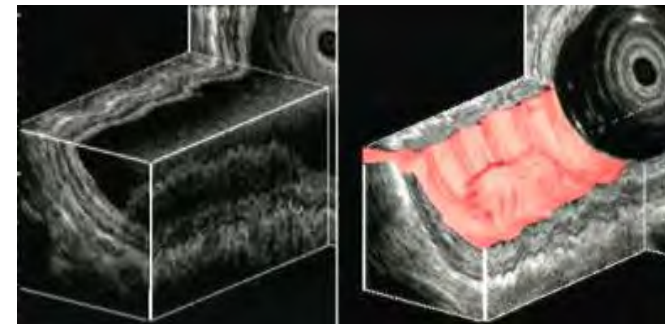
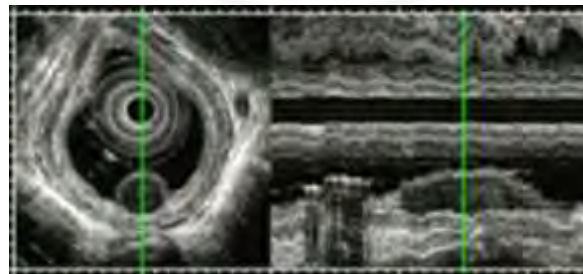
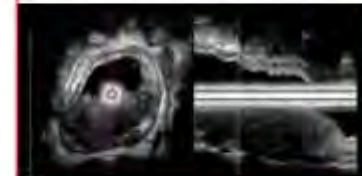
Spiral scanning



Continuous radial images



DPR display



* Hwang JH. Gastrointest Endosc 2005;62:202
Kwon JG. Korean J Gastroenterol 2005;45:88

대장 SET의 임상 및 EUS 특징

Table 2. Clinical and EUS characteristics of patients^a

Diagnosis (No of patients)	Age (yr)	Sex (M/F)	Location (n)	EUS findings					
				Size (mm) ^b	Shape	Border	Layer of origin	Echogenicity	Internal echo
Lipoma (n=15)	57±3	9:6	A (5) T (3) D (1) S (4) R (2)	18±3.2	Round	Regular	Third	Hyperechoic	Homogeneous
Lymphangioma (n=9)	57±4	8:1	A (2) T (6) S (1)	19±3.5	Round	Regular	Third	Anechoic	Multilocular
Leiomyoma (n=6)	51±4	4:2	R (6)	16±1.3 16±1.1 [†]	Round	Regular	Fourth	Hypoechoic	Homogeneous
Leiomyosarcoma (n=3)	62±5	1:2	R (3)	47±3.3 [‡]	Round Lobulated (n=2)	Regular	Fourth	Hypoechoic	Inhomogeneous
Enteric endometriosis (n=7)	42±2	0:7	S (1) R (6)	27±4.9	Round Spindle like (n=2)	Regular (n=5) Irregular (n=2)	Fourth	Hypoechoic	Homogeneous (n=2) Inhomogeneous (n=5)
Malignant lymphoma (n=2)	69±8	0:2	R (2)	46±4.1	Irregular	Irregular	Second to fourth	Hypoechoic	Inhomogeneous
Recurrence of colorectal carcinoma (n=3)	55±5	1:2	S (1) R (2)	34±13.7	Irregular	Irregular	Fourth	Hypoechoic	Inhomogeneous
Appendiceal mucocoele (n=1)	64	1:0	C (1)	23	Round	Regular	Extraluminal	Hypoechoic	Inhomogeneous

R, Rectum; S, sigmoid colon; D, descending colon; T, transverse colon; A, ascending colon; C, cecum.

^aValues of size are shown as mean ± SE.

[†]Indicates size of leiomyomas confirmed histologically by surgical resection.

[‡]Indicates $p < 0.05$ versus leiomyoma.

SET의 조직검사

- EUS의 정확도가 낮음으로 조직학적 진단이 가장 정확한 진단법
- 불필요한 경우
 - 지방종이나 낭종
 - 혈관성 병변
 - 병변이 크거나 증상을 유발시켜 수술절제가 필요한 경우
- 필요한 경우
 - 암성 병변 혹은 전암성 병변의 감별을 위해
 - EUS 소견에서 3층 또는 4층의 저에코 종양으로 확인되면 고려

반복 생검

- **Stacked forcep biopsy**
- **Tunneled biopsy**
- **Bite-on-bite biopsy**
- **Digging biopsy**
 - Diagnostic yield: 38%¹
 - Bleeding rate: 2.8%^{2,3}
- **Unroofing method**
 - 정상 점막층을 절개하거나 제거한 뒤 SET를 노출시킨 후 jumbo forcep으로 반복 생검

1. Ji JS. Korean J Intern Med 2009;24:101

2. Cantor MJ, Gastrointest Endosc 2006;64:29 3. Hunt GC. Gastrointest Endosc 2003;57:68

EUS 유도하 세침흡인세포검사 혹은 조직검사

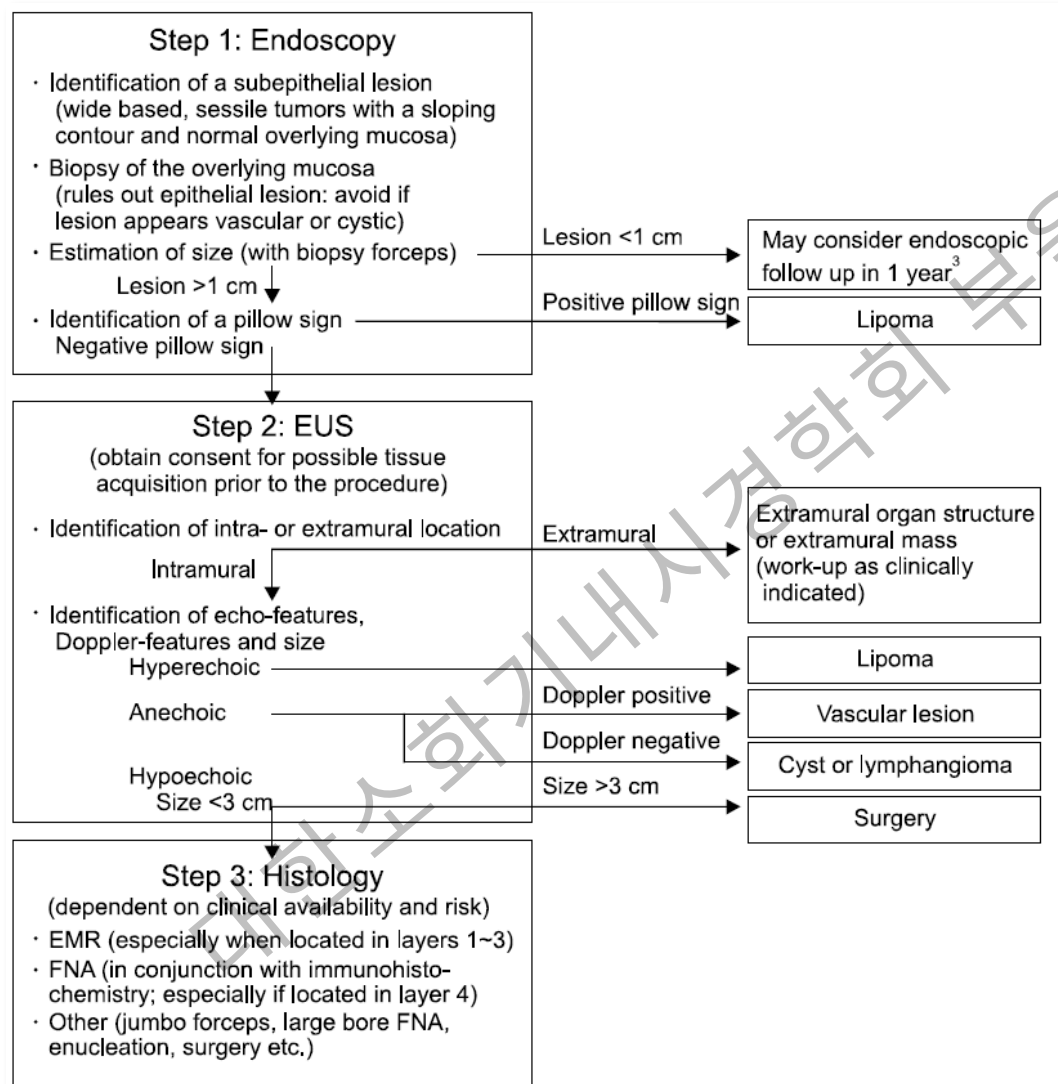
- EUS-guided FNA/Bopsy, Trucut Core Biopsy
- 진단 정확도는 낮은 편^{1,2}
 - 60-90% 다양한 진단율
- 한계점
 - 병변의 크기가 2cm 이하인 경우에는 Trucut biopsy 시행이 안됨
 - 직장 이외의 부위에서는 내시경의 삽입이 어려움



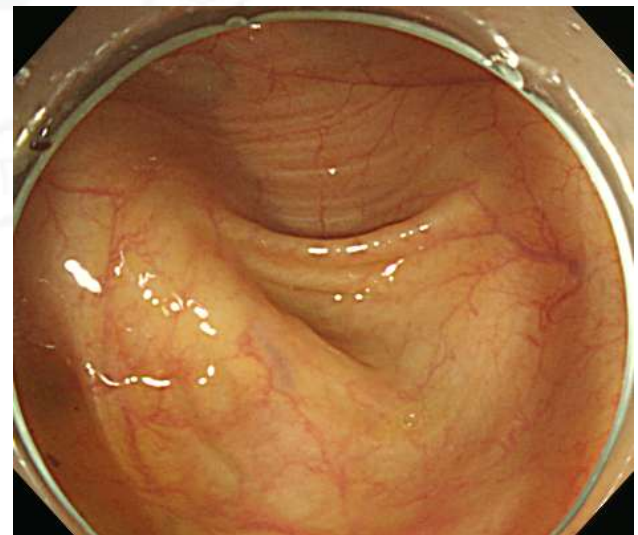
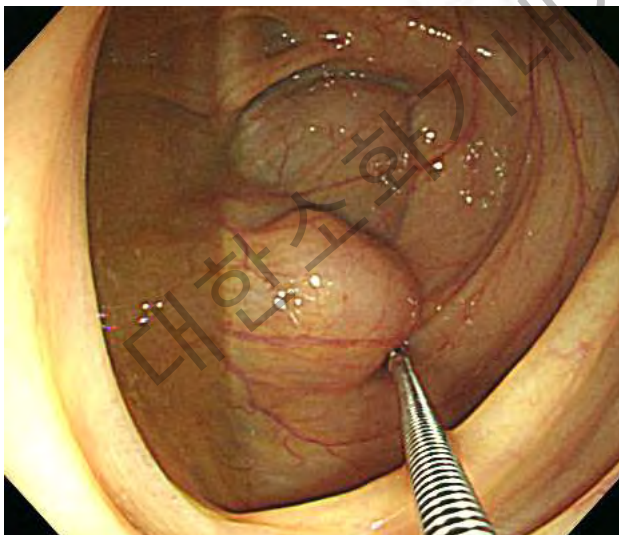
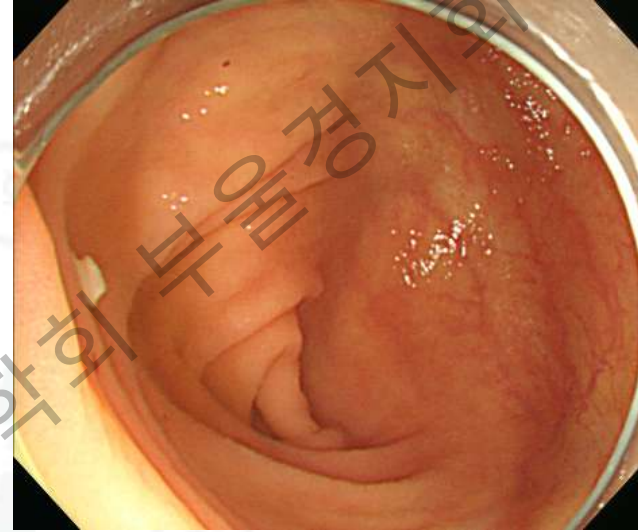
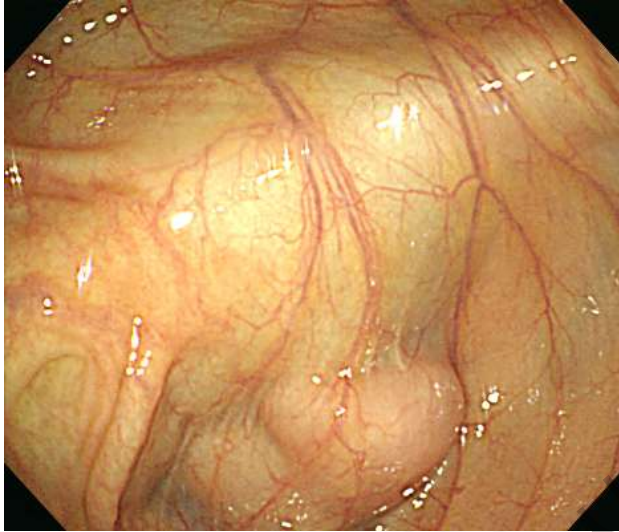
내시경 점막하박리 절제술

- 조직진단 및 치료적 절제 목적
- 천공 및 출혈의 위험
- 주로 심부점막층이나 점막하층에 국한된 병변에서 시행
- 고유근층 기원 종양도 가능
 - 조직의 악성도가 높은 경우는 재수술이 필요
 - 절제 중 발생할 수 있는 천공과 이때 동반될 수 있는 종양세포의 유출(tumor spillage) 우려

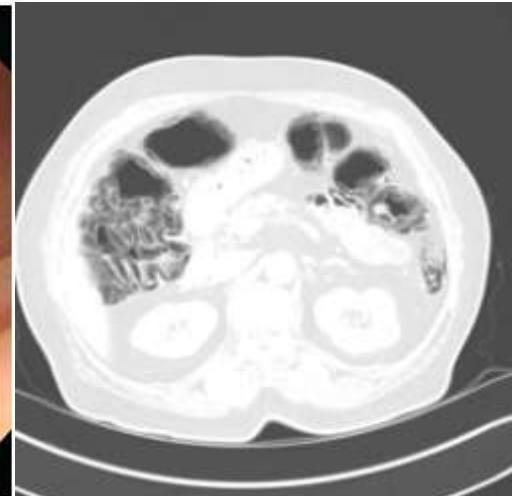
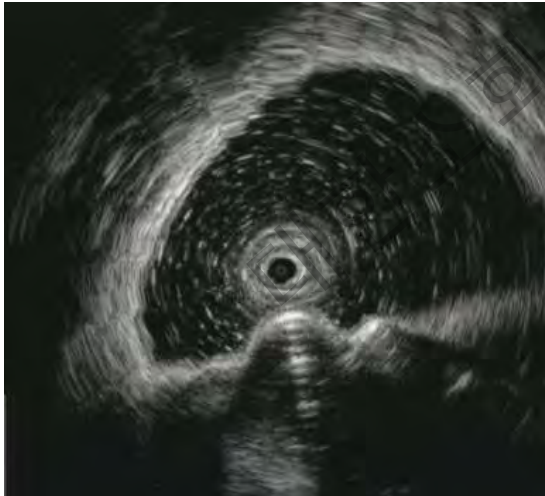
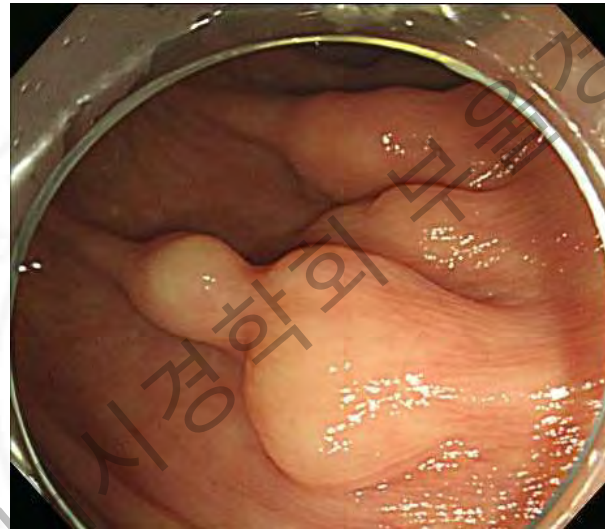
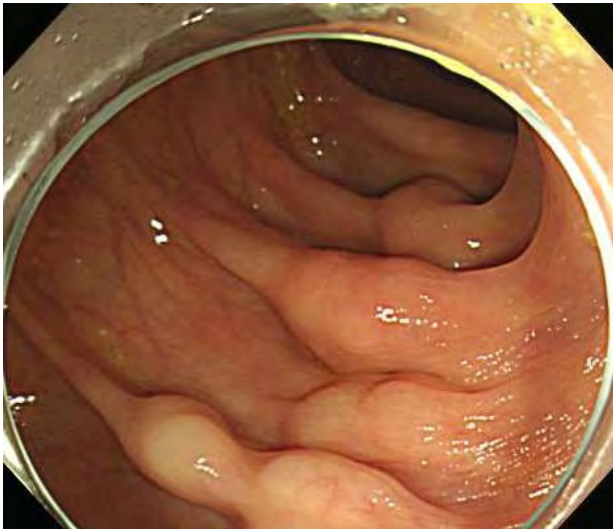
Stepwise Evaluation of GI SET



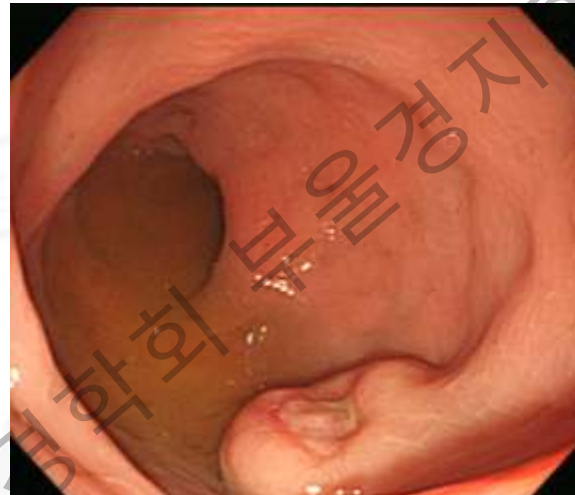
F/49 Extraluminal Compression in Cecum



M/54 Pneumatosis Intestinalis in AC



M/35 Carcinoid Tumor in Rectum



M/35 Carcinoid Tumor in Rectum Multiple Regional LNs metastasis



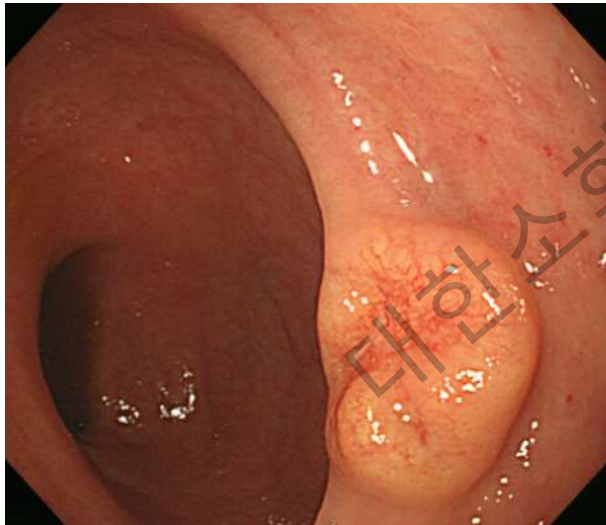
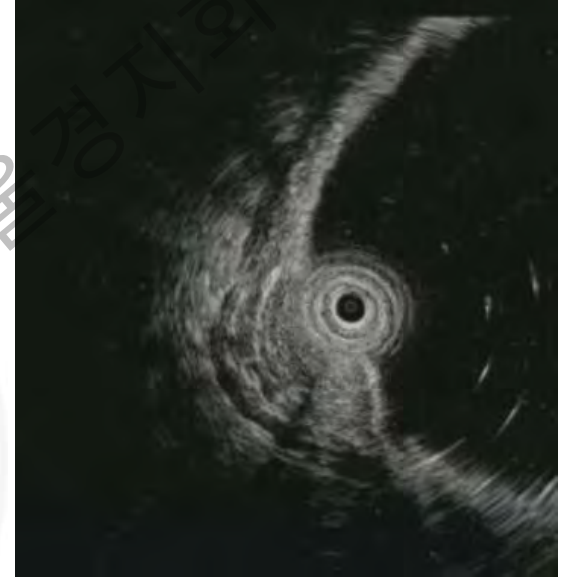
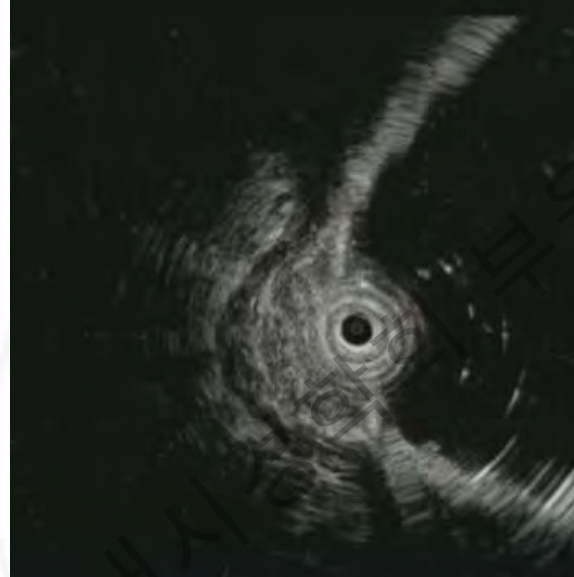
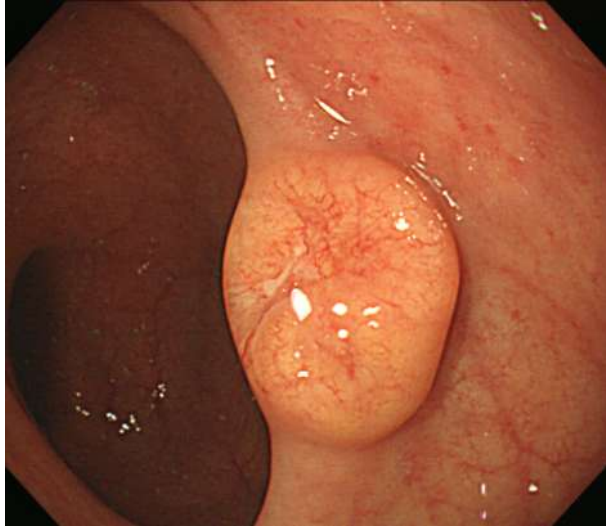
1.3x1.0x0.7cm size , Neuroendocrine tumor

Extent of tumor: invades into lamina propria and submucosa

Histologic grade: G2 (mitotic rate, 3/10HPF) Ki-67 index (2%)

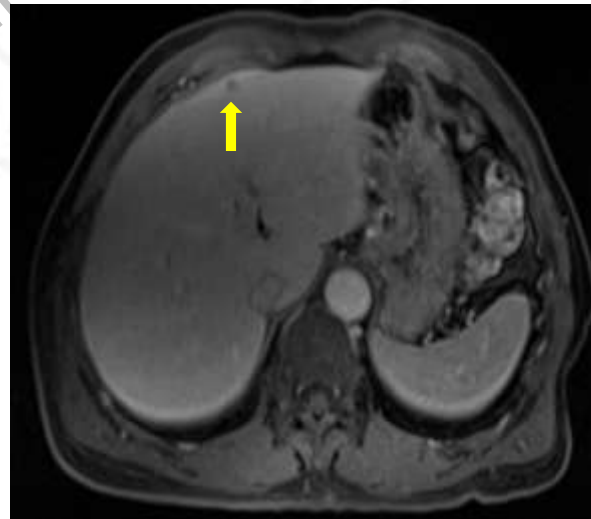
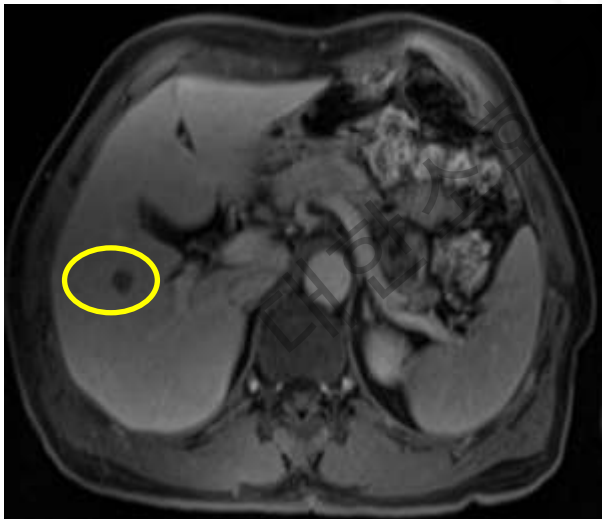
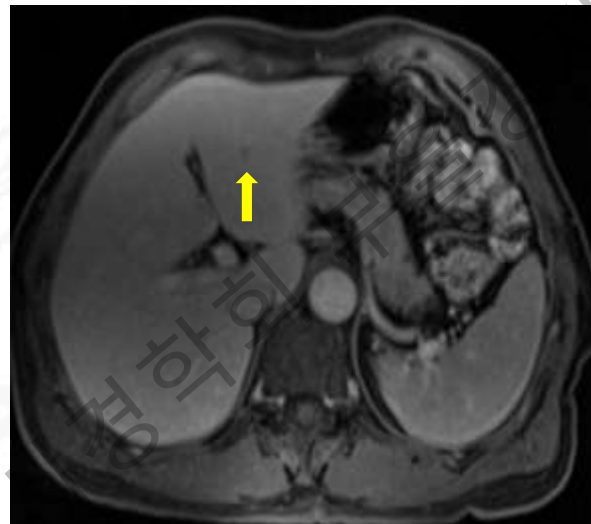
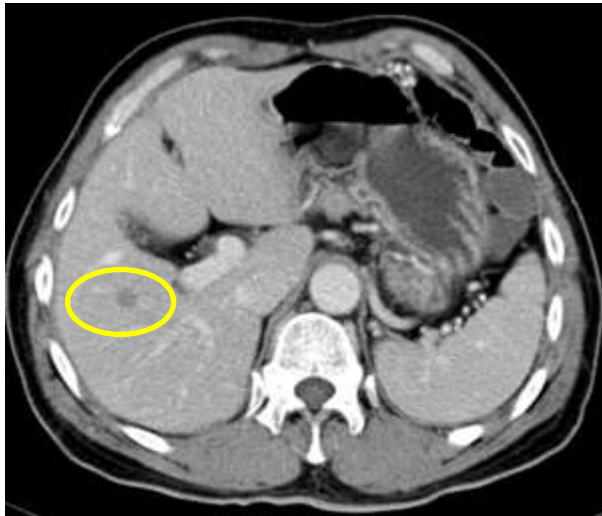
Metastasis to 3 out of 17 regional lymph nodes

M/61 Carcinoid Tumor in Rectum

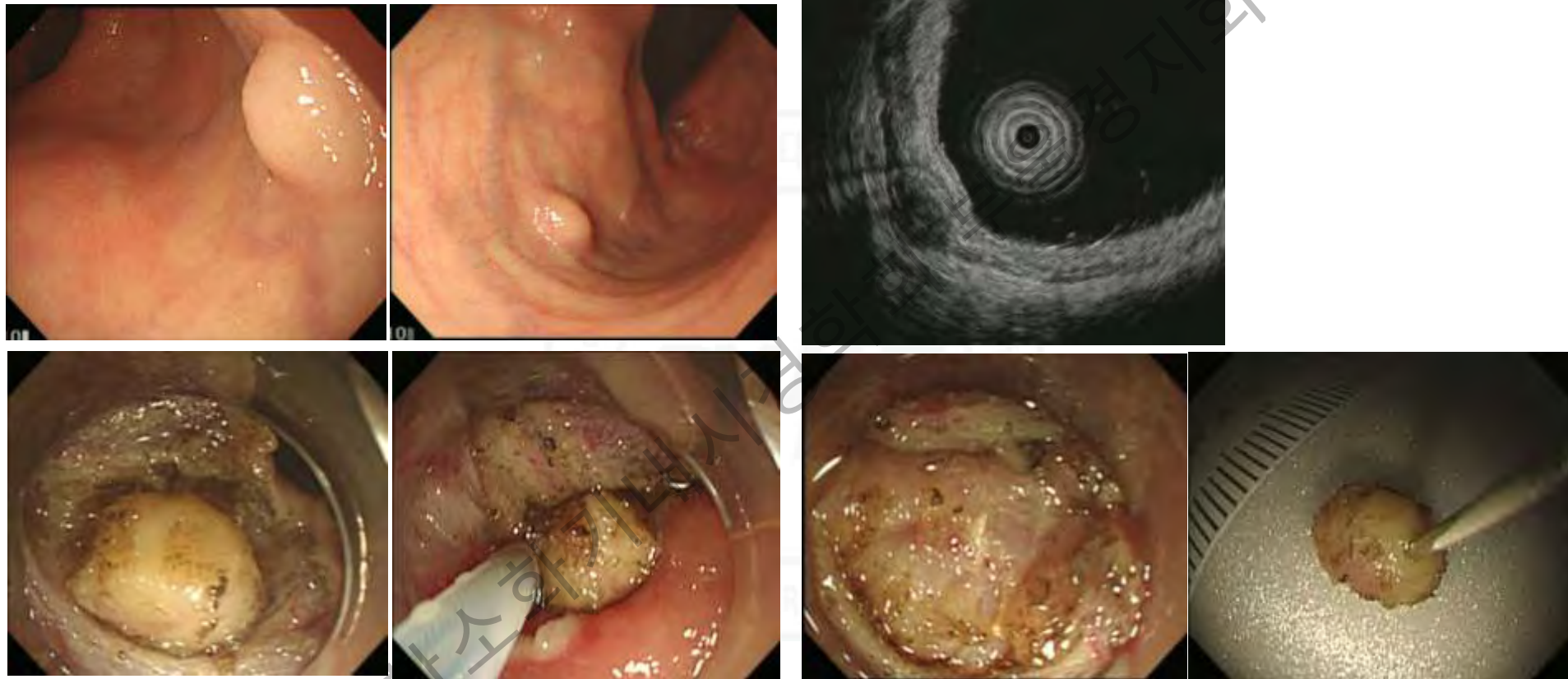


M/61 Carcinoid Tumor in Rectum

Multiple liver metastasis



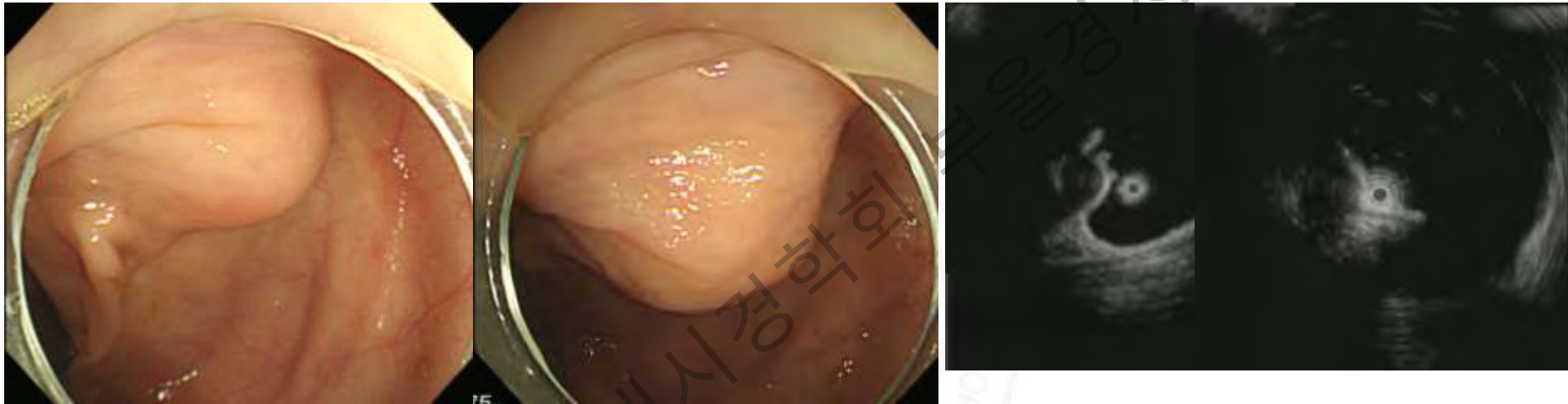
F/67 Small GIST in Rectum



Gastrointestinal stromal tumor (GIST),
with 1. no cytologic atypia
2. no mitoses.

#Immunohistochemistry
c-kit, CD34: positive / SMA, desmin: focal positive
S100: negative / Ki67: less than 1%

F/68 Schwannoma in HF

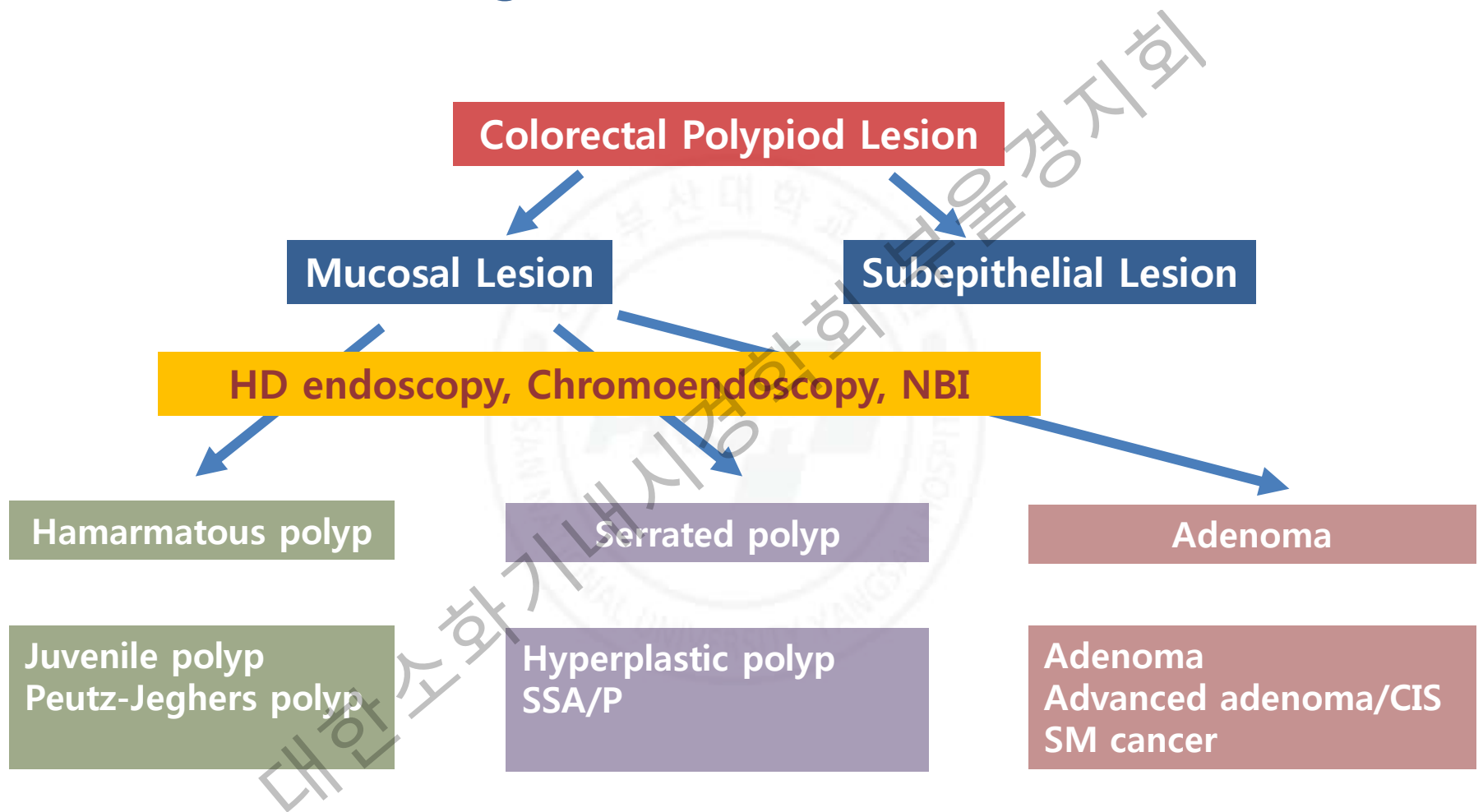


Colon, ascending, laparoscopic right hemicolectomy :

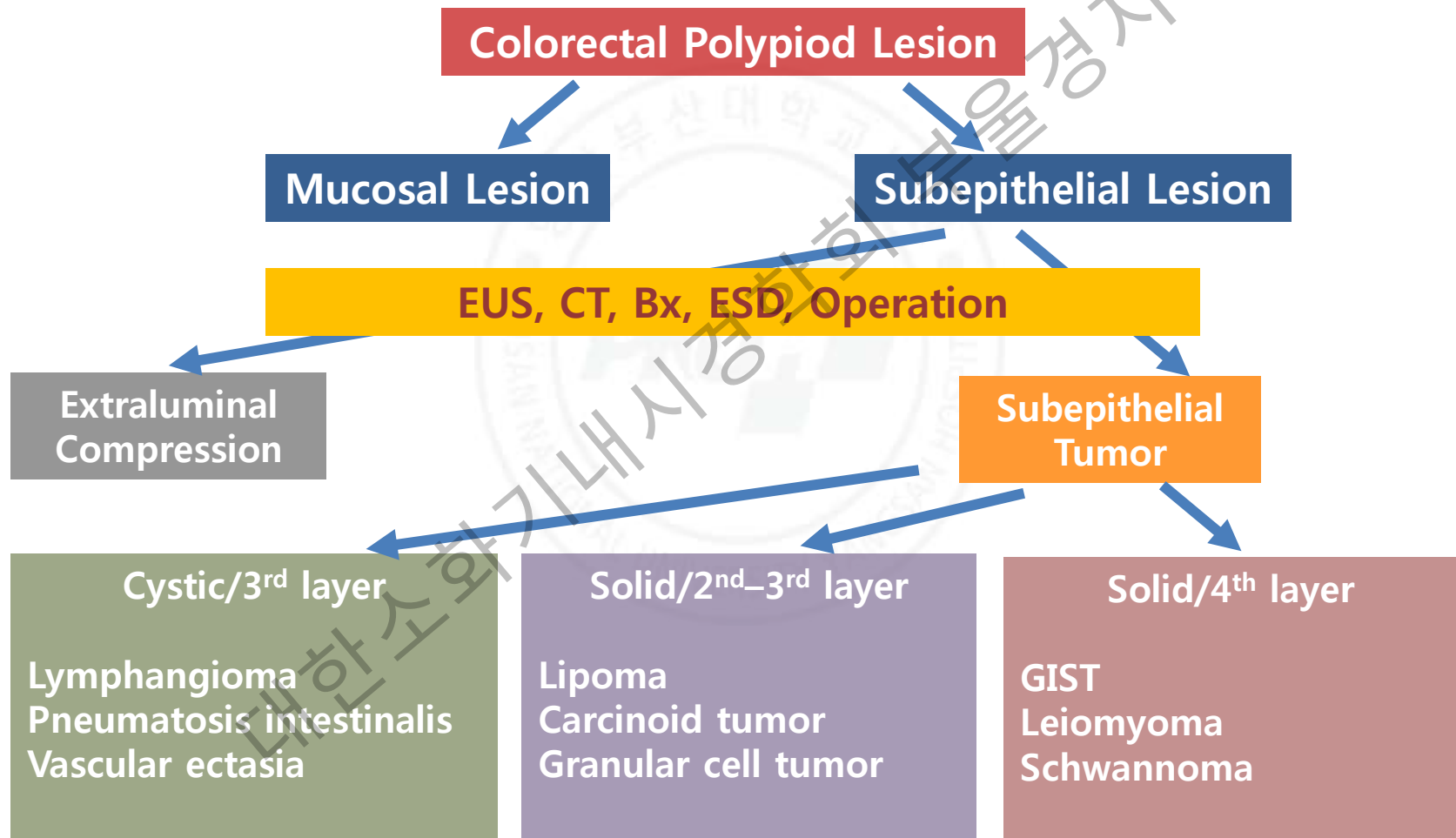
Schwannoma

- 1) size: 2.0x1.5cm
- 2) mitosis: 2/10HPFs, Ki-67 proliferation index: 2%
- 3) DOG-1(-)/c-kit(-)/CD34(-)/SMA(-)/desmin(-)/S-100 protein(+)
- 4) confined to muscularis proper without invasion into submucosa
- 5) reactive hyperplasia in regional lymph nodes (0/35)
- 6) resection margins, free of tumor.

Take Home Messages I



Take Home Messages II



경청해주셔서 감사합니다