



Role of EUS in colon lesions

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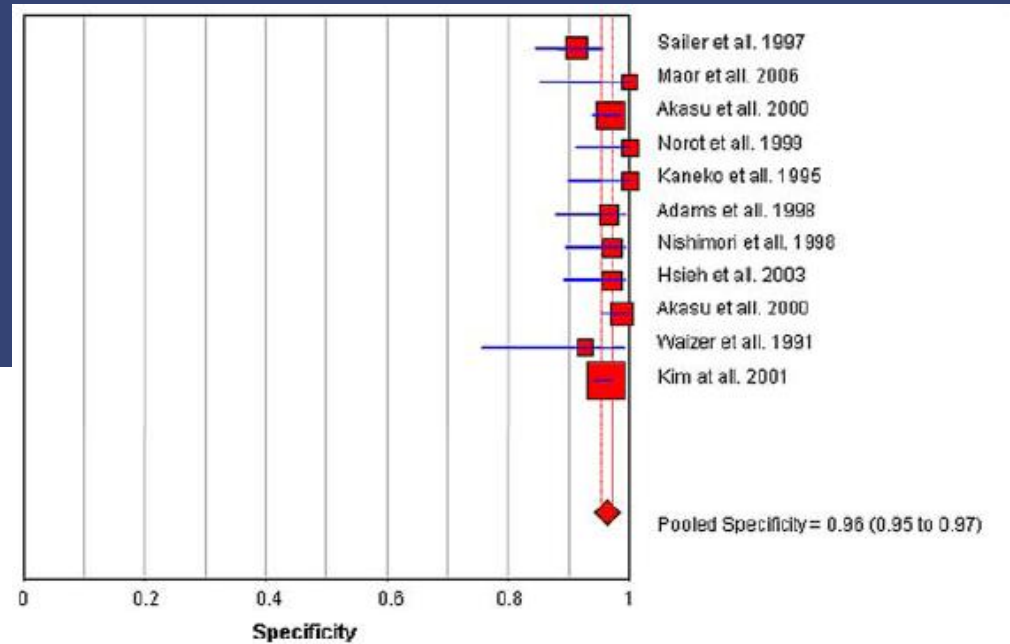
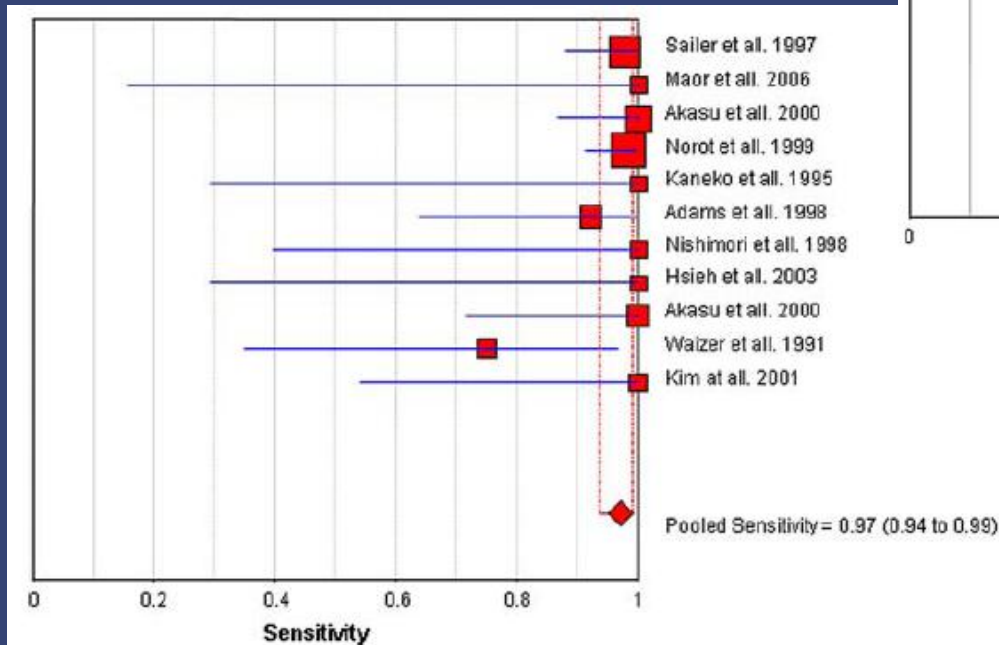
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EUS in colon polypoid lesions



- Evaluation before endoscopic treatment
 - Only in selected cases
- Evaluation during resection
 - Cumbersome, no proven advantage
- Evaluation of radicality of resection
 - Does not add to histology
- Post polypectomy surveillance
 - No role, does not add to histology

EUS accuracy in T1 stage lesions



EUS: T1b



30■
Sex: Age:
D. O. Birth:

26/05/2005
10:43:18

CVP:
D. F:
Et:4 Gr:N

Physician:
Comment:

00,00,0000 0

DATE :01.01.2001
TIME :01:22:20

FREQ : 12MHz
RANGE: 4cm
GAIN : 8/19
CONT : 6/ 8
IMAGE:S
STC ■■■■■

DISTANCE
+ : 6.1mm
x : mm
o : mm
Δ : mm

FRAME: 1/ 29
SCALE: 5mm
DIR :NORMAL

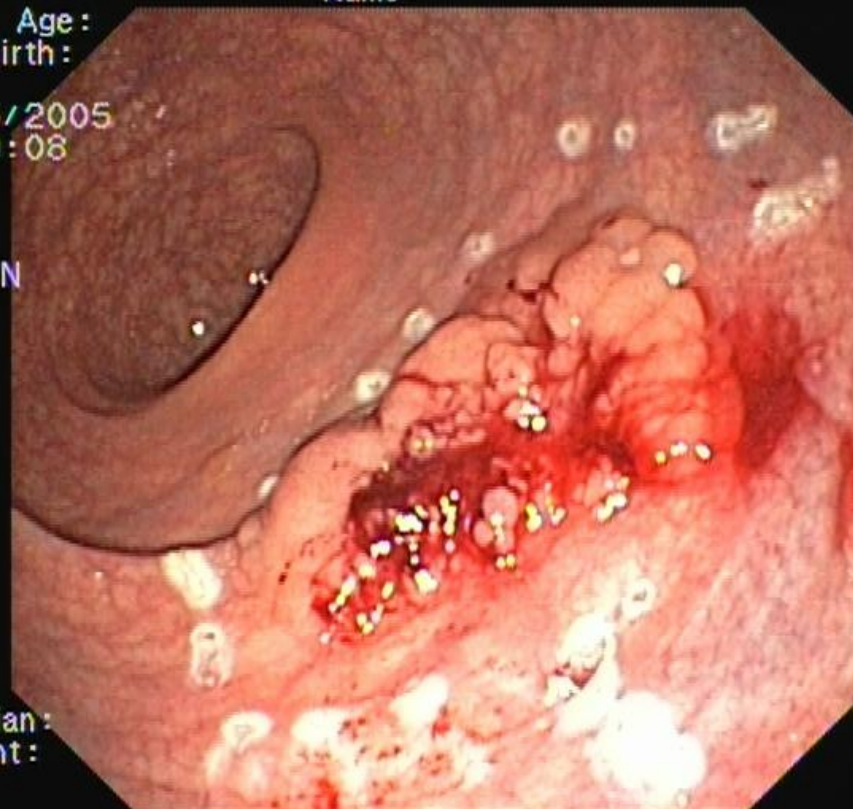
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D. O. Birth:

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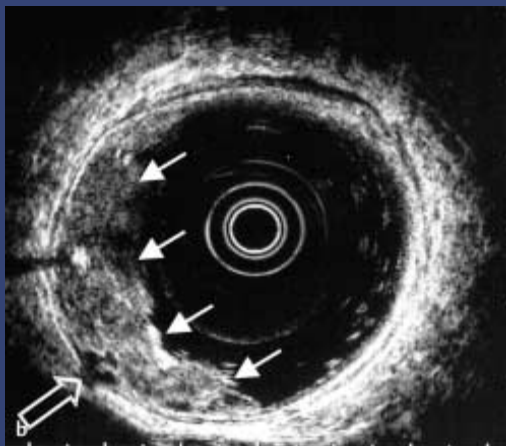
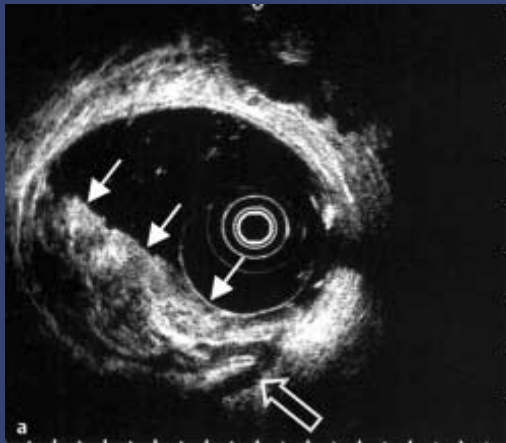
CVP:
D. F:
Et:4 Gr:N

Physician:
Comment:

Name :



Prediction of bleeding



Status on EUS	Number of cases	Incidence of postpolypectomy bleeding, per polyp treated
Group 1 (visible vessels)	8	12.5% (1/8)
Group 2 (vessels absent)	31	12.9% (4/31)
Total	39	12.8% (5/39)

- The absence of vessels on EUS did not rule out the possibility of bleeding

Polkowski et al. Endoscopy 2003

Miniprobe or dedicated?



Miniprobe

- Pros
 - Quick
 - Image small lesions
 - Real time resection
 - Stenotic tumors
- Cons
 - Limited penetration
 - Expensive

Dedicated echoendoscope

- Pros
 - Image stability
 - Good penetration
 - Power Doppler
- Cons
 - Separate examination
 - Stenotic tumors
 - Small lesions

EUS in rectal cancer



- **Accurate staging** of rectal cancer facilitates selection of pts. who will benefit from preoperative multi-modality tx
- Pts. with rectal cancer who warrant **adjuvant tx are those with advanced locoregional disease** [tumor extension into the perirectal and/or involvement of the mesorectal or pelvic lymph nodes (T3, T4 N0, or any T N1,2)]
- Neoadjuvant tx followed by surgery results in **better local control and reduced toxicity** when compared with standard post-op adjuvant regimens

Rectal lesions: treatment options



- EMR/ESD
- Transanal local excision
- Transanal microsurgery (TEM)
- Total mesorectal excision
- Chemo/radiotherapy



EUS accuracy in T staging



	Pooled sensitivity	Pooled specificity	Pooled LR+	Pooled LR-	Pooled DOR
T1	87.8% (85.3–90.0%)	98.3% (97.8–98.7%)	44.0 (22.7–85.5)	0.16 (0.13–0.23)	333.9 (161.4–690.4)
T2	80.5% (77.9–82.9%)	95.6% (94.9–96.3%)	17.3 (11.9–24.9)	0.22 (0.17–0.29)	92.1 (64.2–132.2)
T3	96.4% (95.4–97.2%)	90.6% (89.5–91.7%)	8.9 (6.8–11.8)	0.06 (0.04–0.09)	204.9 (124.9–336.6)
T4	95.4% (92.4–97.5%)	98.3% (97.8–98.7%)	37.6 (19.9–71.0)	0.14 (0.09–0.23)	367.6 (170.9–790.6)

LR+, positive likelihood ratio; LR-, negative likelihood ratio; *DOR*, diagnostic odds ratio

EUS vs. CT vs. MR: meta-analysis



Stage	Imaging Modality	Sensitivity (%)	Specificity (%)
Muscularis propria invasion	EUS	94 (90, 97)	86 (80, 90)
	CT	NA	NA
	MR imaging	94 (89, 97)	69 (52, 82)*
Perirectal tissue invasion	EUS	90 (88, 92)	75 (69, 81)
	CT	79 (74, 84)*	78 (73, 83)
	MR imaging	82 (74, 87)*	76 (65, 84)
Adjacent organ invasion	EUS	70 (62, 77)	97 (96, 98)
	CT	72 (64, 79)	96 (95, 97)
	MR imaging	74 (63, 83)	96 (95, 97)
Lymph node involvement	EUS	67 (60, 73)	78 (71, 84)
	CT	55 (43, 67)	74 (67, 80)
	MR imaging	66 (54, 76)	76 (59, 87)

Note.—Numbers in parentheses are 95% CIs. EUS = endoluminal US, NA = not applicable.

* Significantly lower than EUS.

EUS FOR RECTAL CANCER: CONS



- Disappointing results in a large multi-center study finding agreement between pre- and post-operative staging in only **63.3% of cases (lowest agreement for T3 stage!)**
- Hospitals and endosonographers with **very different experiences**, in terms of volume of cases per year and years of activity, were involved
- **Centralization** of EUS appears essential to ensure a high quality level of this technique

Marusch et al. Endoscopy 2002

EUS: LEARNING CURVE



<i>Site/lesion</i>	<i># cases</i>
Mucosal tumors (cancer staging)	75
Submucosal tumors	40
Pancreaticobiliary	75
EUS-guided FNA (nonpancreatic)	25
EUS-guided FNA (pancreatic)	25

Eisen et al. Gastrointest Endosc 2001

RESTAGING POST CHEMORADIO



- Pts. **re-referral for EUS after neoadjuvant** tx is increasing
- EUS before and after 5-fluorouracil and hyperfractionated radiotherapy in 82 pts. with rectal cancer
- Overall T staging **was correct in only 48% of the pts.** (vs. 81% without chemoradio). Understaging occurred in 14% of the cases, and overstaging occurred in 38%
- Inability to differentiate between residual tumor and **radiation-induced inflammation and fibrosis**

Vanagunas et al. Am J Gastroenterol 2004

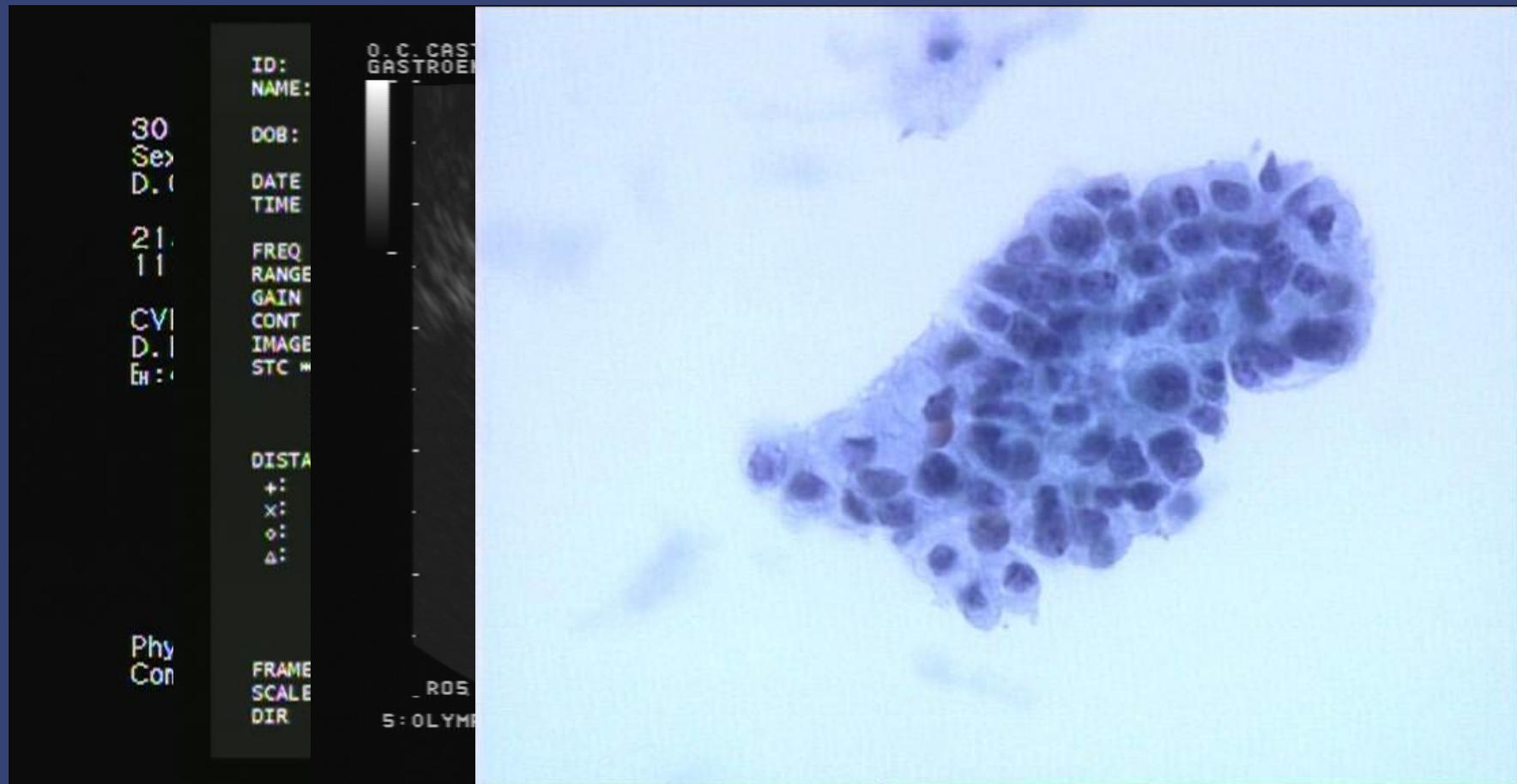
EUS FOR POST-OP FOLLOW UP



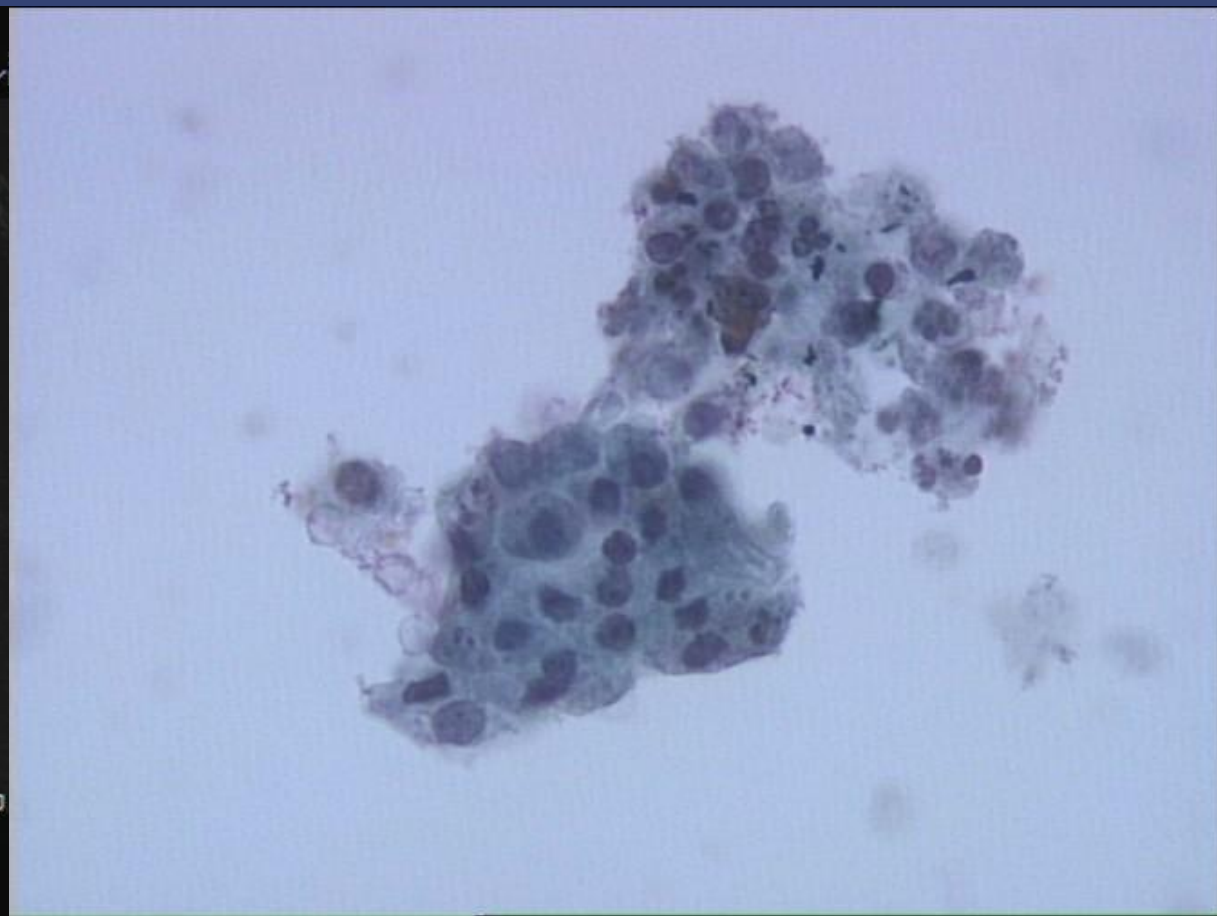
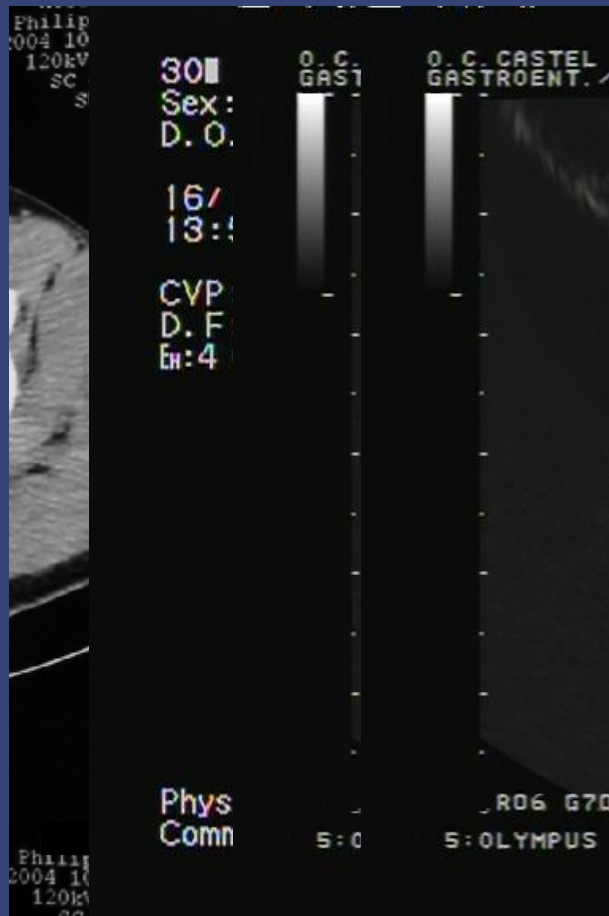
- Most local rectal cancer recurrences occur **extraluminally**
- Among 116 pts., accuracy for detection of recurrence was only **79% with EUS** but rose to **100% with EUS-FNA**
- Early detection led to potential **curative reintervention in 31 pts.**, of whom 25 were detected by EUS alone

Lohnert et al. Dis Colon Rectum 2000

EUS-FNA: RECURRENCE



EUS-FNA: NO RECURRENCE





thank you for your attention