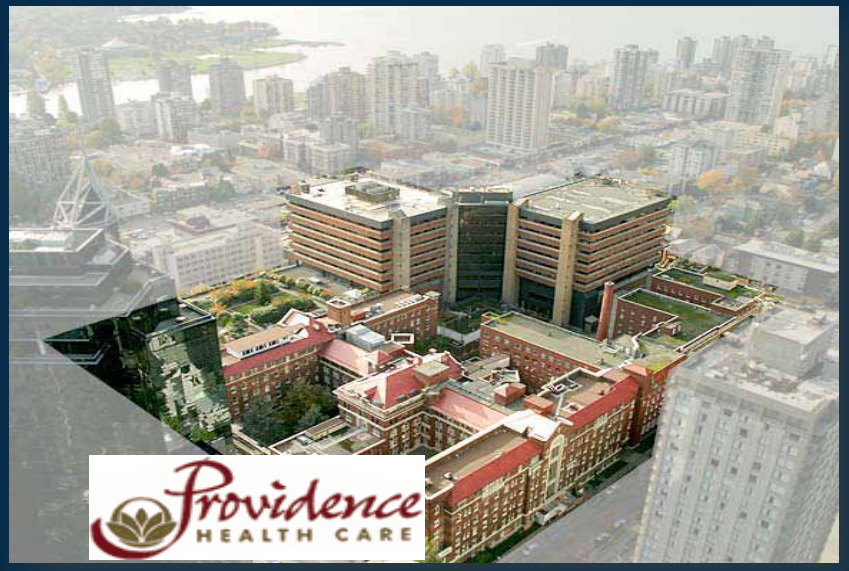
Transanal Endoscopic Microsurgery (TEM) for Rectal Adenoma and Cancer

The University of British Columbia

St. Paul's Hospital

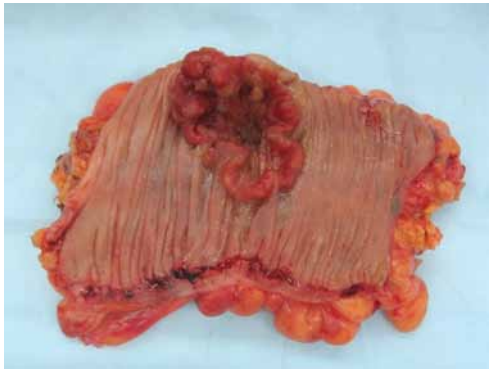


October 20, 2012

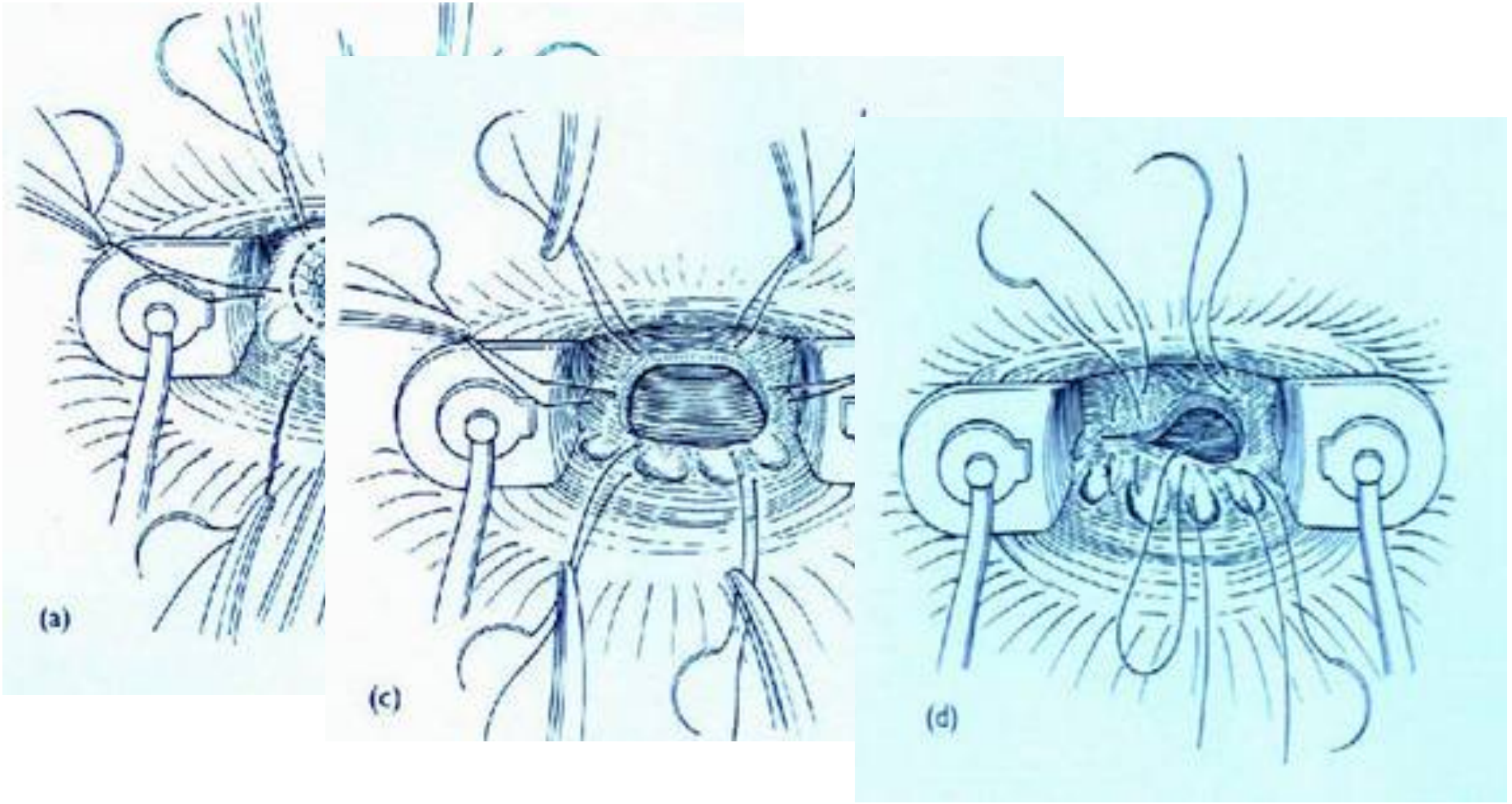
Carl J. Brown, MD MSc FRCSC

Colorectal Cancer

- Lifetime risk of colorectal cancer is 6.5%
  - Rectal cancer comprises approximately 30% of this risk†
- Surgical resection has been the preferred treatment since the early 1900s

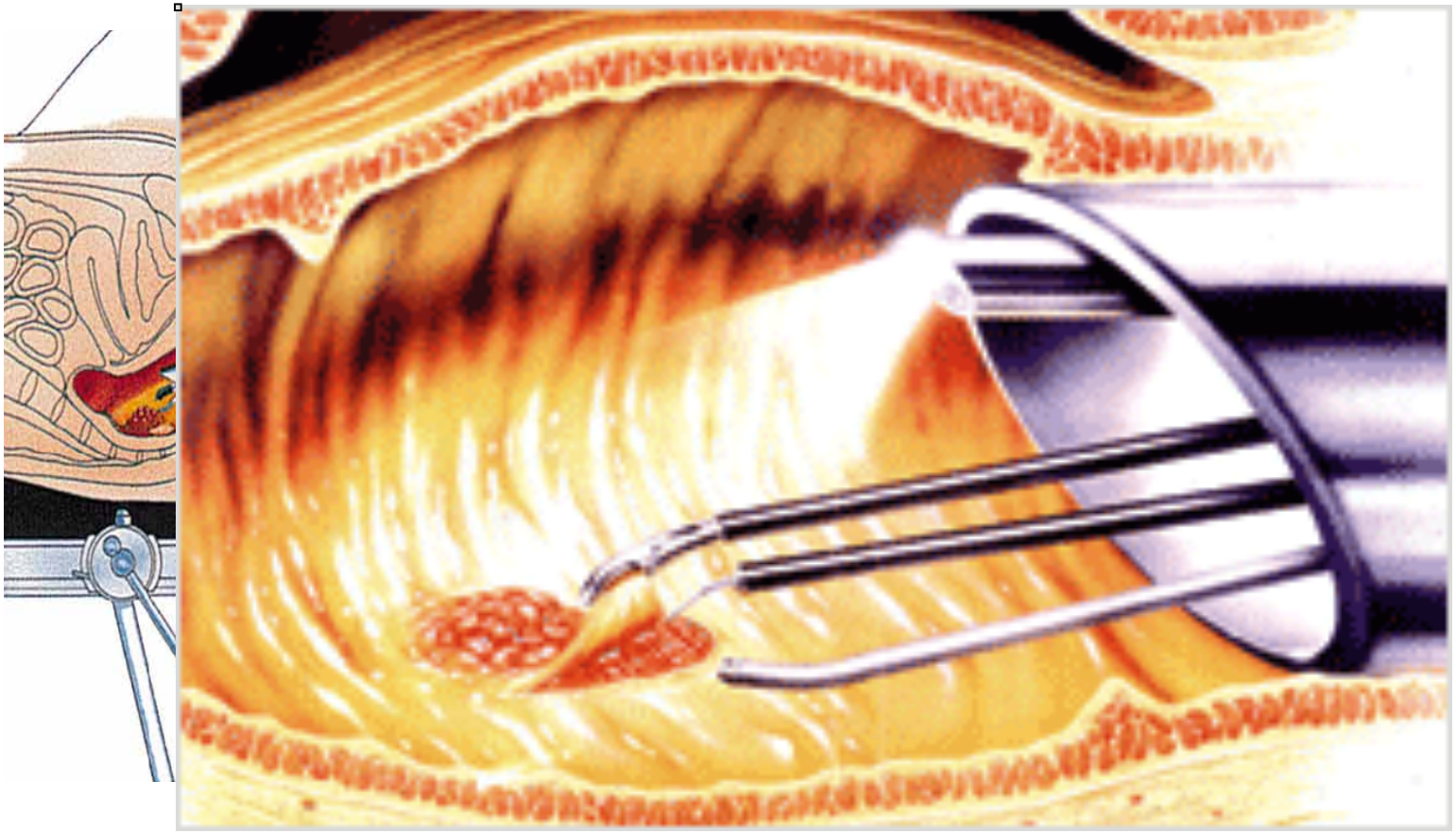


Local Excision Techniques



TEM – A Technical Advance

Transanal Endoscopic Microsurgery (TEM)



TEM for Adenoma

TEM for Adenoma

Study	Patients (n)	Recurrence (%)	Followup (m)
Tsai et al., 2010	156	6 (5.0)	24.5 (6-128)
de Graaf et al, 2010	208	8 (6.1)	32 (0.4-95)
Guerreiri et al., 2010	402	16 (4)	84 (1-190)
Van der broek, 2		23 (9.3)	13 (0-48)
Ramirez et al., 2		9 (5.4)	43 (12-112)
Gach et al., 200		11 (13.9)	12.1 (1-111.3)
de Graaf et al,		21 (6.6)	27 (0-123)
Speake et al. 2008	80		12 (3-84)
Guerreiri et al., 2008	588		44 (15-74)
McCloud et al., 2006	75		31 (6-80)
Whitehoue et al., 2006	143	7 (4.8)	39 (4-89)
Endreseth et al. 2005	64	8 (13)	24 (1-95)
Cameron et al. 2004	62	2 (2.4)	18±0.9
Palma et al. 2004	71	4 (5.6)	30 (6-54)
Said et al., 1995	260	17 (6.5)	38.3 (3-129.6)

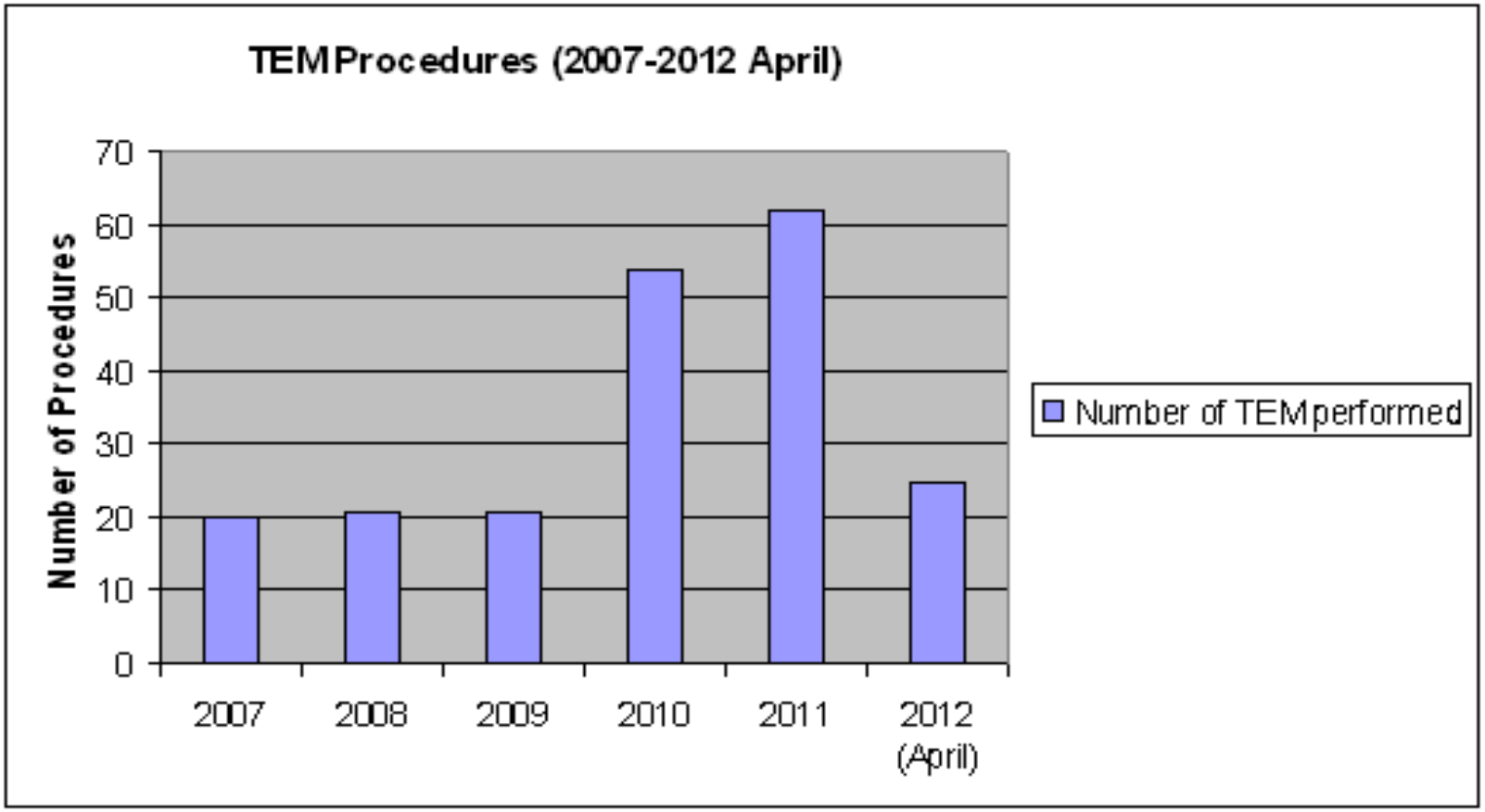
TEM Procedures or Adenoma 2893

Recurrence 6.1%

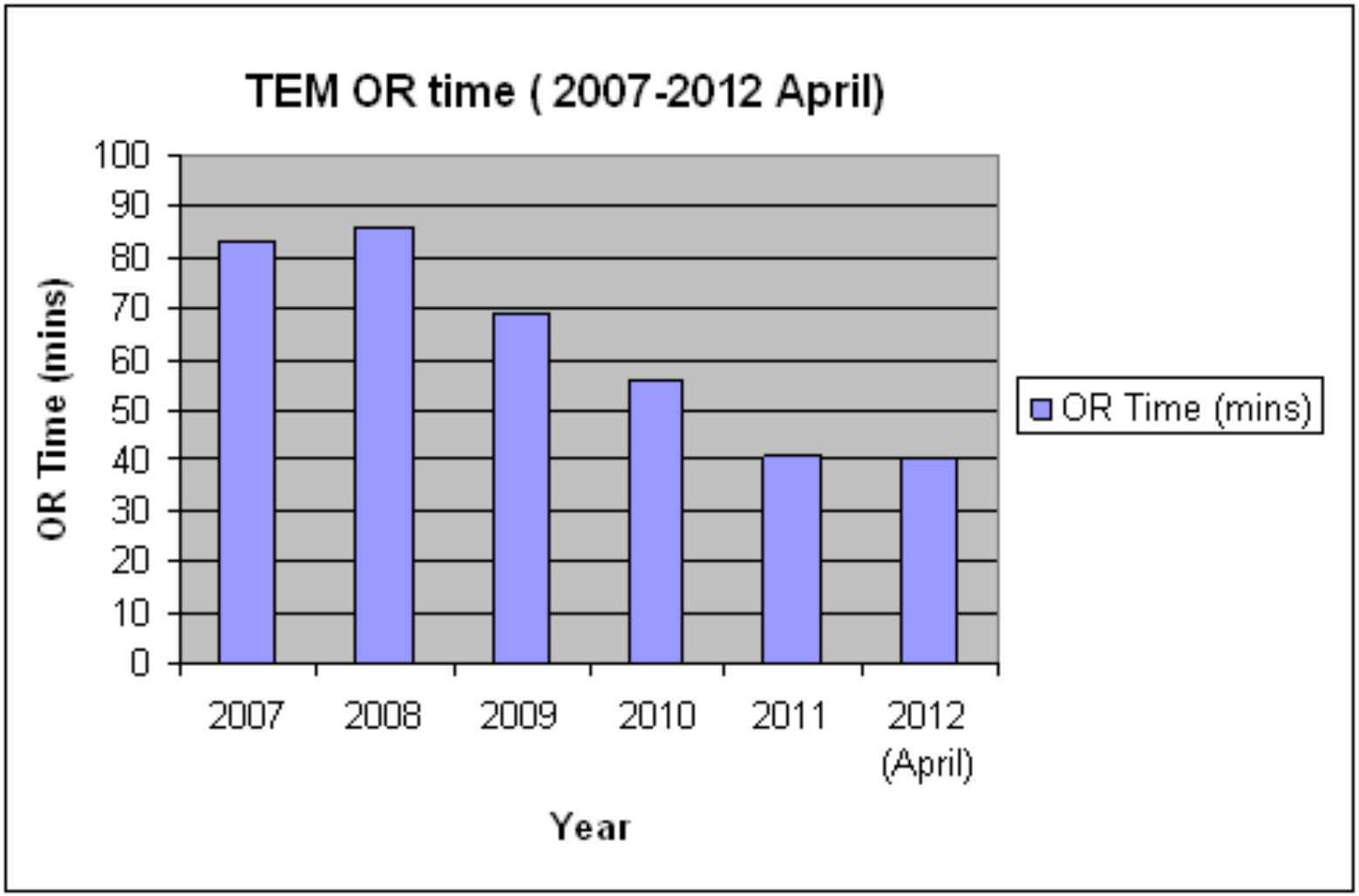
TEM – The first 231 cases at SPH

Age	67 years (17-94)
Gender M:F	137:94
Surgeon Brown Raval Phang	 137 73 21
Tumour height	7.4 cm (0-15)
Adenoma:Carcinoma:Other	141:47:43
Median Hospital stay	0

TEM – Learning Curve



TEM – Learning Curve

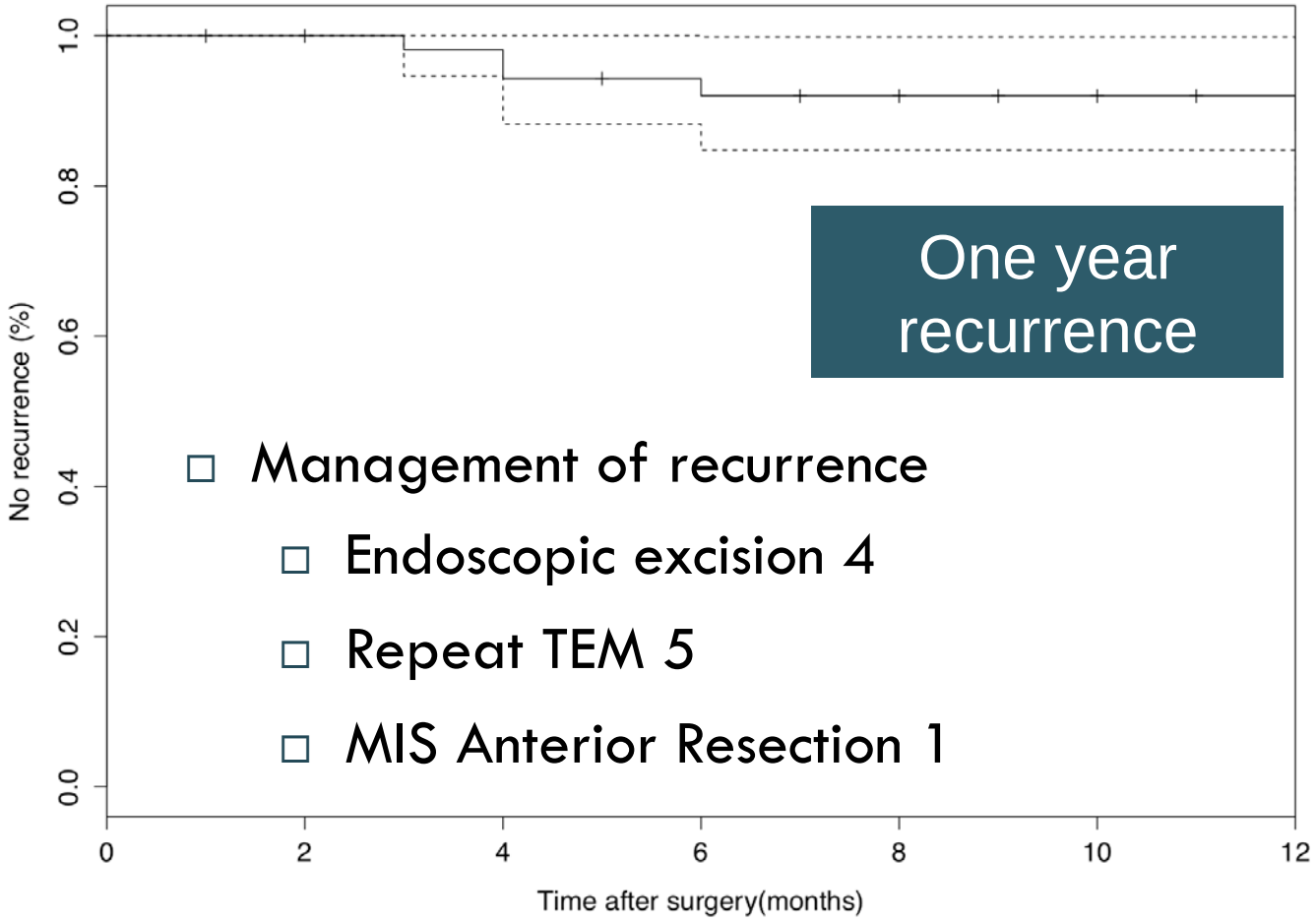


TEM for Adenoma – SPH Experience

- Total Procedures for Adenoma = 141
- Exclusion – multiple procedures, repeat TEM
- 10/104 recurrent adenoma (9.4%)

Adenoma	N=104
Female : Male	47 : 57
Age in years	67 (24 - 94)
ASA 1:2:3:4	26:54:24:0
Tumour height in cm	9 (1-18)
Tumour height Low:Mid:High	28:42:34

TEM for Adenoma – SPH Experience



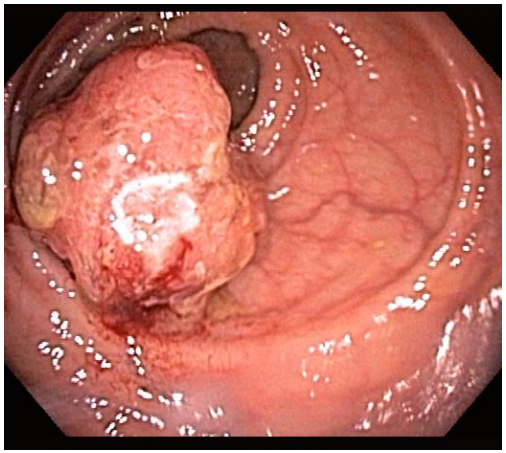
One year recurrence

- Management of recurrence
  - Endoscopic excision 4
  - Repeat TEM 5
  - MIS Anterior Resection 1

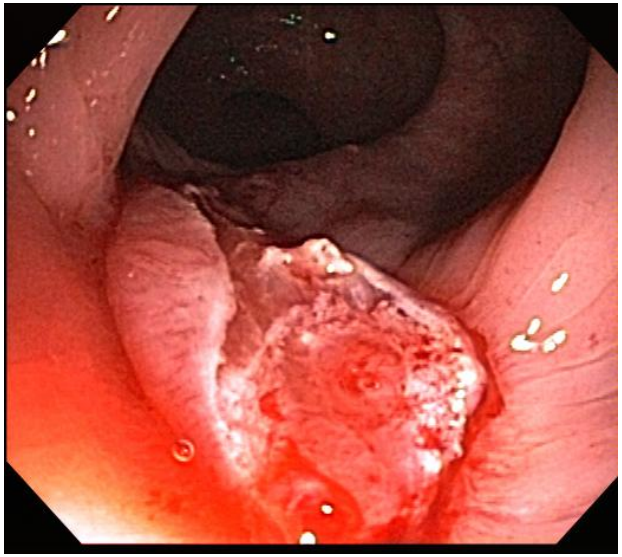
Factors Predicting Recurrence

	Recurrence (n=10)	No Recurrence (n=94)	p
Age (mean years)	73.7	66	ns
Size (mean dimension, cm)	3.9	3.9	ns
Height	9.7	8.1	ns
% margins involvement	20%	18%	ns
% previous treatment	20 %	21%	ns
% HGD	30%	31%	ns
% multistage excision	20 %	3%	0.039

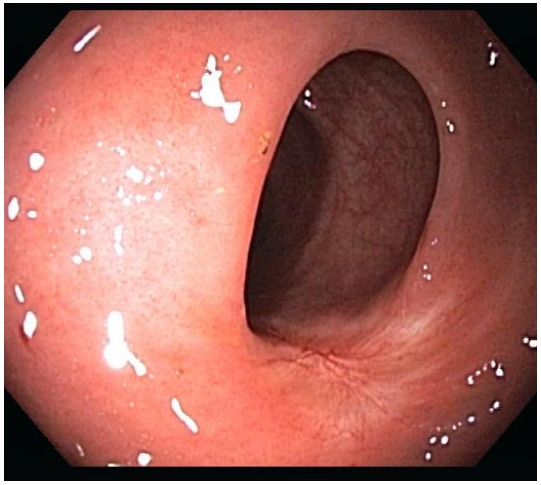
TEM – Endoscopic Follow Up



Preop Image



3 Months Postop



1 Year Later

TEM for Cancer

Total Mesorectal Excision

- Standard Rectal Cancer surgical technique
- Low local recurrence
- Consequences
  - Morbidity and mortality
  - Functional compromise

Br. J. Surg. Vol. 69 (1982) 613-616 Printed in Great Britain

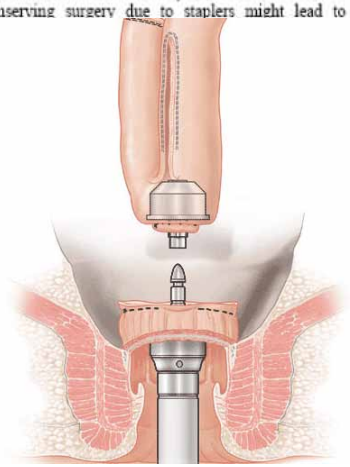
The mesorectum in rectal cancer surgery—the clue to pelvic recurrence?

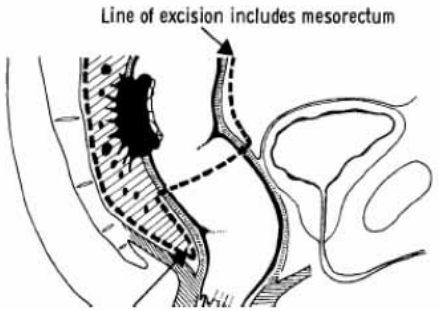
R. J. HEALD, E. M. HUSBAND AND R. D. H. RYALL
Basingstoke Bowel Cancer Clinic, Basingstoke District Hospital, Basingstoke, Hampshire.

Five cases are described where minute foci of adenocarcinoma have been demonstrated in the mesorectum several centimetres distal to the apparent lower edge of a rectal cancer. In 2 of these there was no other evidence of lymphatic spread of the tumour. In orthodox anterior resection much of this tissue remains in the pelvis, and it is suggested that these foci might lead to suture-line or pelvic recurrence. Total excision of the mesorectum has, therefore, been carried out as a part of over 100 consecutive anterior resections. Fifty of these, which were classified as 'curative' or 'conceivably curative' operations, have now been followed for over 2 years with no pelvic or staple-line recurrence.

even though the anus, the levators, a small rectal reservoir and as much as possible of the nerve plexuses have been preserved.

The incidence of locally recurrent disease is the most important measure of the success of any new operation for rectal cancer. Thus there has been anxiety (1) that the increase in sphincter-conserving surgery due to staplers might lead to more local re[illegible] decrease in [illegible]ge in the te[illegible]ned that all ca[illegible]nesorectum int[illegible] resection, wl[illegible] completely on[illegible]y the plane of[illegible]' of fatty ly[illegible] the pelvis





Rationale for Local Resection of CA

- Over 30% of rectal cancers will involve LN
- In T1 Cancers, LN metastases occur in 8-13%*
  - Favorable histology - 1%†
- Selecting patients for local excision based on balancing risk
  - Risk of LN Metastases
  - Risk of Surgery (Mortality 0.2-5%)

*** Hassan et al., *Dis Col Rect,* 2005**
Robert, *Clin Gast Hep,* 2007
† Gramlich et al., US Gastro Rev, 2005

Transanal Excision in Early Rectal Cancer

Study	Local Recurrence (%)			5 year Survival (%)		
	TAE	Rad	p	TAE	Rad	p
Melgren 2000	18	0	0.03	72	80	0.5
Nascimbeni 2004	7	3	0.26	72	90	0.008
Endreseth 2005	12	6	0.01	70	80	0.04
Bentrem 2005	15	3	0.001	89	93	0.26

TEM - Better than transanal excision for Cancer?

Study	N	Local Recurrence
Smith 1996	30	10%
Mentges 1997	64	4%
Demartines 2001	9	14%
De Graaf 2002	21	11%
Dafnis 2004	10	10%
Stipa 2004	39	13%
Dueck 2005	25	0%
Endreseth 2005	8	0%
Floyd 2005	53	8%
Ganai 2006	21	19%
Borchitz 2007	105	13%
Maslekar 2007	27	0%
Guerrieri 2008	51	0%
Jeong 2009	17	0%
Baartrup 2009	72	13%
Tsai 2010	51	10%

TEM – Better than Transanal Excision?

- Abcara and Saclarides, 2010
  - ASCRS May 17, 2010
  - 75 pts with pT1 rectal cancer undergo TEM
    - No chemoradiotherapy
    - 9% (7/75) recurrence
      - 5/7 had radical resection +/- neoadjuvant chemorads
        - 4/7 had subsequent R0 resection
  - "TEM reasonable option in select patients".

TEM vs. Radical Resection - RCT

- Winde et al, 1996
- TEM (n=26) vs. Radical Resection (n=24) for T1 CA
  - Follow up 40 months vs. 46 months
  - Local recurrence - 4.1% vs. 0% (ns)

TEM – Comparative Studies in T1 Cancer

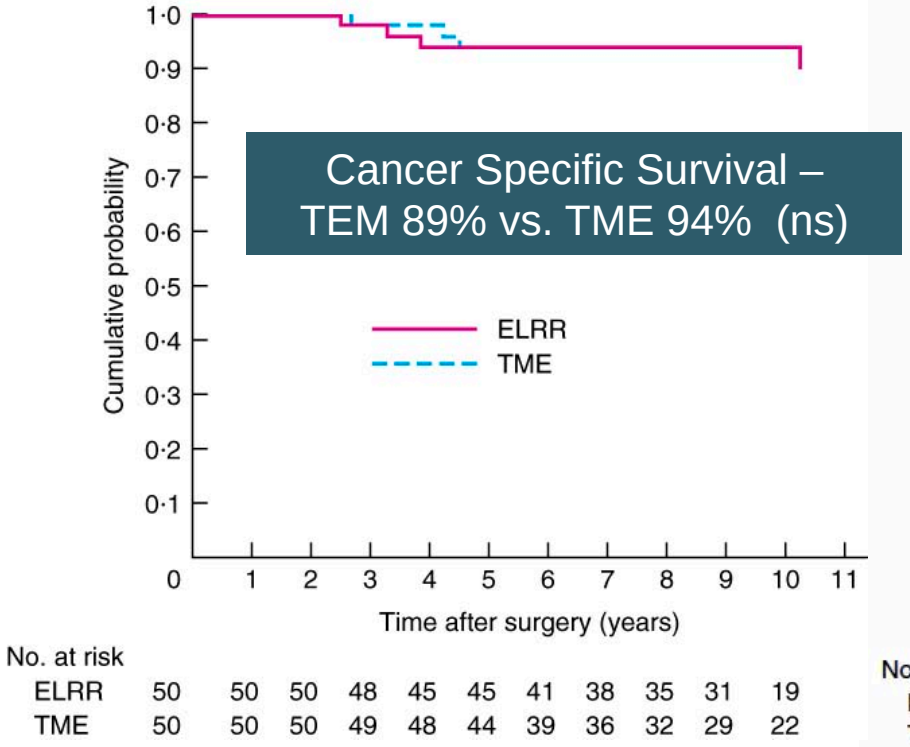
Study	N		5 year Local Recurrence (%)	
	TEM		Rad	p
Heintz 1998	46		3	NS
Lee 2003	52		0	NS
Langer 2003	20	18	0	NS

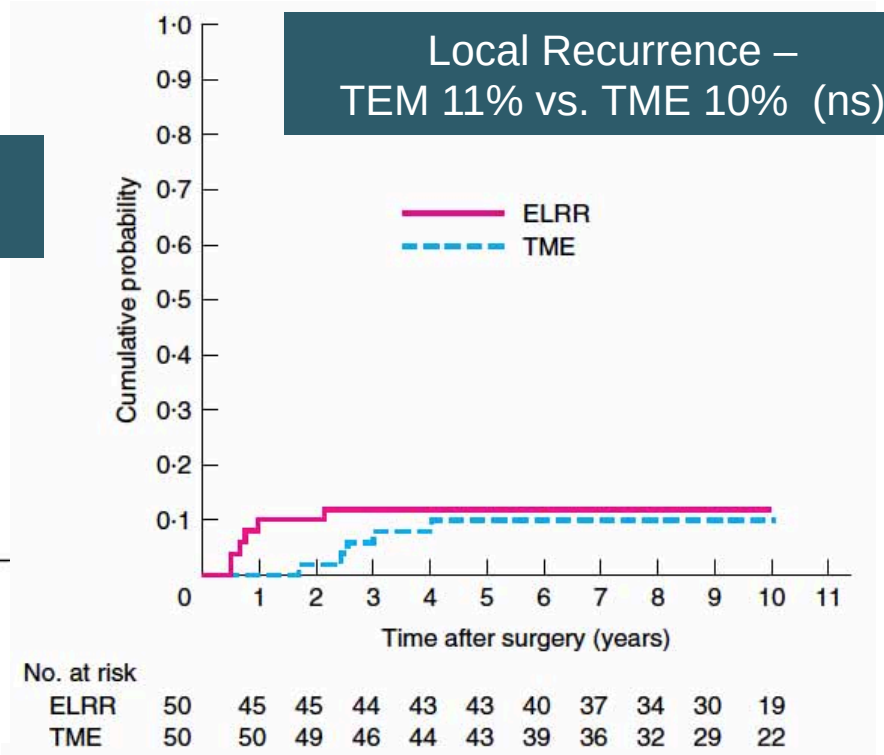
No statistically significant difference

TEM for T2 Cancer?

- Lezoche et al, Br J Surg 2012
  - April 1997 – April 2004, 2 Hospitals in Italy
  - Low rectal tumours limited to muscularis propria, without lymphadenopathy or metastatic disease
  - All received neoadjuvant long-course chemo (5-FU) and radiotherapy (four-field, 50.4Gy over 5 weeks)
  - Restaged post-chemoradiation
  - Randomized to TEM vs laparoscopic TME

TEM for T2 Rectal CA?

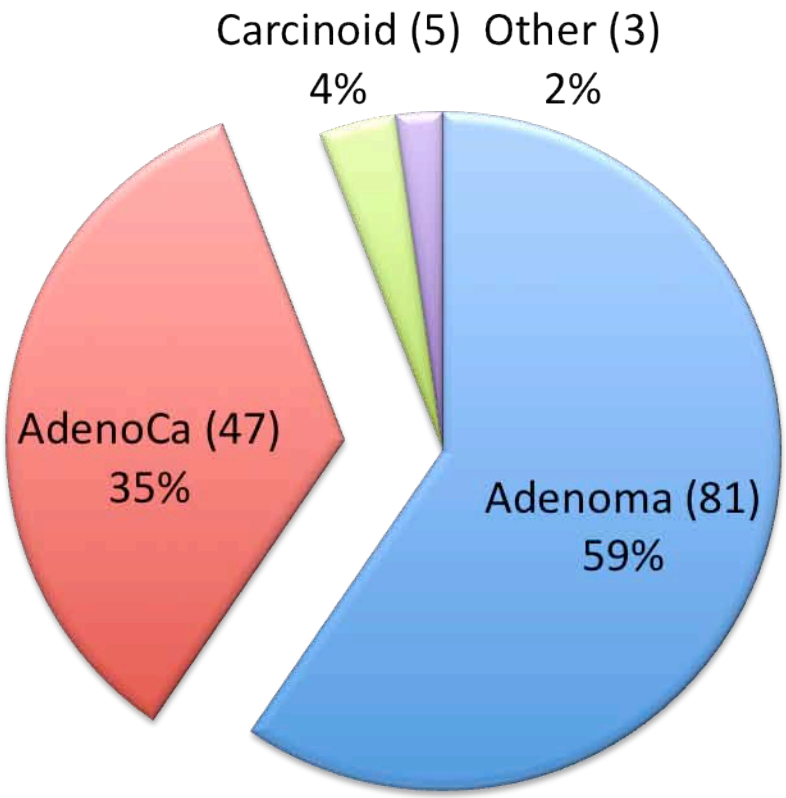




TEM at St. Paul's Hospital

- Jan 2007 – March 2011

Final Diagnosis
(136 Procedures)



TEM for CA at SPH

Age	73 years (42-95)
Gender M:F	29:18
Tumour size	3.4 cm (1-8)
Tumour height	7 cm (0-15)
OR time	88 mins (33-180)
Pathologic stage	n (%)
T1	21 (45)
T2	20 (43)
T3	6 (12)
T4	0 (0)
Hospital stay	1.3 days (0-5)
Median Followup	12 months (1-41)

N=47

Tumour Stage after TEM

Known AdenoCA (n=31)

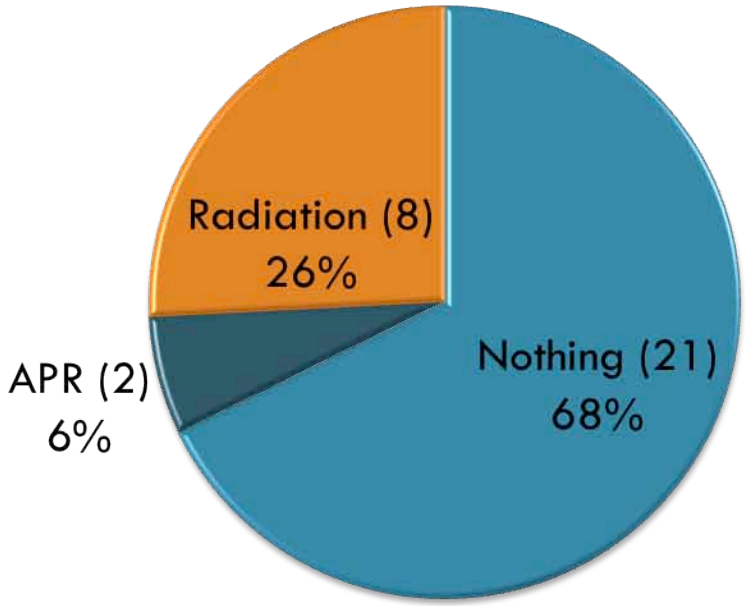
Stage I			**81%**
	T1Nx	12	39%
	T2Nx	13	42%
Stage II	T3Nx	5	**16%**
	T4Nx	0	
Stage III	T3N1	1	**3%**
Stage IV		0	

Preop Adenoma (n=16)

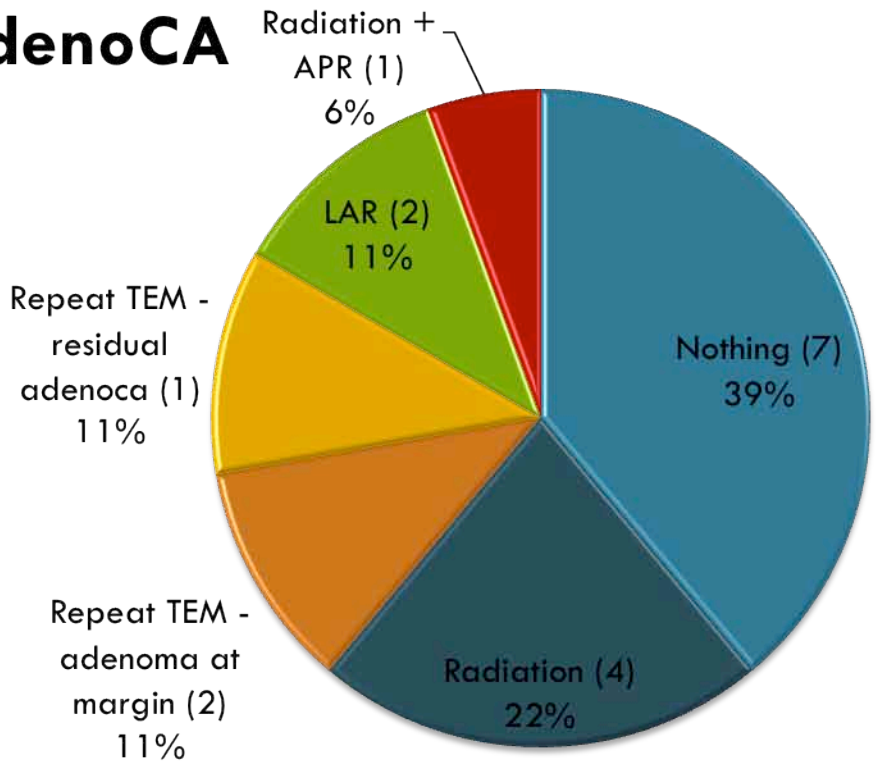
Stage I			**100%**
	T1Nx	9	56%
	T2Nx	7	44%
Stage II, III, IV		0	

Treatment after TEM

Preop AdenoCA



Postop AdenoCA



42/47 patients **did not** have immediate post-TEM major resection

TEM for Adenocarcinoma - Outcomes

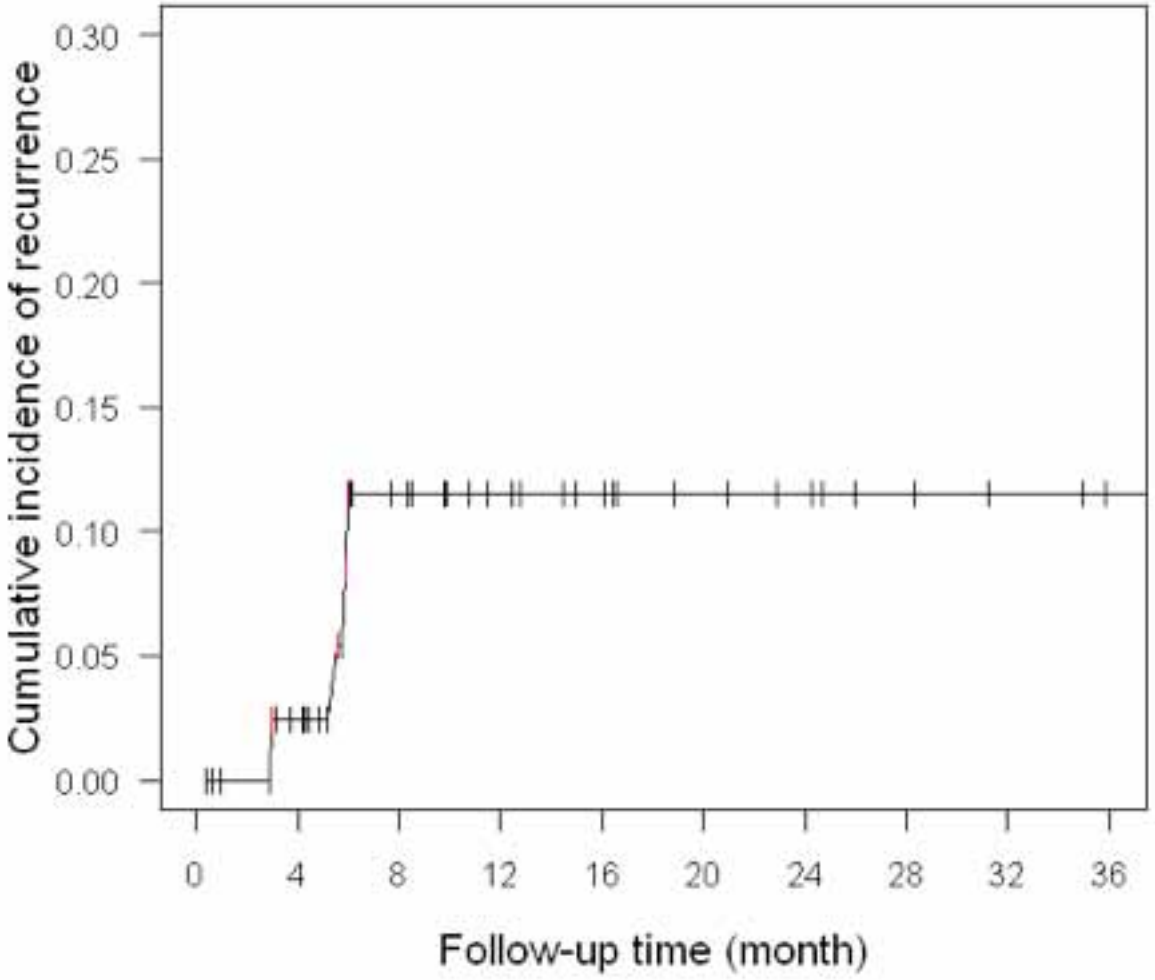
- Mortality
  - 3 in 12 months followup
    - 2 cancer-specific (T3N0, T3N1)
    - 1 unrelated (cerebral aneurysm)

- Recurrence
  - 42/47 patients **did not** have immediate post-TEM major resection

Adenocarcinoma Recurrence

- **4 local recurrences**
  - Mean 5 months post-TEM
  - Post-TEM pathology
    - T1 (n=2)
    - T2 (n=2, margin+ in 1)
  - No recurrence in patients with post-TEM adjuvant radiation
- **Mortality**
  - 3 in 12 months followup
    - 2 cancer-specific (T3N0, T3N1)
    - 1 unrelated (cerebral aneurysm)

Adenocarcinoma Recurrence

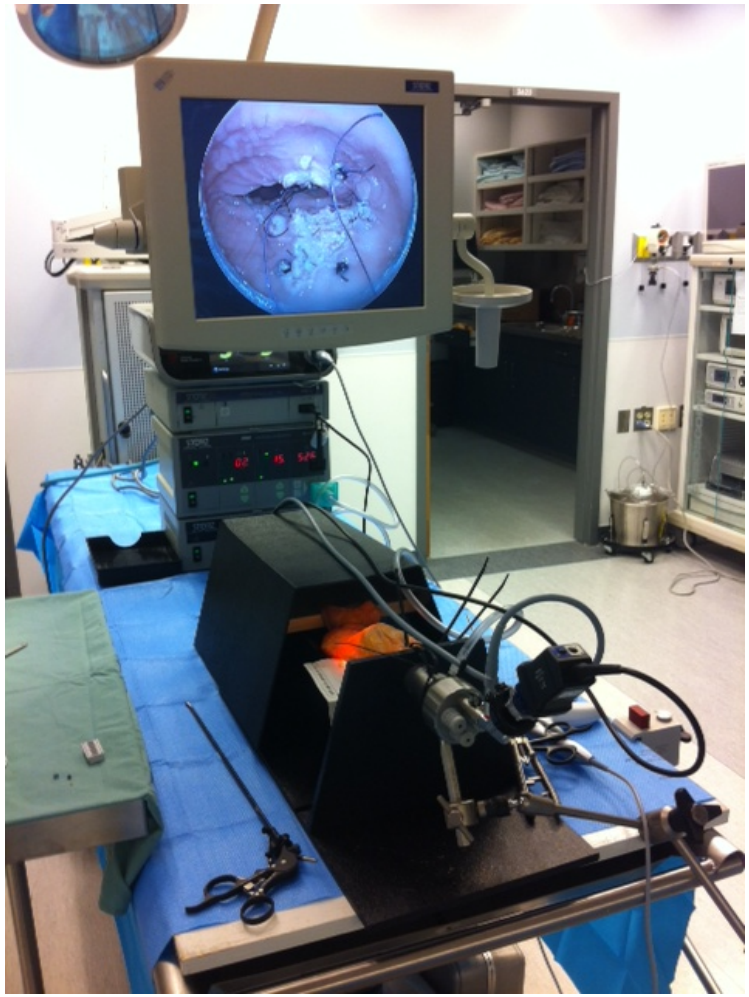


11.5% at 3 years

TEM Indications

- Adenomas
  - Large rectal adenoma not amendable to endoscopic removal
- T1 Cancer
  - In patients will to accept higher local recurrence
  - Radiotherapy recommended
- Other Cancers
  - T1, T2, and early T3 in patients unfit for radical resection

TEM Training Course



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