The 20th Annual Conference of the Egyptian Society of Colon Rectal Surgeons

Pelvic Exenteration

Initial Experience and Outcome

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Jordan Armed Forces

the KHMC has five hospitals with a capacity of more than 900 beds.

Al-Hussein hospital: established in 1973, one of the busiest hospitals in Jordan with an annual admission rate of 25,000 patients.

colorectal unit

- established September 2008.
- 1 consultant, 6 fellows, 5 surgical residents (rotating every 3 months), 2 nurses, 1 dietician.
- one colorectal clinic and 2 days theater/ week.

- on average 80 colorectal cancer surgeries/ year, third laparoscopy.
- ERAS implemented 2014.
- median hospital stay 4.4 days.

Disclosure

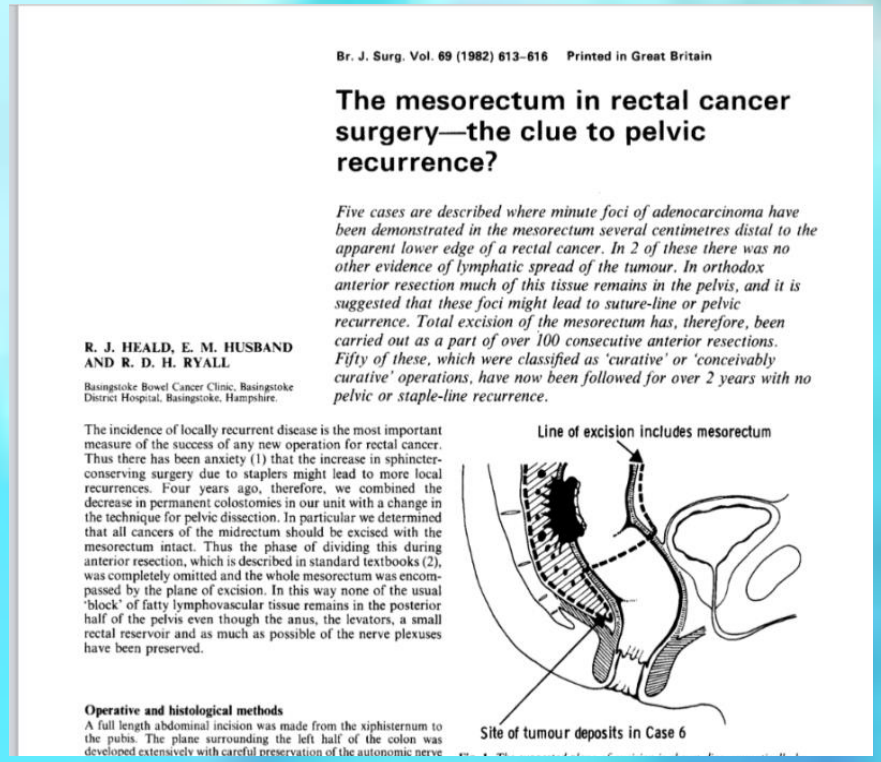
- I have no commercial relationship relevant to this presentation

outline

- TME concept.
- rectal cancer: recurrent and advanced
- pelvic exenteration: definition and types
- our experience

rectal cancer: TME concept

- in the 1980's, Professor Richard J. Heald from Basingstock facilitated the adoption of total mesorectal excision



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

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

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.

R. J. HEALD, E. M. HUSBAND AND R. D. H. RYALL

Basingstoke Bowel Cancer Clinic, Basingstoke District Hospital, Basingstoke, Hampshire.

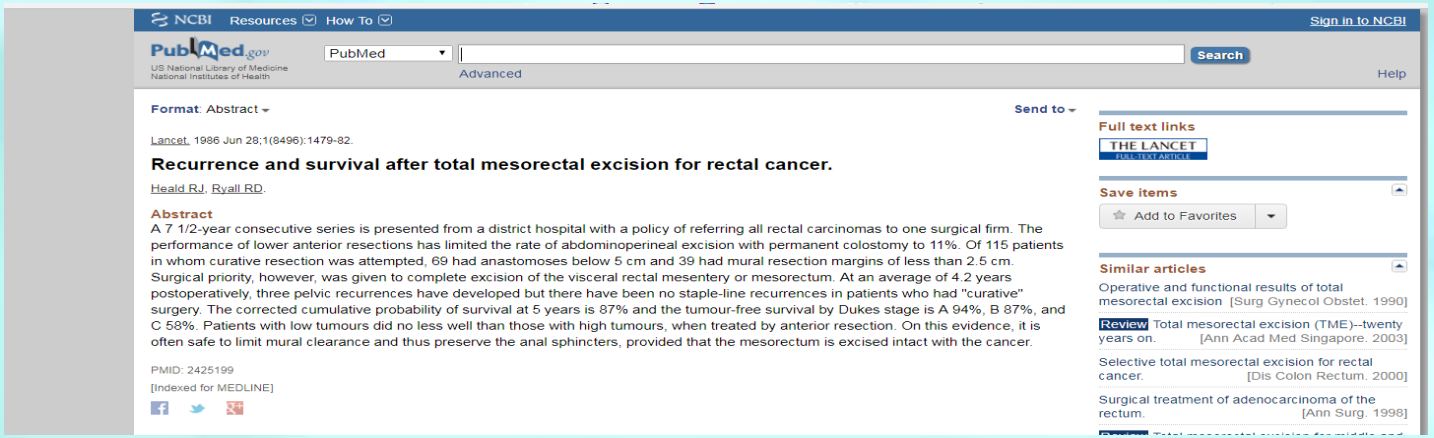
The incidence of locally recurrent disease is the most important measure of the success of any new operation for rectal cancer. Thus there has been anxiety (1) that the increase in sphincter-conserving surgery due to staplers might lead to more local recurrences. Four years ago, therefore, we combined the decrease in permanent colostomies in our unit with a change in the technique for pelvic dissection. In particular we determined that all cancers of the midrectum should be excised with the mesorectum intact. Thus the phase of dividing this during anterior resection, which is described in standard textbooks (2), was completely omitted and the whole mesorectum was encompassed by the plane of excision. In this way none of the usual 'block' of fatty lymphovascular tissue remains in the posterior half of the pelvis even though the anus, the levators, a small rectal reservoir and as much as possible of the nerve plexuses have been preserved.

Line of excision includes mesorectum

Site of tumour deposits in Case 6

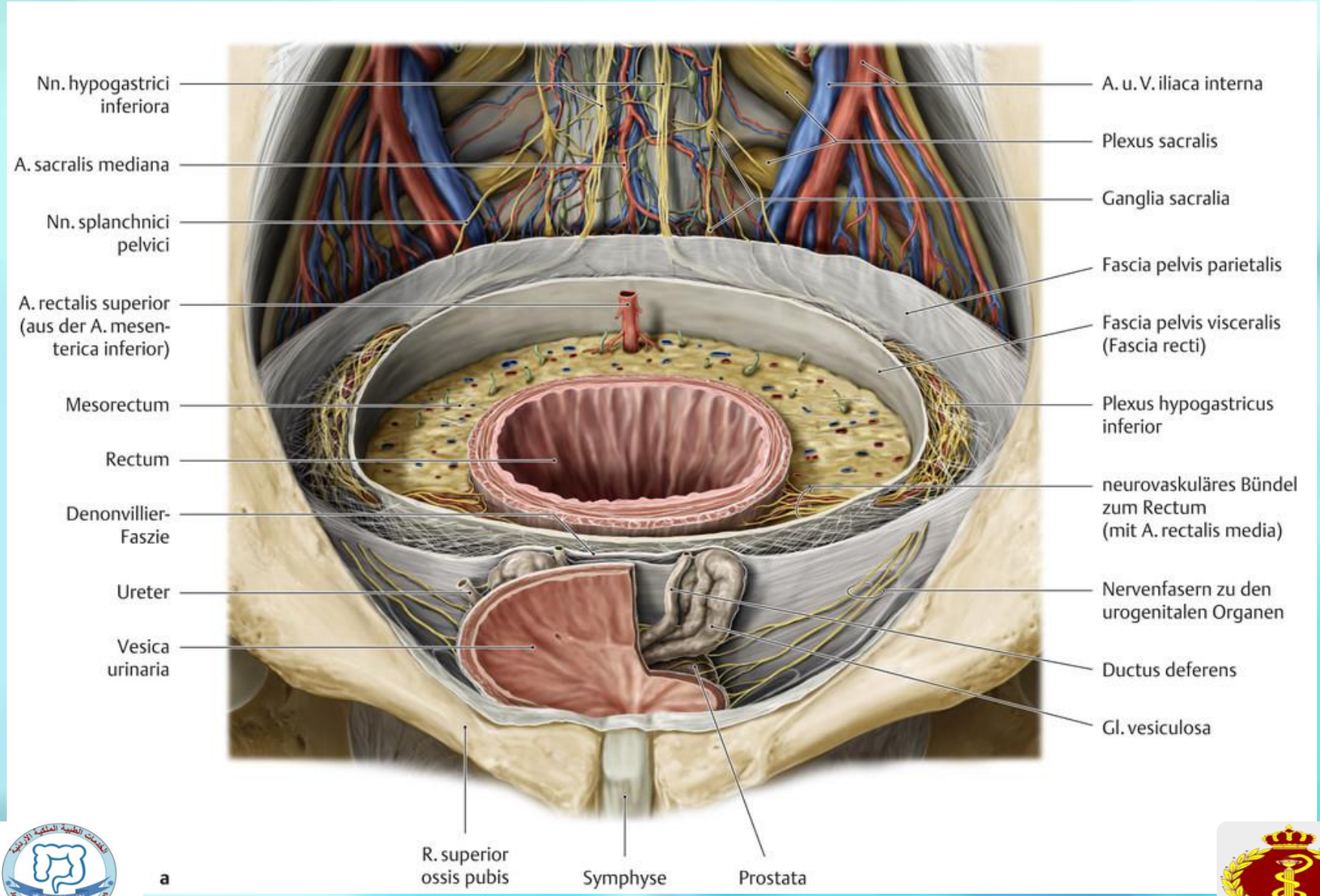
Operative and histological methods

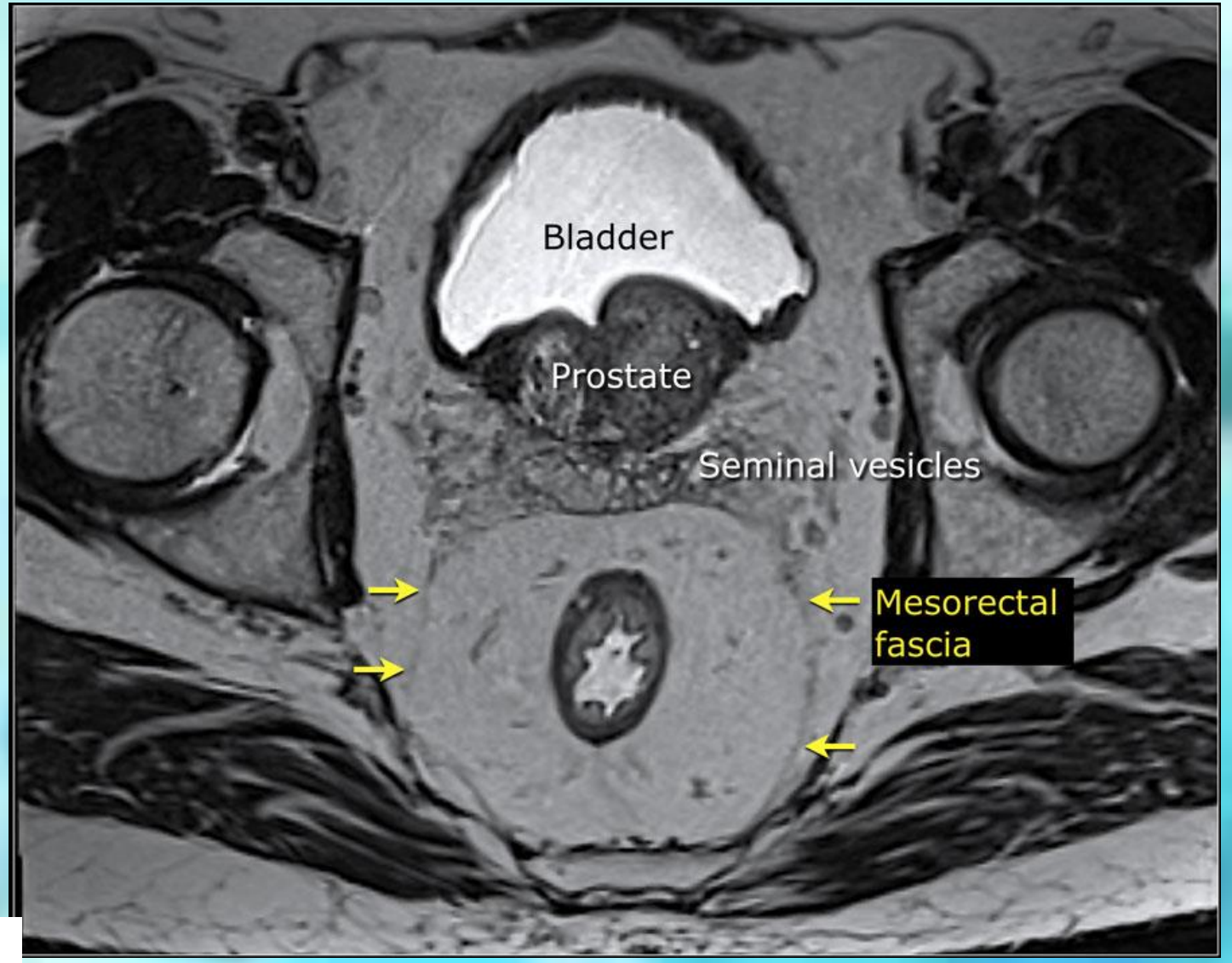
A full length abdominal incision was made from the xiphisternum to the pubis. The plane surrounding the left half of the colon was developed extensively with careful preservation of the autonomic nerve



- he described the “Holy Plane” of TME for mid and lower-third rectal tumors undergoing restorative resection, which led to only 3.7% local recurrence
- this is in contrast to local recurrence rates of 14% to 40% in series published before the use of TME dissection

Heald R J, Ryall R DH. Lancet. 1986


Nn. hypogastrici inferiora
A. sacralis mediana
Nn. splanchnici pelvici
A. rectalis superior (aus der A. mesenterica inferior)
Mesorectum
Rectum
Denonvillier-Faszie
Ureter
Vesica urinaria
A. u. V. iliaca interna
Plexus sacralis
Ganglia sacralia
Fascia pelvis parietalis
Fascia pelvis visceralis (Fascia recti)
Plexus hypogastricus inferior
neurovaskuläres Bündel zum Rectum (mit A. rectalis media)
Nervenfasern zu den urogenitalen Organen
Ductus deferens
Gl. vesiculosa
R. superior ossis pubis
Symphyse
Prostata
a

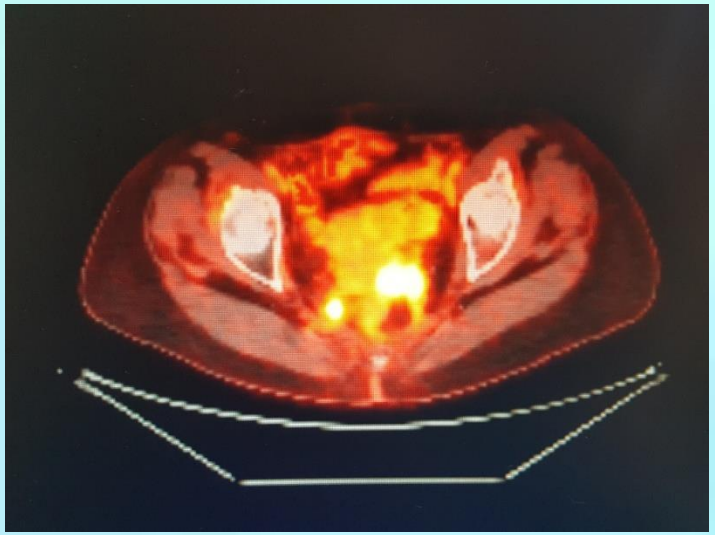

Bladder
Prostate
Seminal vesicles
Mesorectal fascia

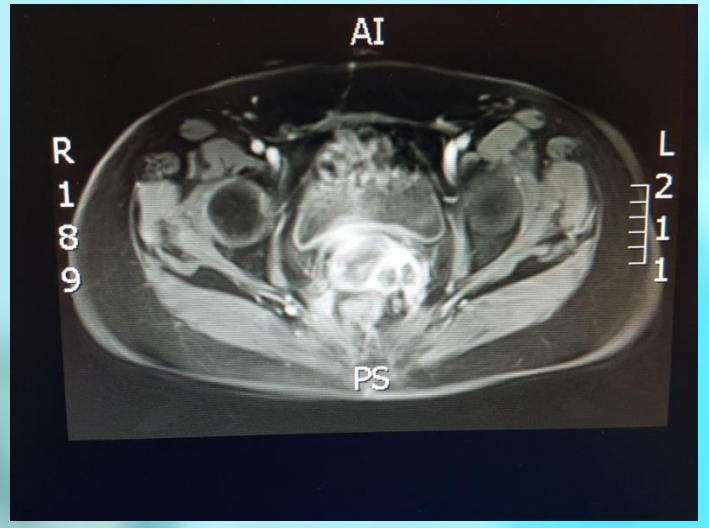
- despite technical improvements including total TME and the addition of neoadjuvant therapies, locoregional recurrence has been found to have an incidence of up 10%

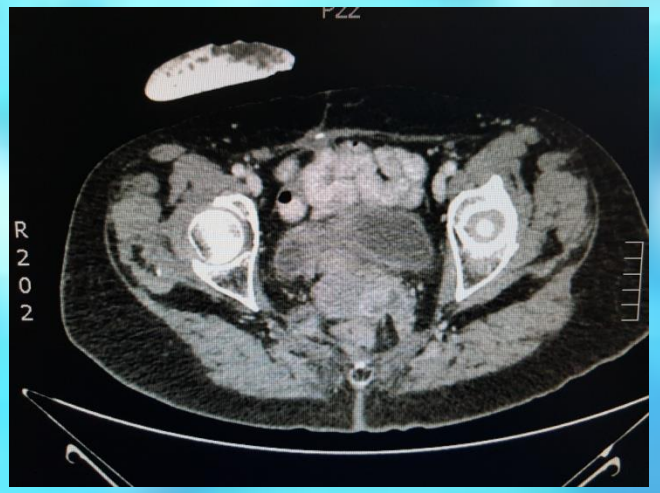
Bakx R, et al. World J Gastroenterol. 2008

rectal cancer: recurrent and advanced

recurrent







- recurrent rectal cancer is difficult to manage because of the loss of surgical planes (TME plane) and invasion of pelvic structures.

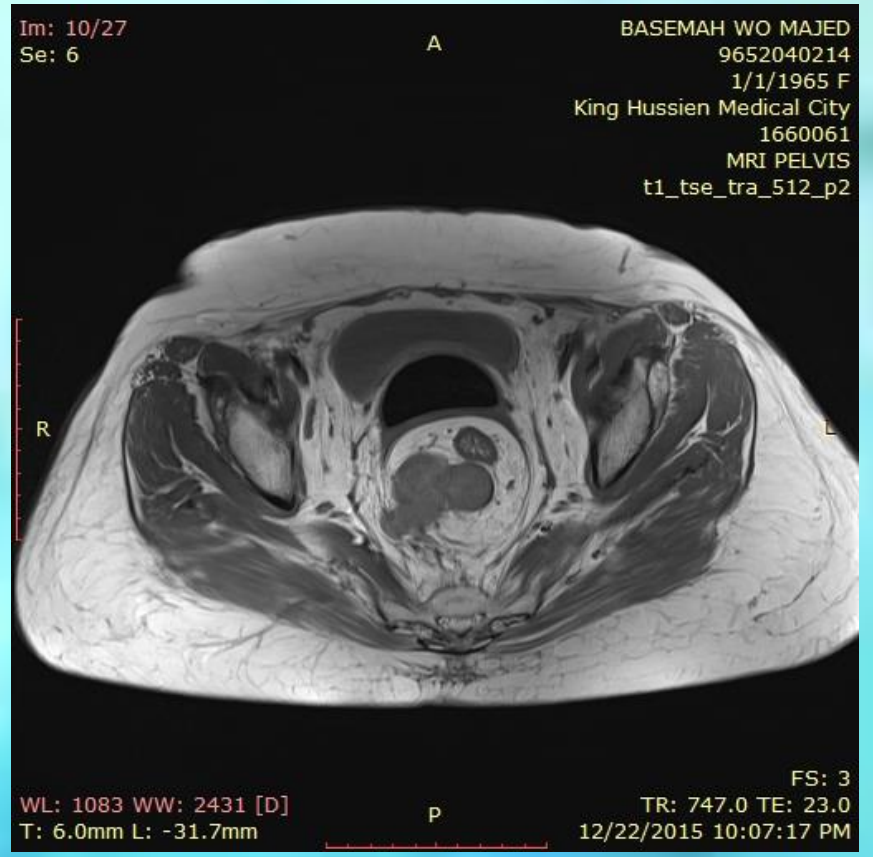
recurrent

- up to 10% of patients who undergo “curative” resection for rectal cancer develop recurrence.
- for recurrent rectal cancer and after R0 surgical resection the 5-year survival rate reaches 46%
- in the absence of surgical intervention, the mean survival is 7 months and the 5-year survival less than 5%.
- with radio-chemotherapy, median survival time is 14 months and time of local control is 5 months. Five-year survival rate in these patients is usually <5%

Solum AM, et al. J Surg Oncol. 2004, Heriot AG et al. Dis Colon Rectum2008,
Wong CS et al. Int J Radiat Oncol Bio Phys 1998

locally advanced

- locally advanced rectal cancer that adheres to or invades adjacent organs accounts for approximately 10-25% of all primary rectal cancers

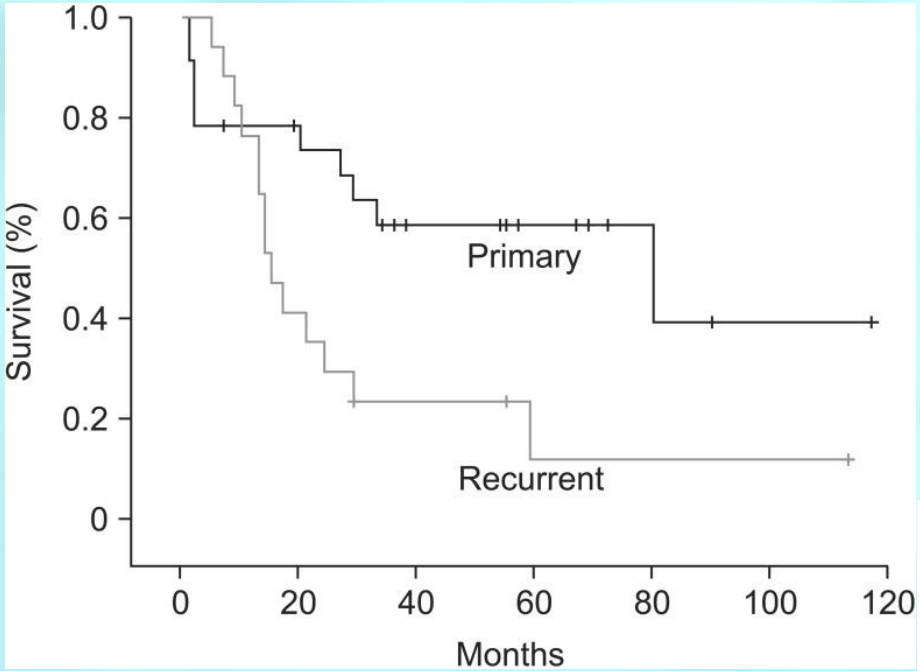


Yang et al. Dis Colon Rectum 2013

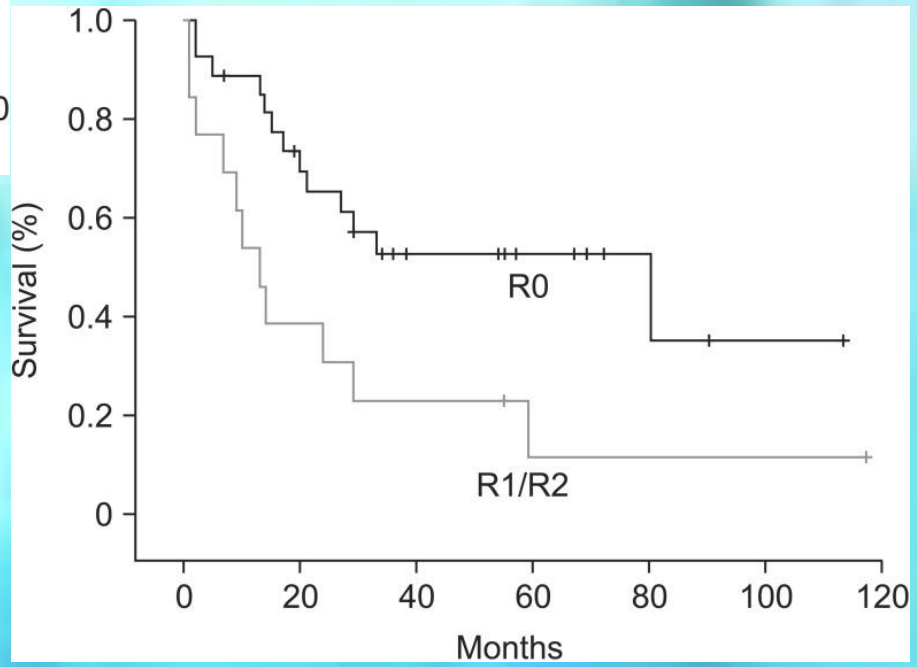
Pawlik Tmet al. Ann Surg Oncol 2006

- after R0 resection the 3-year survival of 56.4% for locally advanced primary rectal cancer.

Kellly ME, et al. AnnSurg. 2017

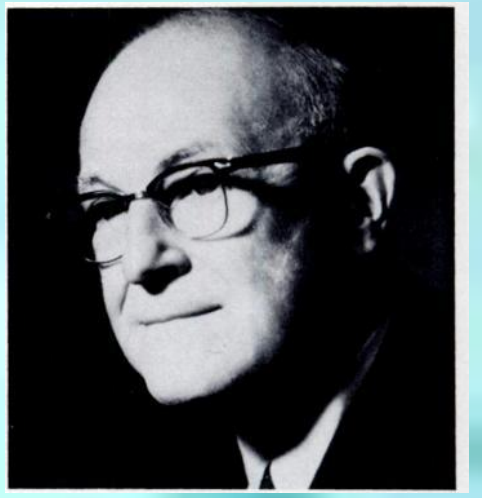


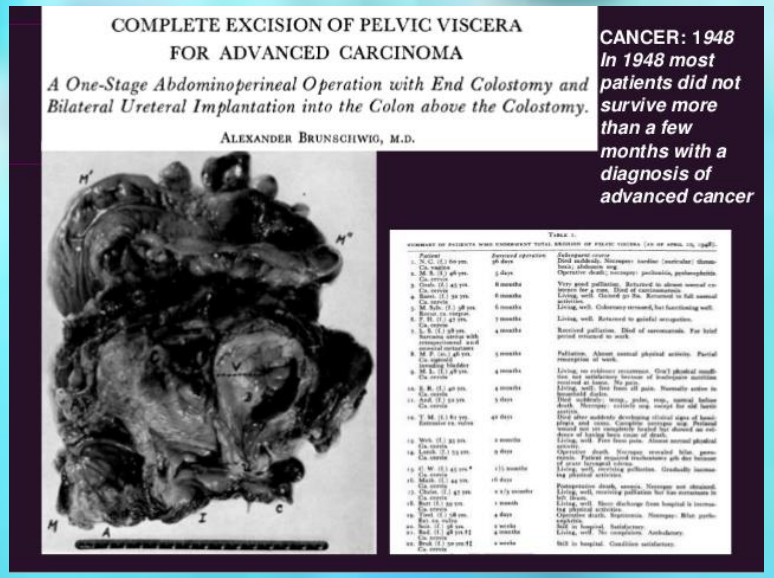
Hwa Yeon Yang, et al. Ann Surg Treat Res. 2015



pelvic exenteration

- first described by Alexander Brunschwig in 1948 as a palliative procedure for advanced cervical cancer.





Brunschwig A. Cancer. 1948.

- pelvic exenteration was described as "the most radical surgical attack so far described for pelvic cancer" and at the time had a post operative mortality rate of 23%.

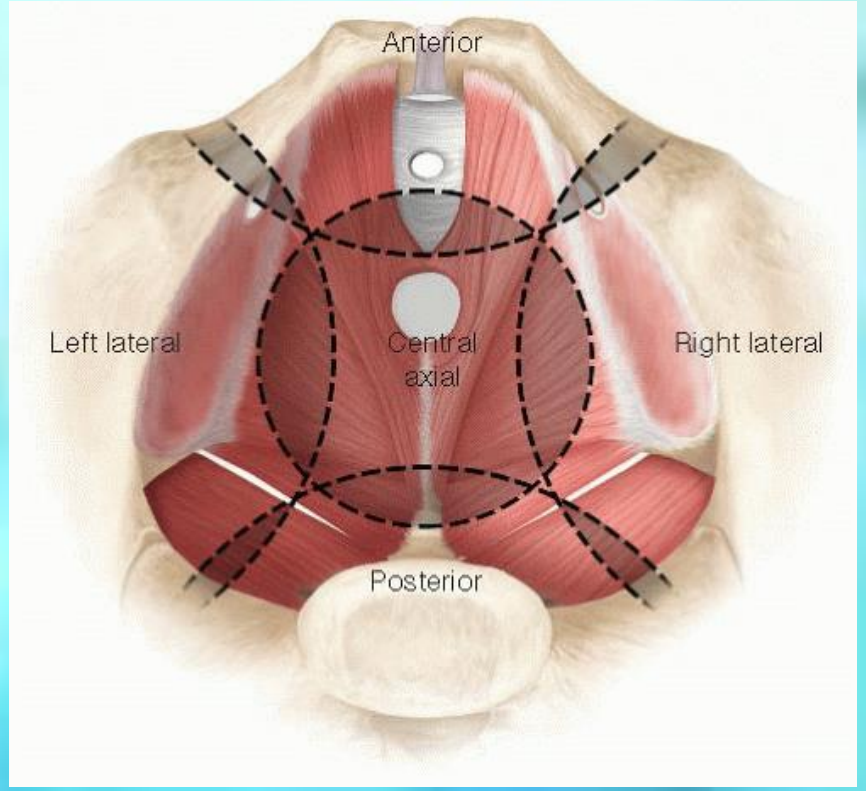
Brunschwig A. Cancer. 1948.

- currently, operative mortality rates are 3-5%, and major perioperative complication rate is 30-44%

Ramamurthy R, et al. Indian J Surg Oncol. 2012 .

pelvic exenteration

- pelvic exenteration is an umbrella term that could be used to refer to:
  - anterior pelvic exenteration
  - posterior pelvic exenteration with/ without sacrectomy
    - supra/ infralevator
  - total pelvic exenteration with/ without sacrectomy



- once the exenteration was completed, a phase of reconstruction follows

approach

- thorough clinical evaluation that is guided by information provided by MRI and PET-CT scans
- to balance the pros and cons of various parameters during evaluation
- to determine whether the procedure performed would lead to better quality-of-life outcomes

multidisciplinary team is required to assess:

- clinical symptoms
- the extent of local and distant disease
- fitness for operation
- adequate cognitive awareness and understanding of the postoperative rehabilitative process.

clinical symptoms

- “history of pain” and “pelvic bone pain” are both ranked as important symptoms by an expert panel in selecting patients suitable for PE.
- patients with intense pain often raise concerns of advanced pelvic disease with malignant infiltration of nerve roots and bone.

Min-Hoe Chew, et al. Dis Colon Rectum 2013

- Moore et al. found that central and anterior recurrences were more likely to have R0 resection

Moore HG, et al. Dis Colon Rectum. 2004

- various studies suggest that lateral pelvic sidewall recurrence is a very poor prognostic variable, with the inability to achieve R0 resection as one of the main deterring reasons

Mirnezami AH et al. Dis Colon Rectum. 2010, Suzuki K, et al. Dis Colon Rectum.1996, Wanebo HJ, et al. Dis Colon Rectum. 1999, Lopez MJ, et al. Ann Surg Oncol. 2004

contraindication

Relative contraindications	*Absolute contraindications*
Distant metastases	Encasement of external iliac vessels
Primary disease stage IV	Extension of tumor through the sciatic notch
Extensive pelvic sidewall involvement	Presence of lower limb edema from lymphatic or venous obstruction
Predicted R1 or R2 resection	Poor performance status
Sacral invasion above S2-S3	

Mirnezami AH et al. Dis Colon Rectum. 2010

our experience
January 2016- June 2018

baseline characteristics (13 pts, 14 operations)

Characteristic	Value
Age (yr), median (range)	59 (37-77)
Female: Male	12: 1
Primary site Colorectal Gynecological	 12 2
Tumor classification Primary advanced Recurrent	 10 4 (2 GI, 2 Gyne)
Type of operation posterior PE posterior PE with sacrectomy total PE	 10 2 2
Preoperative CRT	6
Radicality R0 R1 Not stated	 11 1 2
Mean operative time, hours	6.6 (5.1-8.1)

- neoadjuvant radiochemo-therapy not used in 8 cases:
- recurrent gynecological - 2
- recto-sigmoid - 3
- recurrent GI - 2
- not tolerated -1

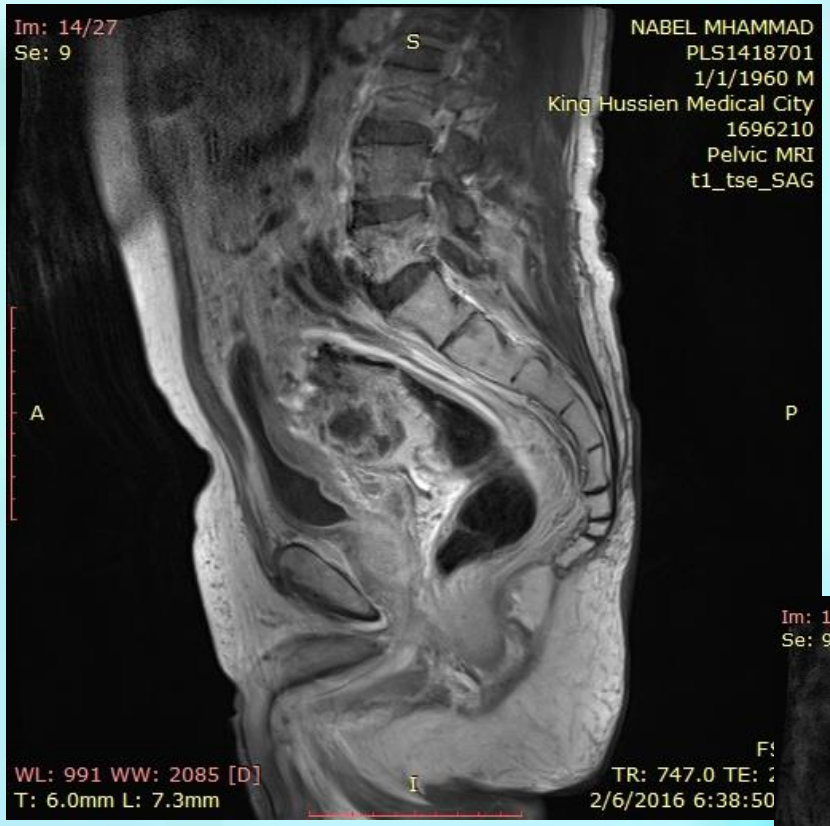
pathological outcome

variable	
Tumor type	
adenocarcinoma	12
cervical squamous cell	1
uterine carcinosarcoma	1
Tumor differentiation	
well	0
moderate	7
poor	5
not mentioned	2
Lymphovascular invasion	
yes	5
no	6
not mentioned	3
Perineural invasion	
yes	3
no	5
not mentioned	6

- post operative complications 57%
  - infected wound 2
  - entero-cutaneous fistula 1
  - high output stoma with dehydration with readmission 1
  - vaginal stump infection 1
  - urinary leak 1
  - UTI 1
  - persistent perineal sinus 1
- 30 day mortality 15.4% (2 patients, MI, PE)
- 30 month disease free survival 46% (6 pts)

Nabeel

- 69 years old male
- mid rectal tumour, cT3N2M0
- completed neoadjuvant October 2015
- refused surgery, missed golden period
- operated June 2016
- total pelvic exenteration with end colostomy and ileal conduit
- R0 resection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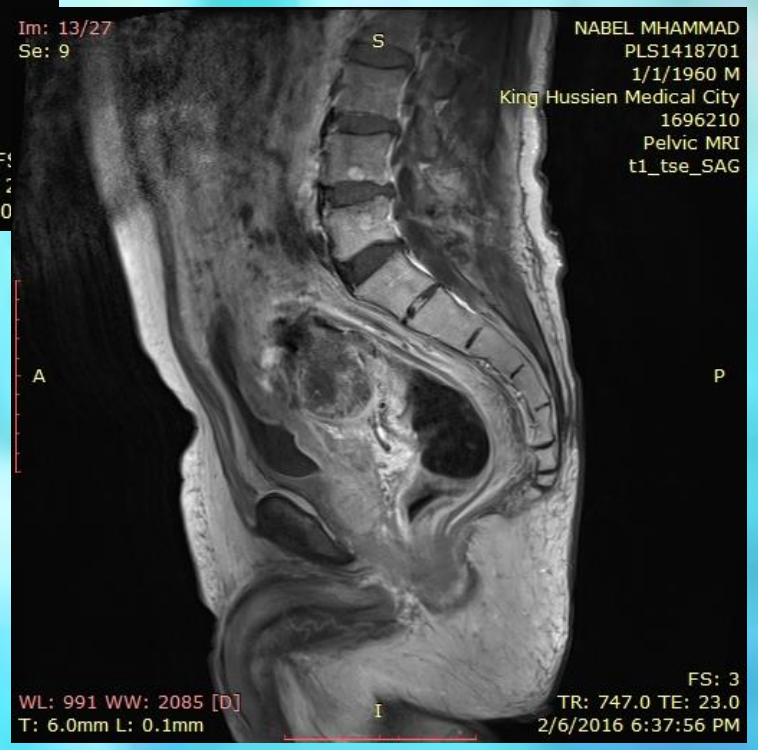
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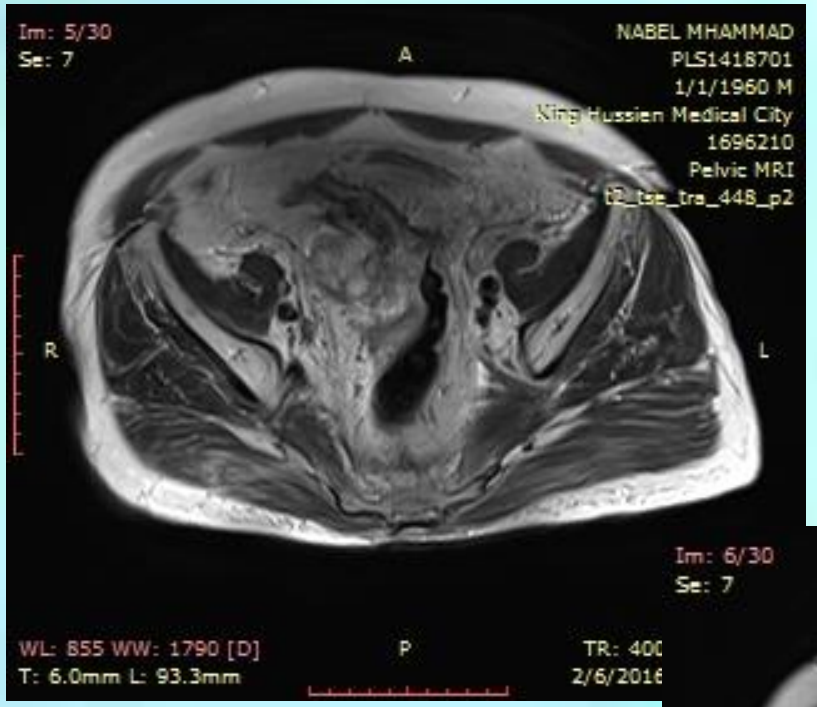
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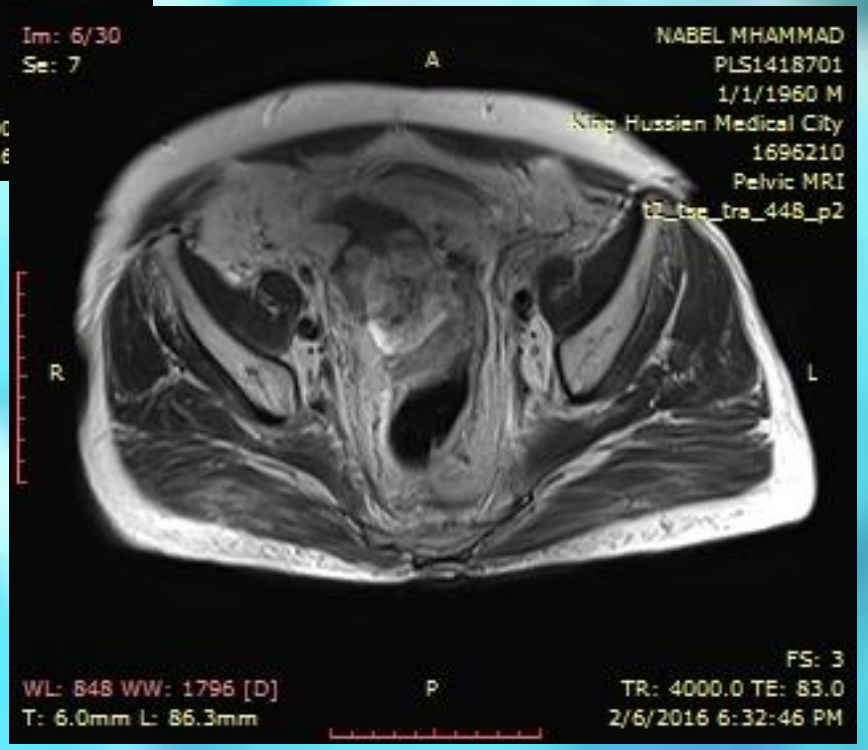
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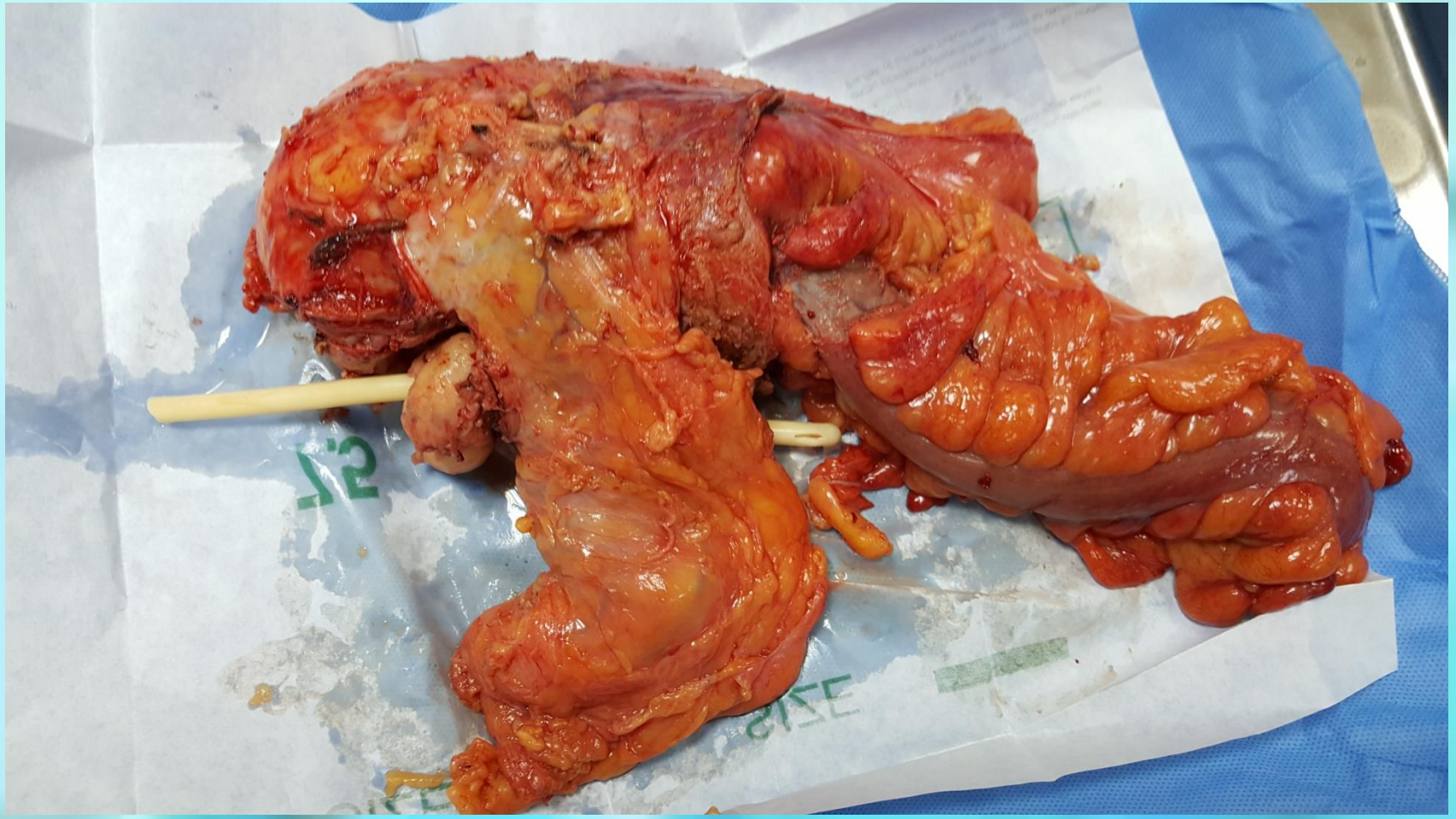


Royal Medical Services - KHMC
Princess Iman Research And Laboratory Sciences Center
HISTOPATHOLOGY

الرقم الطبي:	418701	جهة الانتفاع :	محول من جهة
المريض:	نبيل محمد علي ابوسيفين	الجنس:	ذكر
الوطني:		تاريخ الميلاد :	01-01-1948 العمر 69 سنة
شفى:		الطبيب المشرف:	د.حياة الخصاونة / د خالد عريقات
القسم:		تاريخ الطلب:	23-06-2016

Pathology No: S16/7068

Specimen: Rectosigmoid colon

Clinical Information:

Rectal tumor invading the bladder

Gross Description :

This specimen composed of sigmoid measuring 12cm and rectum measuring 12cm .
The outer surface of the specimen shows adherent part of urinary bladder measuring 7x8cm, , prostate measuring 4x4x3cm and seminal vesicles measuring 3x2cm.
On opening, there is a huge mass measuring 7cm and located 5cm away from nearest distal margin with mucus at surface.
The tumor grossly is located near to the circumferential margin at the lateral and posterior surface.
(22BK, A+B: margins ,C-E: Tumor ,F-G: Tumor+circumferential margin,H-I: Tumor + seminal vesicle, J,K,L,O: tumor + urinary bladder ,M+N: Prostate ,P-V-: L.N)

Microscopic Description:

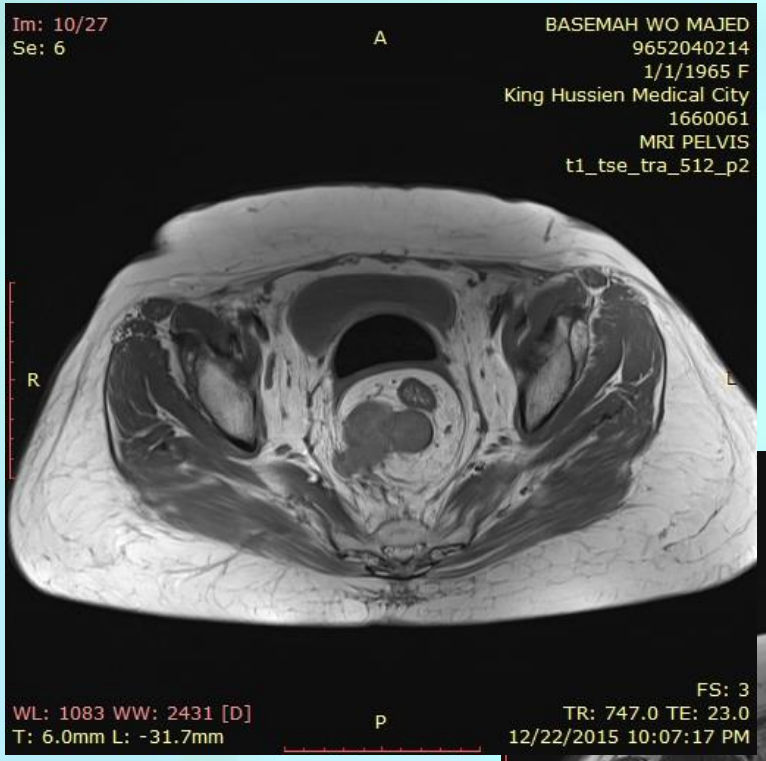
- Histologic type : Mucinous adenocarcinoma
- Microscopic tumor extension
The tumor is adherent to the wall of urinary bladder with focal area of microscopic invasion.
Also the tumor is adherent to the seminal vesicle.
- Margins : -Both proximal and distal margins are free of tumor.
-The circumferential margin of lateral and posterior surface located 0.2cm from the tumor
- Lymphovascular space invasion: Absent
- Perineural invasion : Not identified
- Tumor deposits : Absent
- Regional lymph nodes: (17)examined
(0) involved
- Others : The prostate is unremarkable

Final Diagnosis:

Rectosigmoid colon:
- Invasive mucinous adenocarcinoma invading the urinary bladder wall and located 0.2cm away from the circumferential margin.
- AJCC (7th edition) : T4bNO

Basema

- 56 years old female patient
- post neoadjuvant radio-chemotherapy
- posterior pelvic exenteration with sacrectomy.
- R0 resection
- missed adjuvant chemotherapy because of wound infection
- pelvic recurrence after > 1 year with lung metastasis and primary left breast cancer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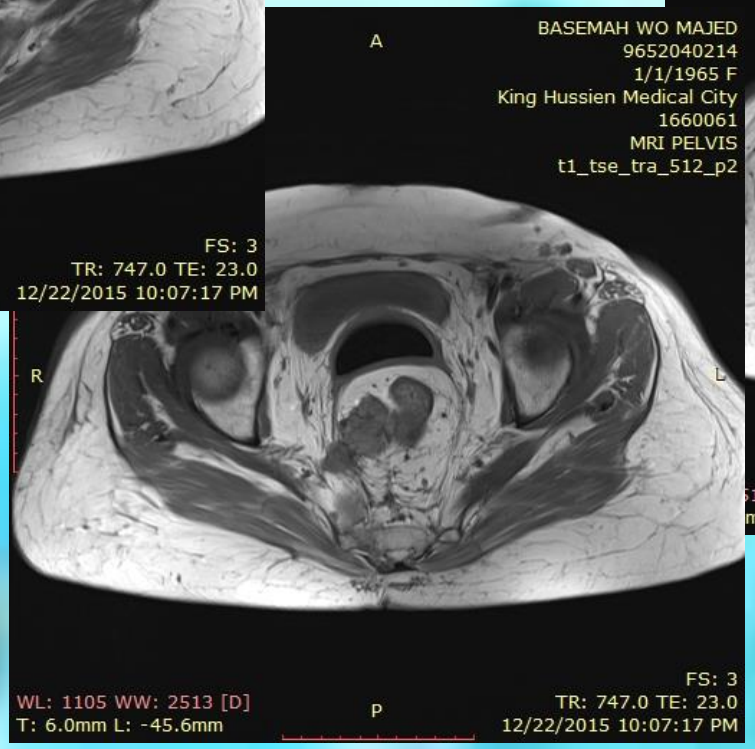
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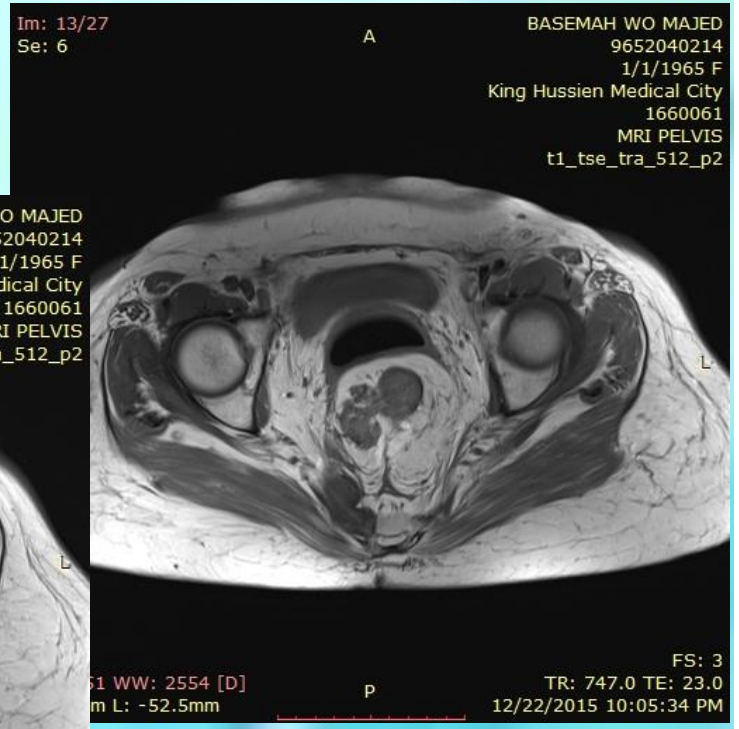
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Gross Description :

Microscopic Description:

- Histologic type: Invasive mucinous adenocarcinoma
- Histologic grade: Moderately differentiated
- Microscopic tumor extension: The tumor infiltrates through the full thickness of rectal wall and directly invades the vaginal wall and presacral soft tissue.
- Margins: Proximal, distal and circumferential margins are negative for tumor. There was no evidence of sacral bone infiltration.
- Treatment effect: Grade 2.
- Lymph vascular invasion: Not identified
- Perineural invasion: Not identified
- Tumor deposits: Multiple perirectal tumor deposits identified
- Additional pathologic findings:
  - The cervix shows chronic cervicitis
  - The endometrium shows weakly proliferative phase
  - The myometrium shows adenomyosis
  - Both fallopian tubes show active chronic salpingitis
  - Both ovaries are unremarkable.
- Regional lymph nodes: 1 out of 5 identified lymph nodes contains metastatic carcinoma however some tumor nodules in the fat could represent additional replaced nodes.
- Tumor border configuration: Pushing (expansile)
- AJCC classification: pT4b and at least N1.

Final Diagnosis:

Rectal tumor, AP resection + TAH and BSO + partial sacrectomy:
- Residual invasive moderately differentiated rectal mucinous adenocarcinoma invading the full thickness of rectal wall into the vaginal wall with nodal metastasis and multiple pericolonic tumor deposits.
- AJCC classification (7th ed) TNM stage: pT4b and at least N1.

	Systematic review by Yang et al.	Our data
Number of patients	1049 (23 studies)	13
median age (range, years)	59 (52-64)	59 (37-77)
R0 resection margin (range %)	73 (42-100)	78.6%
complication rate (range, %)	57 (37-100)	57%
30 day mortality (range %)	2.2 (0-25)	15% (2 pts)
local recurrence (range %)	22 (4.8-61)	15% (2 pts)
5-year survival (range %)	52 (31-77)	---

Yang et al. Dis Colon Rectum 2013

current limitations

- poor quality MRI
- general radiologist with interest in MRI
- all decisions made by the colorectal team
- absence of multidisciplinary team
  - usually an individual consultation sent to urologist, plastic surgeon, orthopedic, oncologist etc.
- no dedicated nurse or physiotherapist

- our cases are mainly axial or central recurrences/ advance primaries, which are easier to deal with and has better chances of R0 resection than lateral pelvic side wall involvement

areas of improvement

- improve MRI quality
- dedicated pelvic MRI radiologist with standardized reporting
- dedicated multidisciplinary team that includes all the specialists involved in the management of these complex cases
- better selection criteria
- improved and standardized pathology reporting

conclusion

- our data is comparable to literature
- mortality is high, necessitates better patients selection
- longer follow up time will clarify local recurrence and 5-year survival

conclusion

- pelvic exenteration should stay an option for patients with locally advanced or recurrent rectal or pelvic cancers to achieve an acceptable 5-year disease free survival with adequate quality of life

Thank you