Management of Rectourethral Fistula (RUF)

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Summary of Iatrogenic RUF

- **Non-radiation RUF**
  - Numerous surgical approaches to excision + repair
  - Presence of healthy tissue…results in reasonable success

- **Radiation RUF**
  - Minimal literature on this entity and its management
  - Local repairs will fail
  - Ultimately need anterior exenteration, ileal loop diversion, colostomy for durable cure
etiology

- Congenital
- Iatrogenic** (iRUF)
- Traumatic
  - Missile, bullet, crush injury, direct blunt trauma
- Neoplastic
- Inflammatory
  - Crohn’s, pseudomonas prostatitis, malakoplakia

iatrogenic RUF (iRUF)

- Uncommon complication of urologic procedures
  - TURP
  - Cryotherapy
    - 0-5% Cox et al 1995, Long et al 1998 JU159
  - Radical prostatectomy
    - 0.2-2.9% Scardino 1997
  - Perineal prostatectomy
    - 1.4% (thomas et al BJU 1997)
  - Simple prostatectomy
RUF after Radiation

- Brachytherapy 0.4 - 3.3%
  - Brachytherapy vs BT + EBRT vs Salvage BT
  - Anterior rectal biopsy in early post-tx course
  - Neoadjuvant hormone ablation

- EBRT 0-0.6%

presentation

- Usually NOT subtle!
  - Fecaluria - pneumaturia
  - Urorrhea

- 12% iRUF present w/ pelvic/abdominal sepsis... urgent exploration/fecal diversion

- Often palpable on DRE
Presentation post-radiation

- May initially present with severe rectal pain from mucosal ulceration
- Dramatically resolves when rectal wall breaks open and fistulizes

Diagnosis

- Radiologic options:
  - CT
  - Barium enema
  - VCUG
  - Methylene blue in bladder
- Highest yield with cystoscopy:
  - Cystourethrogram
  - Retrograde pyelogram
  - Biopsy
Sigmoidoscopy is also vital...

- Localize level of rectal entry
- Identify sphincter integrity
- Confirm absence of rectal pathology
- Define extent of radiation injury

Treatment

Conservative**
- Urinary Drainage
  - SPT
  - IDC
- Fecal Diversion
  - Colostomy

**opportunity for spontaneous closure

Surgical Repair
- Single vs multi-stage

CI to 1-stage:
- radiation
- uncontrolled local/systemic infx
- Immunocompromised state
- extensive rectal injury leading to fistula formation
- Anterior Exenteration w/ Urinary Diversion
Need for fecal diversion?

- Controversial
  - ??Diverting colostomy for all vs spontaneous closure w/ simple urinary diversion??

- Probable indications (Hanus, 2002)
  - Symptoms despite abx + urinary diversion
  - Persistent fecaluria despite TPN/ low residue diet in presence of sepsis
  - **Radiation induced fistulas**

Surgical Principles of Local Repairs

- Proper positioning/incision
- Excision of fistula tract
- Non-overlapping suture lines…no tension
- Separation of urethral/rectal suture line by interposition of pedicle flap
  - Gracilis muscle flap
  - Dartos pedicle flap
  - Rectal mucosal advancement flaps
- Effective urinary/fecal diversion
Surgical repairs

- Numerous procedures described....
  - reflects uncertainty in approach

Surgical approaches

- Posterior vs anterior
- Transphincteric vs non transphincteric
- Midline or sagittal
- Open or endoscopic
Types of repairs

A. Trans-abdominal approach
B. Kraske (posterior sagittal)
C. York mason (post, transrectal, transphincteric)
D. Trans-anal
E. Perineal (anterior)

- Anterior transanorectal
Iatrogenic RUF

- Nyam, Pemberton (Mayo Clinic Rochester) Dis Colon Rectum ‘99
  - Reviewed 16 RUF (‘81-'95)
  - 15 CaP, 1 bladder TCC
    - 7 RRP
    - 2 salvage RRP
    - 2 BT
    - 3 BT + EBR
    - Rad. Cystectomy, continent diversion… dilation of stricture

Of 16 RUF from various iatrogenic etiologies:

- 7 colostomy as initial mx…all req’d surgery
- 13 underwent surgical excision
  - 9 were “cured”
  - 3 gracilis flaps…all “cured”
  - 4 failures…permanent fecal diversion w/ “good palliation of sx’s”
  - No anterior extenteration
- 3 conservatively tx w/ abx…unknown outcome
Conclusions from this series:

- Tx w/ fecal diversion only…poor results
- Local repairs…70% success
- Interposition of gracilis flaps…100% success

Case presentation

- 77 male intermediate risk CaP
- BT 2002
- Rectal bleeding 2004
- Colonoscopy rectal proctitis
- March 2005 rectal ulcer 15mm
- June '05, dysuria, pneumaturia, frequency x10
Pt is now admitted under Gen Surg w/ fevers to 39C, fecaluria, pneumaturia
DRE: fistula easily admits finger
Cysto: large fistula prostate, mild radiation cystitis

How would you manage this pt?

- Fecal diversion?
- Urinary drainage?
- Urinary diversion?
- Local repair and excision of fistula?
Mx of RUF post-BT

- Few publications
- BJU Aug 2004, *Devastating Complications after Brachytherapy in tx of CaP*
- Retrospective chart review
- 2000-'03, 11pts w/ RUF post BT

Mx of RUF post brachytherapy

- All pts initially tx w/ diverting colostomy
- 4 had simultaneous SPT diversion

2 management arms:
1. Severe radiation damage + severe symptoms w/ LARGE fistula (7)
2. Minor radiation damage + CONTINENT (4)
"Severe radiation damage"

7 Patients

Large fistula
Extensive damage

6
Cystoprostatectomy
Fistula closure (omentumal wrap)

No fistula recurrence
Adequate function of catheterizable/appliance wearing systems

1
Prostatectomy, BN closure
Fistula closure (omentral flap)

Fistula recurrence
Urosepsis

Deceased

"minimal radiation damage"

4 Patients

Minor radiation damage
Continent

3
York-Mason procedure
Fistula closure (gracilis flap)

2
Urethral repair
(dartos flap)

CA-prostate

Continent

Neuroendocrine tumour (deceased)

1
Prostate leiomyosarcoma
Bladder neck closure
SP tube

1
No treatment

Voids per urethra and rectum

(Deceased)
Summary

- All received colostomy as initial tx...unsuccessful
- Pts w/ MAJOR radiation damage +LARGE fistula
  - Anterior exenteration, fistula closure, urinary diversion...success 9/11 cases
- Pts w/ MINOR radiation damage
  - York Mason procedure +/- Gracilis muscle flap +/-dartos flaps
  - All continent following surgery

Urinary Fistulas following external radiation or permanent brachytherapy for CaP

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- 51pts '72-02, h/o radiation treatment w/ subsequent fistula formation
- EBRT or BT or combined
- Excluded previous RRP, diverticulitis, crohn’s (any predisposing RF)

- 11 RUF
conclusions

- Majority of pts have large fistulas into necrotic/infected prostates, even after fecal diversion
- Subjective/objective cure only from both urinary (ileal loop) and fecal diversion
- bladder sparing diversion...
  - Complicated w/ persistent hematuria + pelvic abscess

Rectourethral Fistula

- Observation
- Conservative treatment

Symptomatic

- Fistula size <1.5 cm
  - Fecal Diversion (+/- foley or SP tube)
  - Persistent Fistula
    - >1.2 cm above anorectal ring
    - Primary Repair (+/- flap)
    - Fecal Diversion Takedown
- Fistula size >1.5 cm
  - Immediate Urinary and Fecal Diversion

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Treatment principles of post-radiation RUF

- Fecal diversion is mandatory
- Bladder drainage unlikely to contribute to cure except with small fistula + minimal radiation damage
- Highest rate of success with FD + cystoprostatectomy with ileal loop diversion
- Bladder sparing approach may not be best choice

Back to the case...

- Symptomatic despite oral abx + IDC
- Initial diverting colostomy + SPT
- Pt now resolved from symptoms
- Undergoing Hyperbaric Oxygen
- General Surgeon still unsure of final repair
  - Permanent colostomy vs Cystoprostatectomy
  - Rectal pull down with coloanal anastomosis
end