

Surgery of urogenital trauma in condition of war or precarity

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Personal Experience

◆ **ICRC:** Peshawar, Quetta, Kabul, Border Thailand-Cambodia

◆ **Médecins du Monde:** Border Irak-Iran

◆ **GFMER:** Fistula surgeon (Africa)

« *Main difficulty is to have the right surgeon at the right time at the right place* »

Urogenital lesions

- ◆ 1-5% of wounded persons
- ◆ More than 95% are associated with other lesions
- ◆ Rape as a weapon of war (traumatic gynecologic fistula)
- ◆ Following topics will be discussed
 - Kidney
 - Ureter
 - Bladder
 - Urethra
 - External genitalia
 - Traumatic gynecologic fistula

Distribution of urologic injuries by Conflict

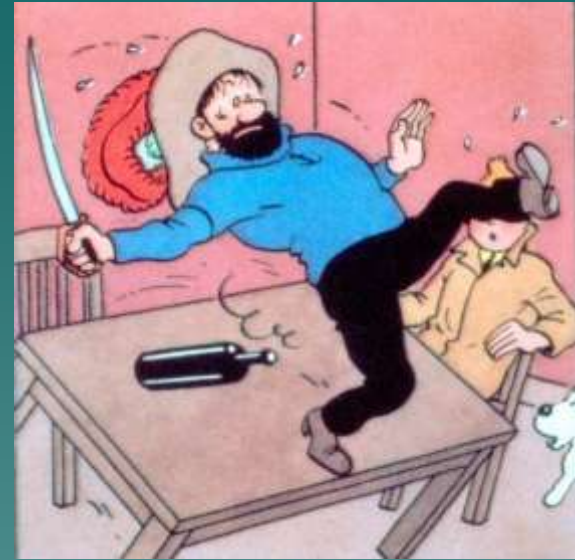
Injured organ %	Vietnam (n=252)	Croatia (n=110)	Desert Storm (n=30)
Kidney	31	35	17
Ureter	3.6	15	0
Bladder	14.7	11.6	17
Penis/urethra	25.1	13.3	30
Testis/scrotum	25.4	25	27

Common Principles (ICRC)

- ◆ Wound excision
- ◆ Preservation of as much viable tissue as possible
- ◆ Dependant drainage
- ◆ Diversion of the urinary flow above the site of injury
- ◆ Tensionfree sutures

Kidney

- ◆ Blunt Trauma
 - Blast,
- ◆ Penetrating Trauma
 - Splinter
 - Bullet (low and high velocity)
 - Stab wound



Kidney injury

◆ Consequences

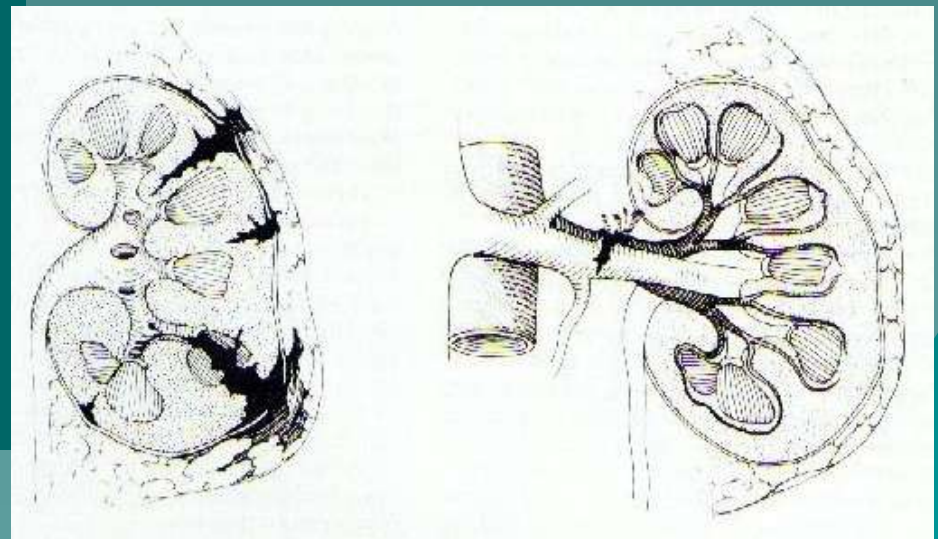
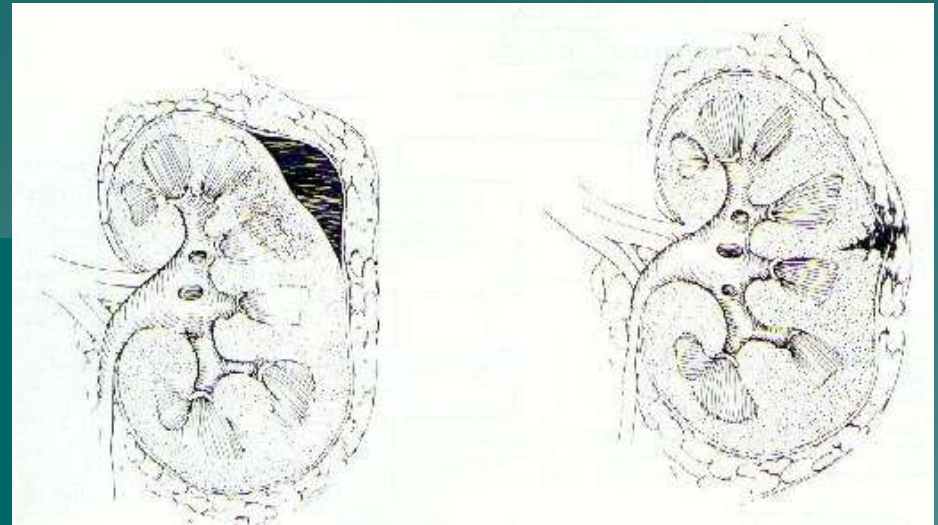
- Retroperitoneal bleeding
- Hematuria
- Urinary leakage

◆ Diagnostic procedure

- Palpation
- Macro or microhematuria (bladder catheter)
- Hematocrit, blood pressure monitoring
- IVU (no CT available in field hospitals)

Kidney Blunt Trauma

- ◆ 10% require renal exploration
- ◆ Observational attitude recommended under strict control of vital signs



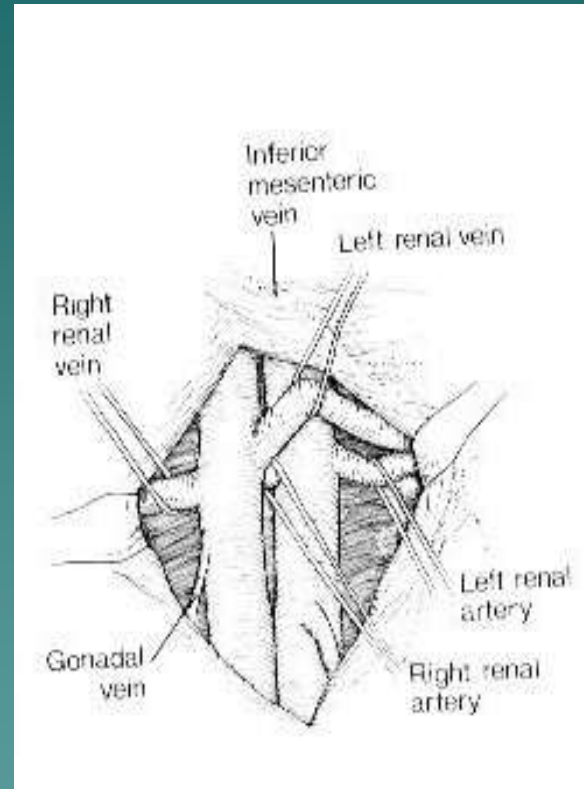
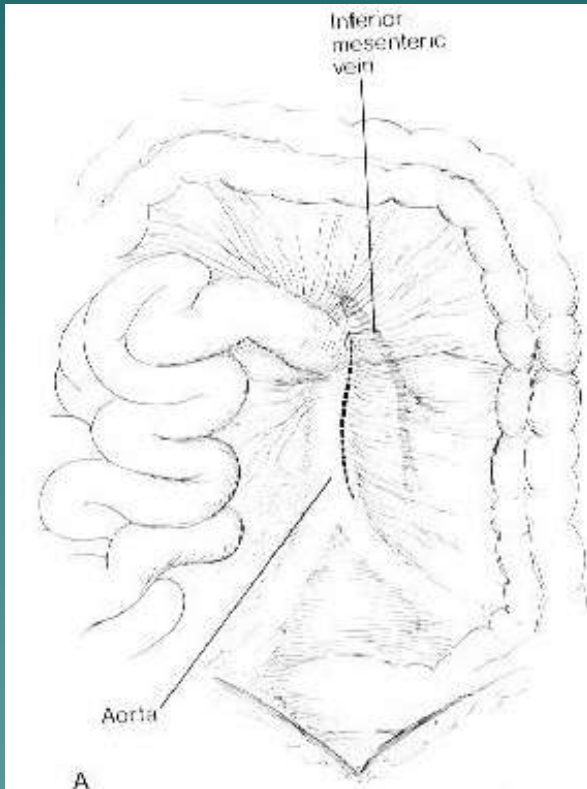
Kidney Penetrating Trauma

- ◆ Renal surgery is recommended in all cases of penetrating trauma in war situation
 - Higher energy impact in war situations
 - 98% associated with other organ injuries
 - Radiodiagnostic facilities less available

Kidney : Operative Approach

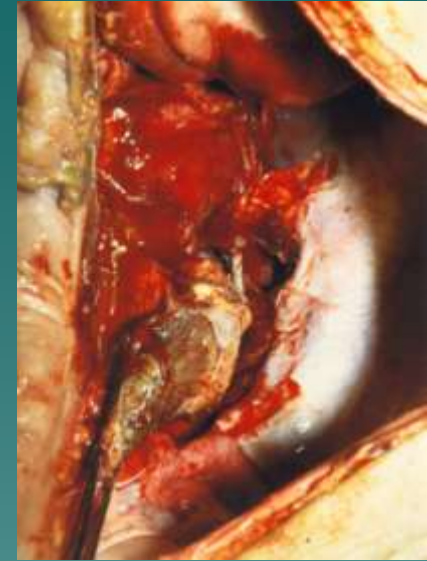
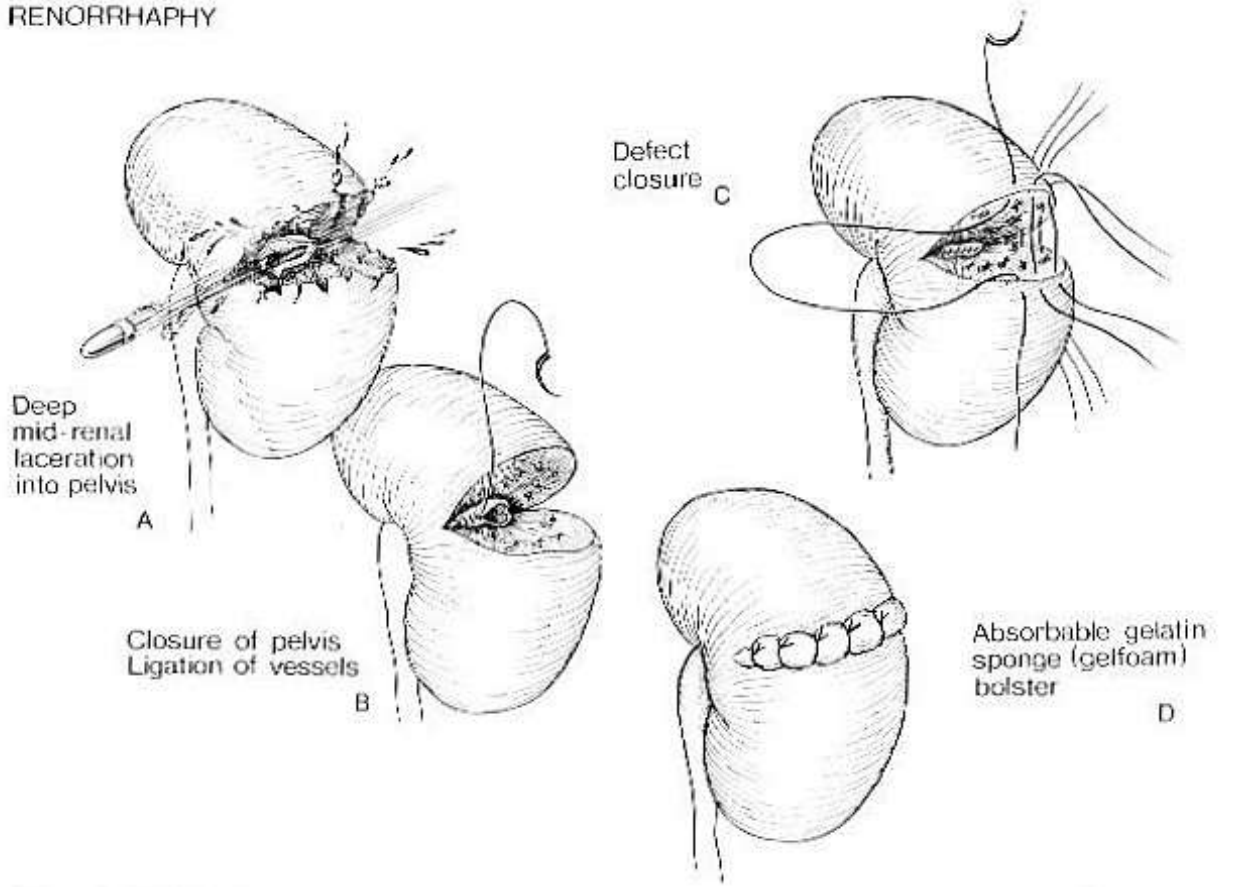
- ◆ Midline transabdominal incision allows:
 - Ready access to the kidney
 - Exploration for associated injury
- ◆ Retroperitoneal hematoma requires:
 - Small bowel elevation
 - Incision is made over the aorta above the inferior mesenteric artery
 - Placement of loops on the renal vessels
 - Subsequently colon mobilisation and Gerota fascia opening

Kidney : Operative Approach



Kidney : Reconstruction or Ablation

RENORRHAPHY



Ureteral Injury

- ◆ 95% are due to penetrating trauma (gunshot wound > 90%)
- ◆ Most ureteral injuries are diagnosed intraoperatively (and sometimes occurred intraoperatively...)
- ◆ IVU highly sensitive

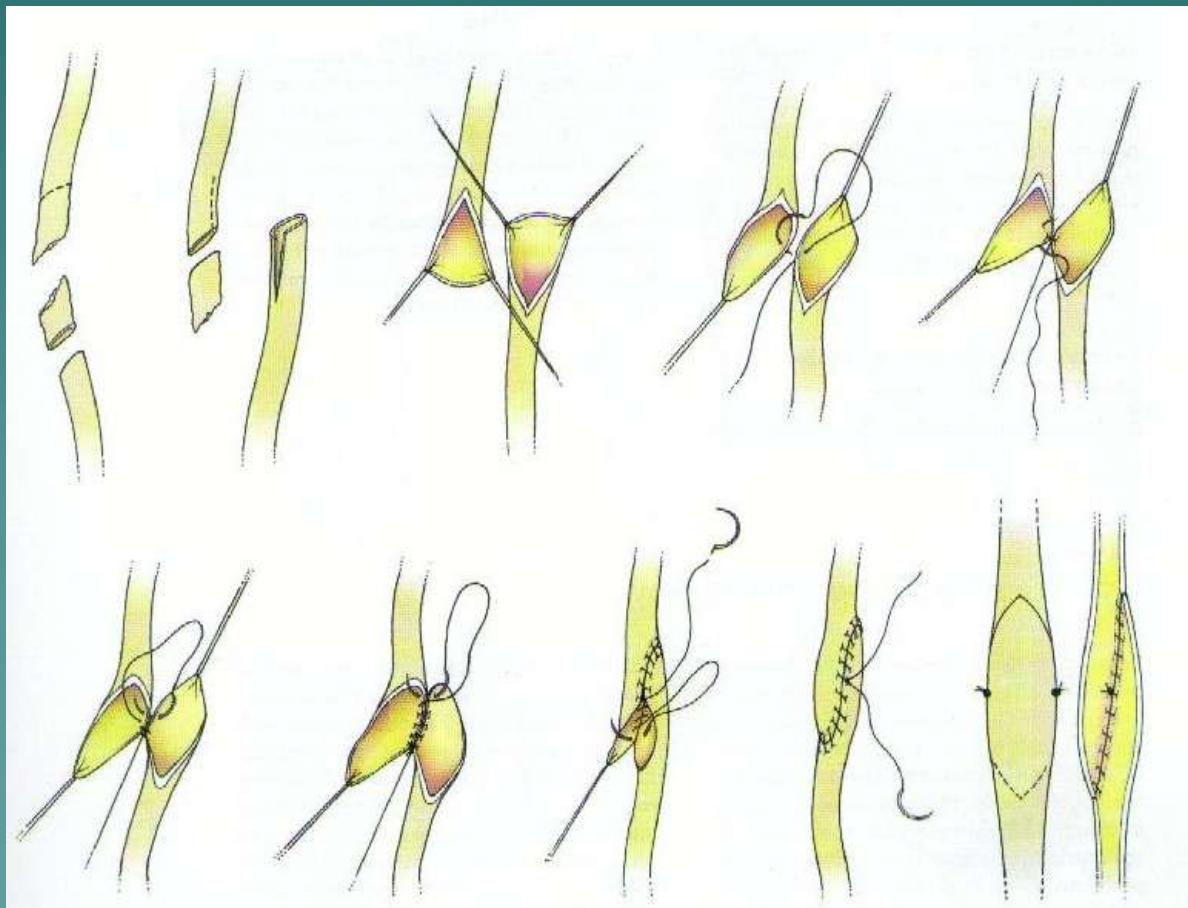


Ureteral Injury : Operative Approach

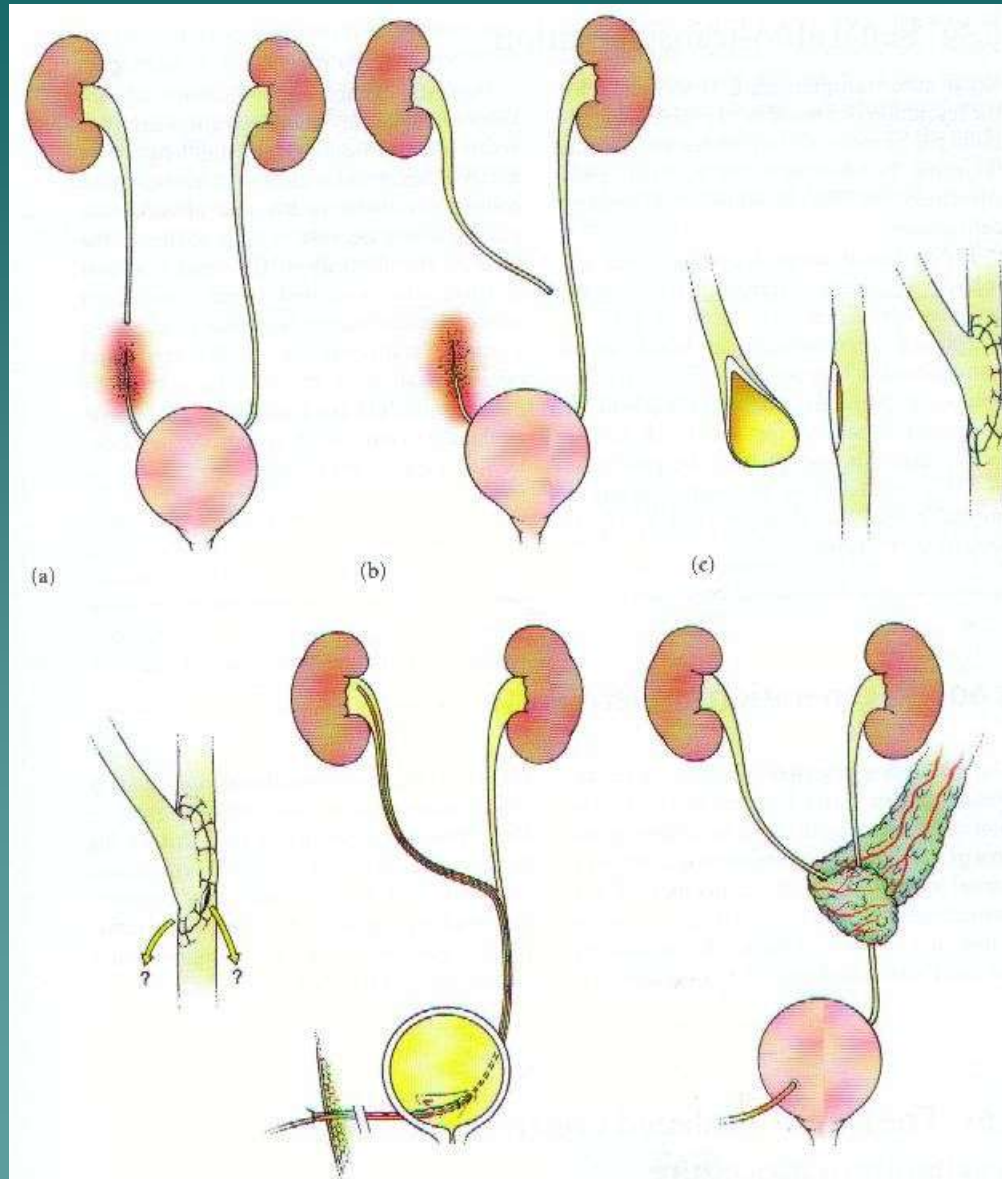
- ◆ Careful ureteral mobilisation
- ◆ Debridement of non viable tissue to the bleeding edge
- ◆ Mucosa to mucosa, spatulated, tension-free and watertight anastomosis
- ◆ Ureteral stenting
- ◆ Omental interposition
- ◆ Retroperitoneal drainage

Upper and Middle Ureteral Injury

◆ Ureteroureterostomy

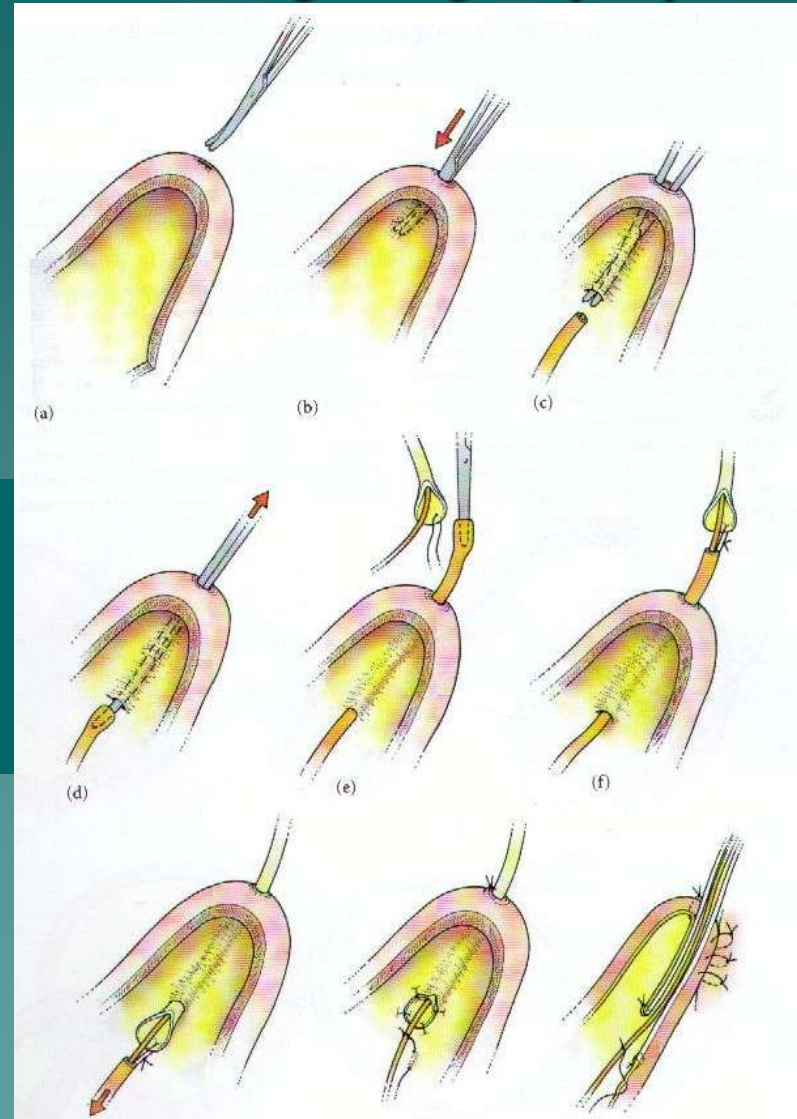


Trans-uretero-ureterostomy

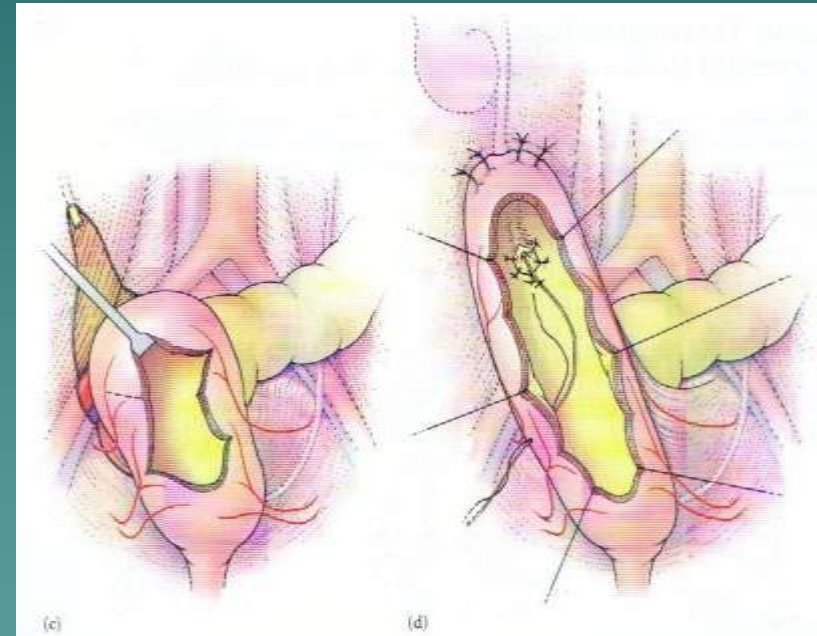
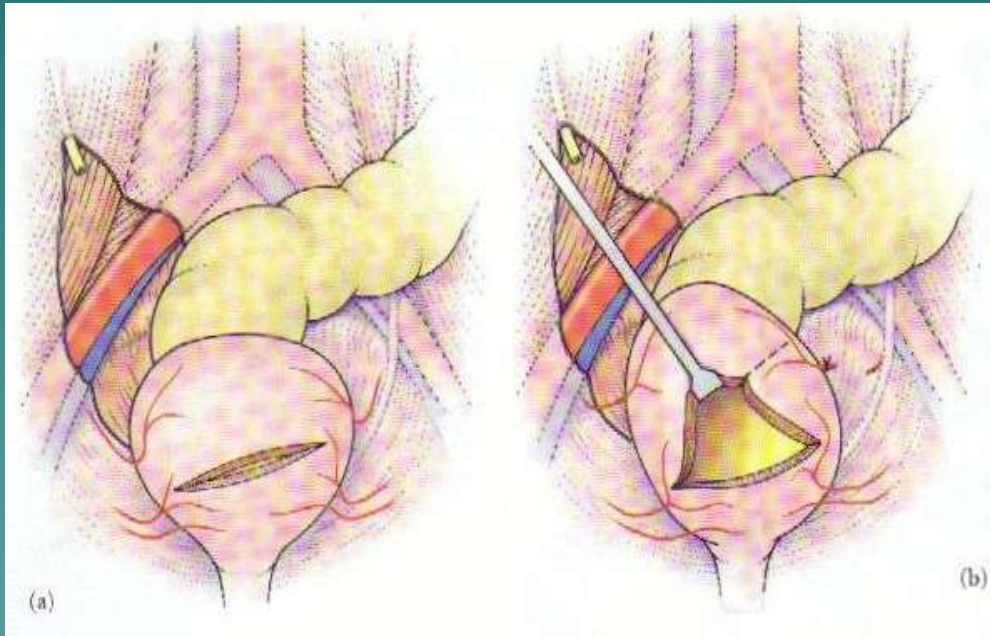


Distal ureteral Injury (1)

- ◆ Supra-trigonal tunnel implantation



Distal ureteral Injury (2)



Psoas-hitch procedure

Bladder Injury

- ◆ 80% due to pelvic fracture
- ◆ Penetrating trauma
- ◆ Diagnosis by retrograde cystogram (up to 400 cc)

Treatment of Extrapерitoneal Bladder Injury

- ◆ Transurethral drainage only



Treatment of Intraperitoneal Bladder Injury

Surgical exploration and closure
+ urethral catheter
+ suprapubic catheter
+ perivesical drainage
± ureteric catheterization

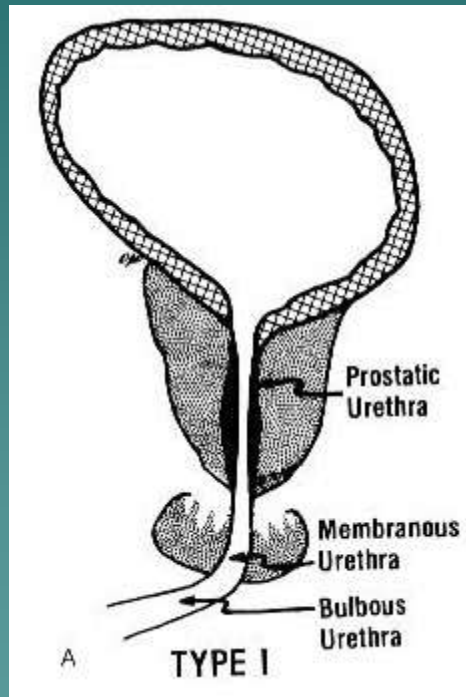


Urethral Injury

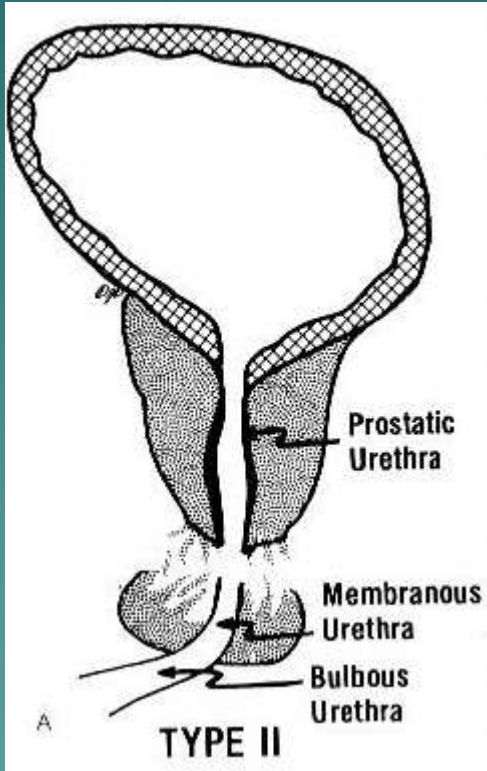
- ◆ Diagnosis is done by urethrography:
 - 16-18 Foley catheter
 - injection of 2 cc saline into the balloon 2-3 cm proximal to the penile meatus
 - patient placed 25-25° oblique position
 - 25-30 cc injection of contrast material with irrigating syringe



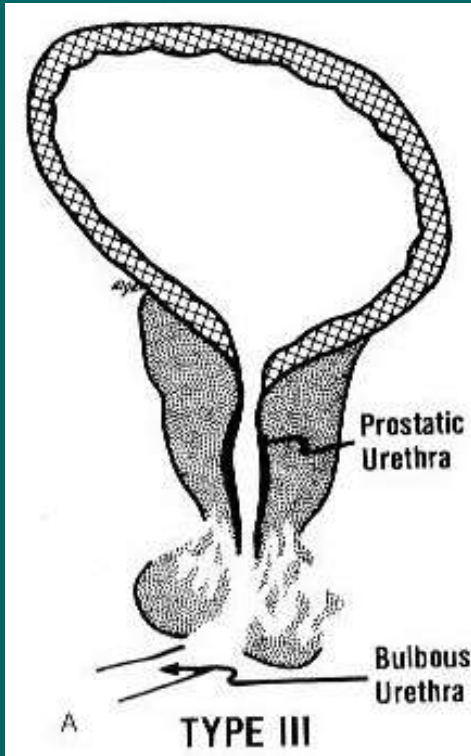
Posterior Urethral Injury (Type I)



Posterior Urethral Injury (Type II)

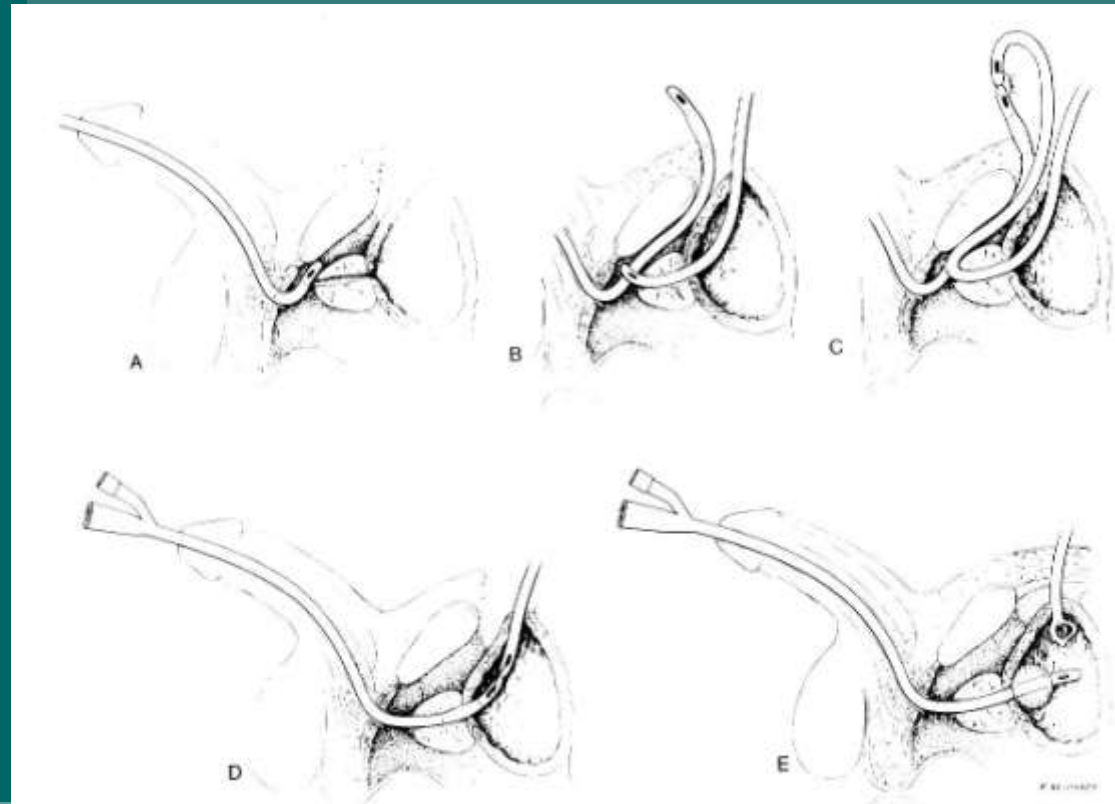


Posterior Urethral Injury (Type III)



Treatment of Posterior Urethral Injury

- ◆ Abdominal approach
- ◆ Suprapubic cystostomy
- ◆ Optional:
 - Primary urethral realignment ('rail roading')



Anterior Urethral Injury

- ◆ Penetrating trauma (gunshot wound)
- ◆ Contusion



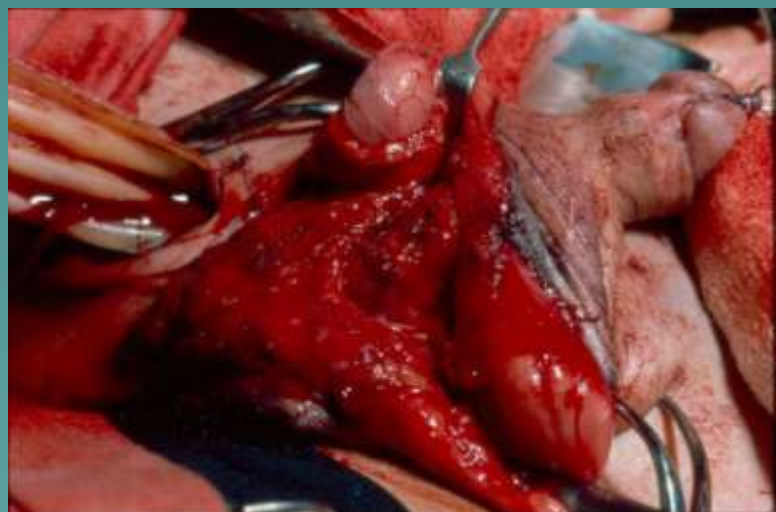
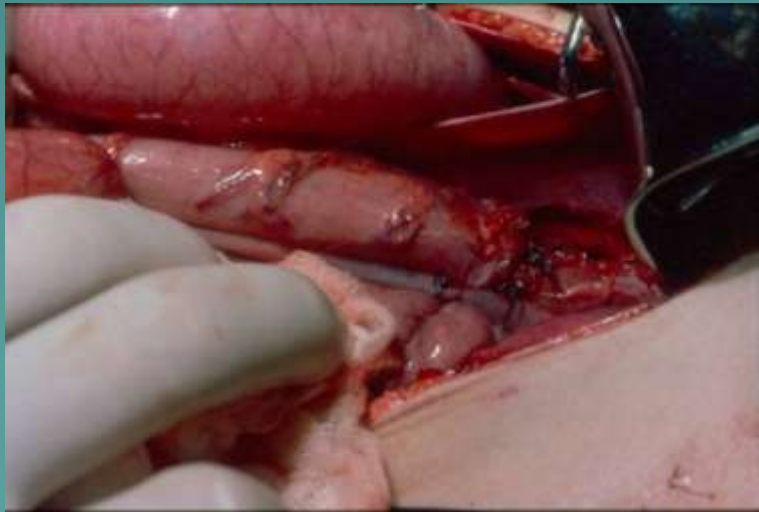
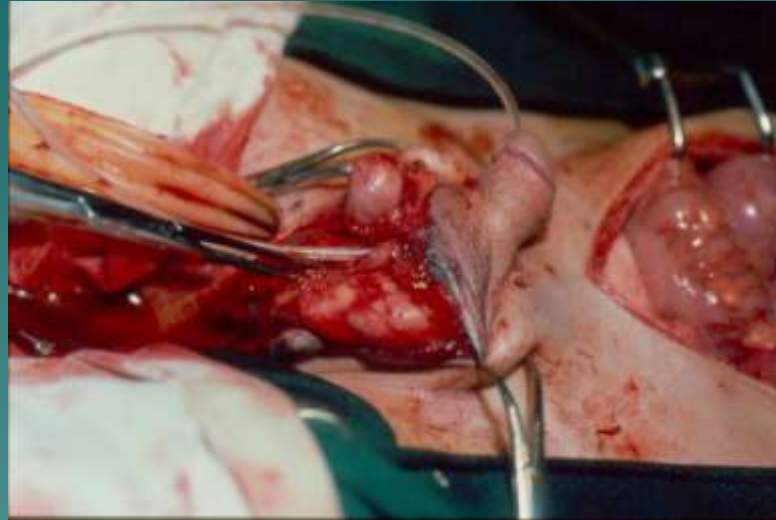
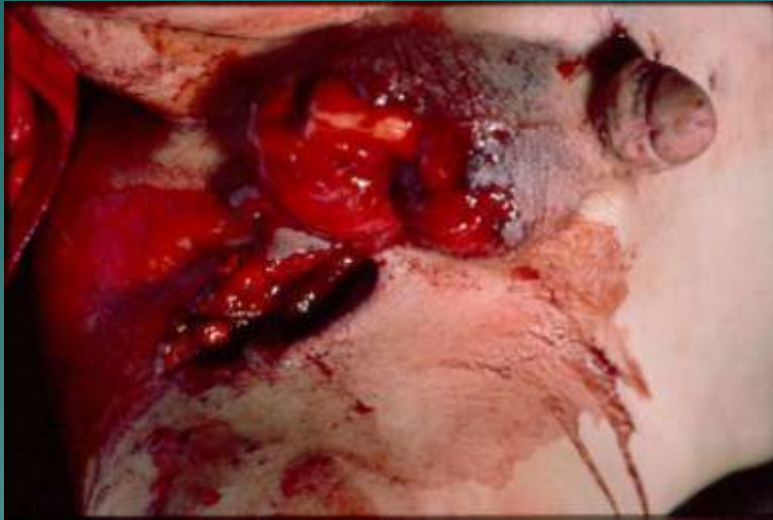
Treatment of the Anterior Urethral Injury

- ◆ Suprapubic cystostomy
- ◆ Excise the wound
- ◆ Leave open
- ◆ Inspect at time of DPC :
 - accept permanent urethrostomy
 - consider late repair, if minimal damage, and success can be assured (after 6 weeks)

Pelvis and Urethral Injury



Pelvis and Urethral Injury



Pelvis and Urethral Injury



Mohamed
R 7:0
GSW (rebound on a rock) 1 kg
multiple pelvic + abdominal injury.
emergency laparotomy photo

sub peritoneal
rectum

rectal
exam: not in a

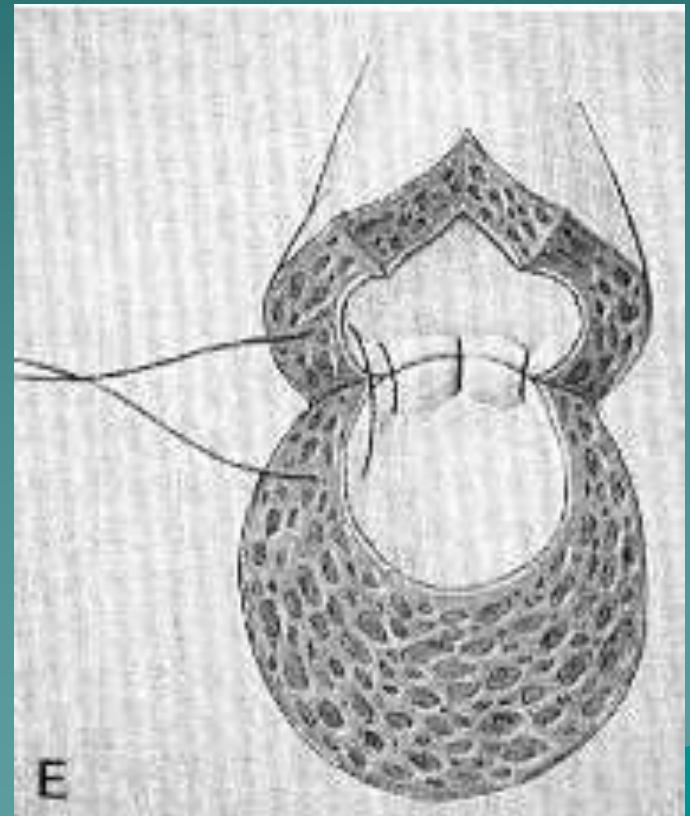
under
ok

The complex block contains handwritten notes and anatomical diagrams. The notes describe a patient named Mohamed with a gunshot wound (GSW) at 7:00, caused by a 1 kg object rebounding off a rock. The injury is described as multiple pelvic and abdominal, requiring an emergency laparotomy. The diagrams illustrate the anatomy of the male urethra and rectum. One diagram shows the urethra with a blue circle indicating the injury site. Another diagram shows the rectum with a blue circle indicating the injury site. The text 'sub peritoneal rectum' and 'rectal exam: not in a' are written near the diagrams. A note 'under ok' is also present.

Treatment of the Anterior Urethral Injury - Late Repair

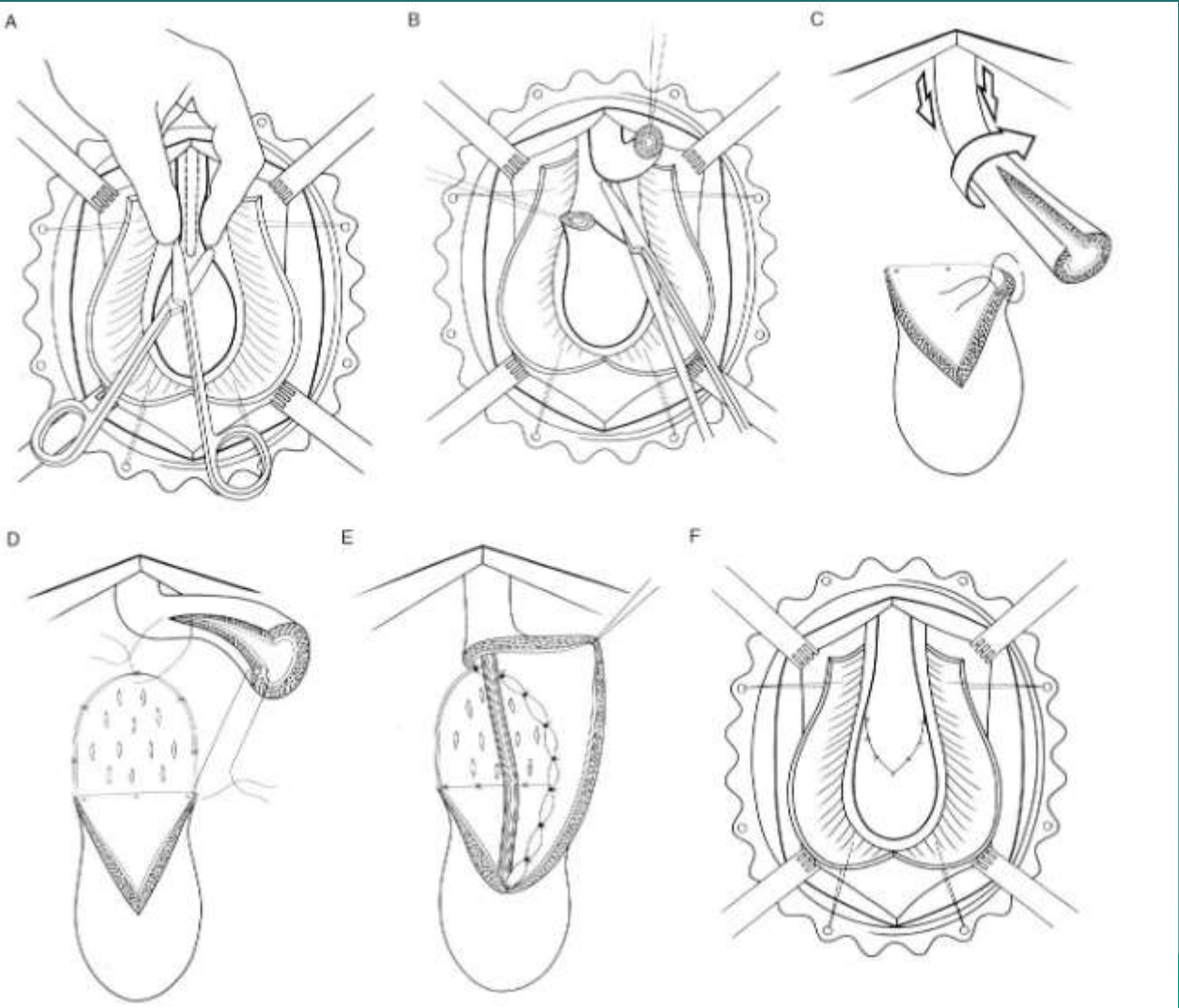


- ◆ End to end anastomosis





Treatment of the Anterior Urethral Injury - Late Repair



Free graft -
foreskin or
buccal
mucosa for
defects up to
4 cm

External Genitalia

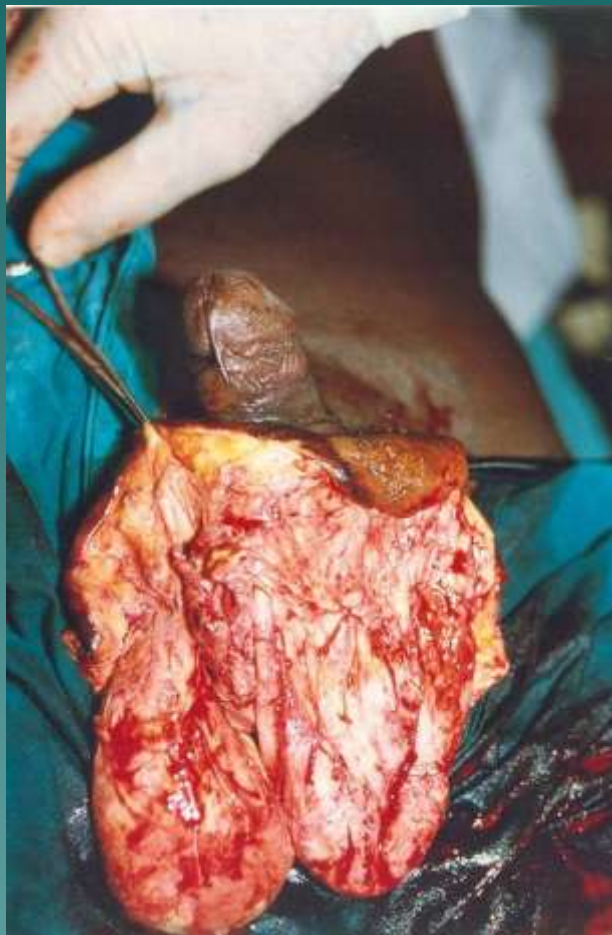
◆ Penis

- primary suture (excellent vascularisation)

◆ Scrotum

- always drain
- if skin loss: meshed grafts or thigh flaps





Delayed and tricky Injuries



5/7/81 830

██████ Ahmed ♂ 15

23/6/81 Laparotomy: large jejunal hole
" hole in rectum

① iliac loop colostomy
idema ovaries

5/7: posterior urinary fistula

07

- bladder revision
- closure of 2 cm length hole in the right posterior bladder wall
- cystostomy

right ureter

- closure of the pelvic fistula

Traumatic gynecologic fistula

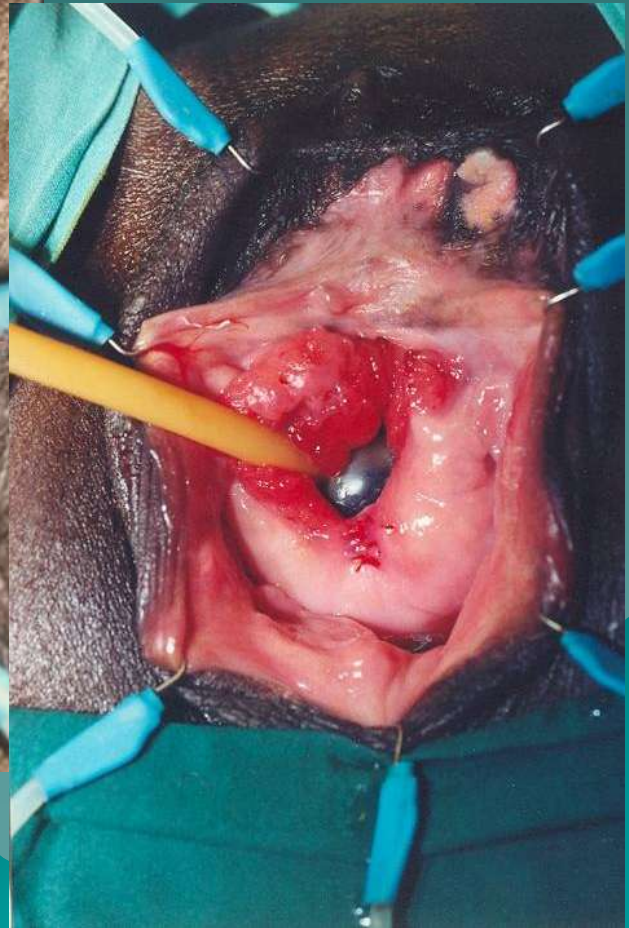
- ◆ Obstetric fistula (prolonged obstructed labor)
- ◆ Iatrogenic
- ◆ Direct traumatic tearing (violent sexual assault and rape or by the forcible insertion of objects-gun, bottle, or sticks-into the vagina)

Traumatic gynecologic fistula in conflicts

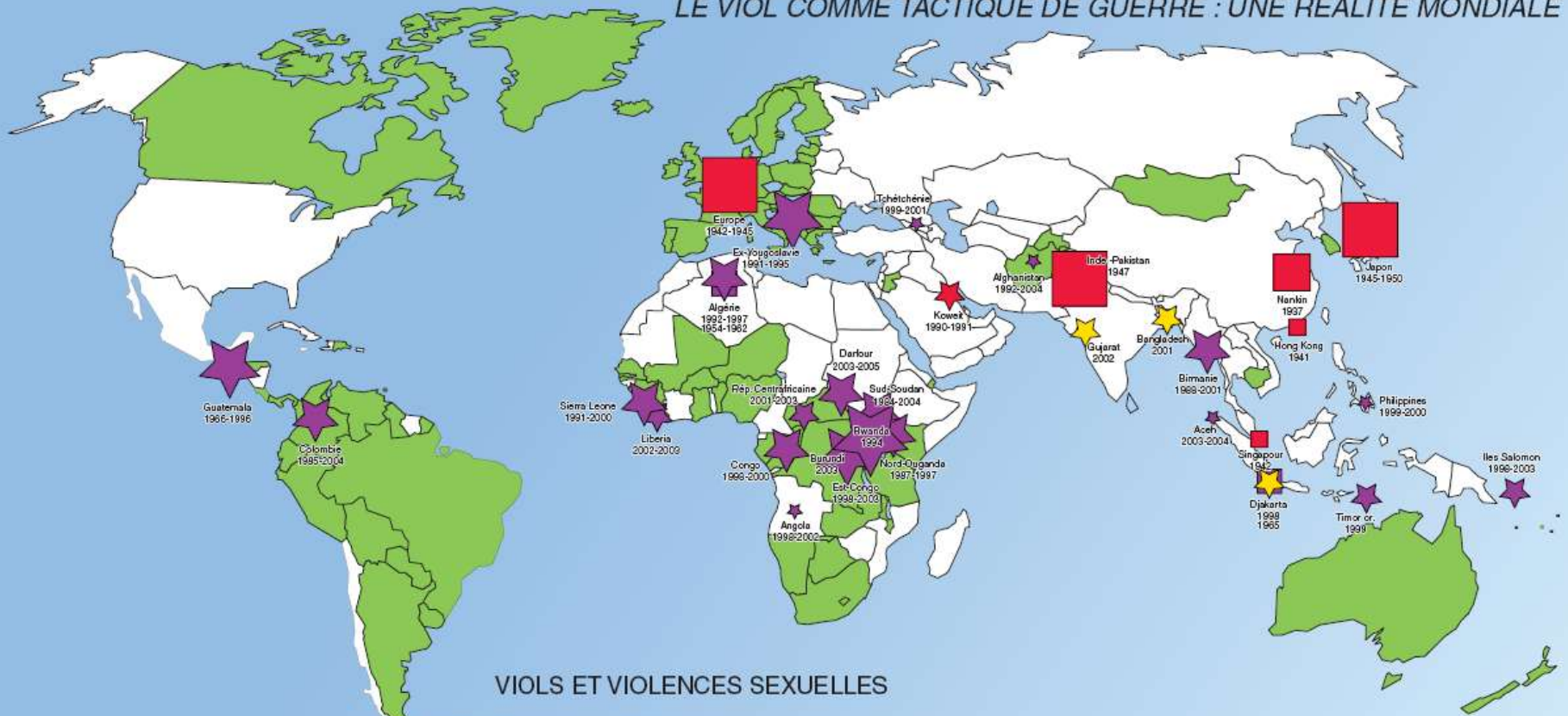
- ◆ Rape as weapon of war
- ◆ Young sexual slave
- ◆ Delayed access to health care

Consequences

- ◆ Complete incontinence (urine/feces)
- ◆ Social stigmatization
- ◆ Post traumatic stress disorder
- ◆ Unwanted pregnancies, STIs, HIV (rape)



LE VIOL COMME TACTIQUE DE GUERRE : UNE REALITE MONDIALE

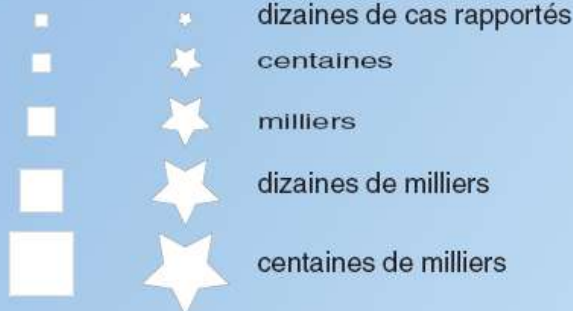


VIOLS ET VIOLENCES SEXUELLES

1937-1980* après 1980*

CONTEXTE

Etats Parties au Statut de Rome au 12 mai 2005



A ce jour, 30 condamnations pour violences sexuelles ont été prononcées en tout (TPIY et TPIR) dont 9 où le viol est explicitement cité en tant qu'élément de crime contre l'humanité.

* les dates sont celles des périodes couvertes par les rapports (111 rapports et 64 ouvrages)
* les dates sont celles des conflits

Problem

- ◆ Abandoned from their families
- ◆ Co-morbidity
 - Infections
 - Bladder stones
 - Infertility



Classification

Simple fistula

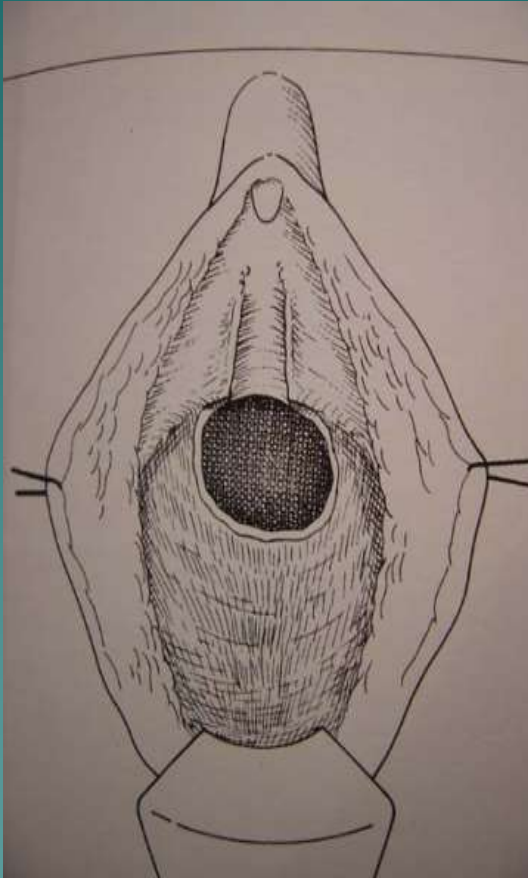
- Non-fibrotic tissue
- Easy to access

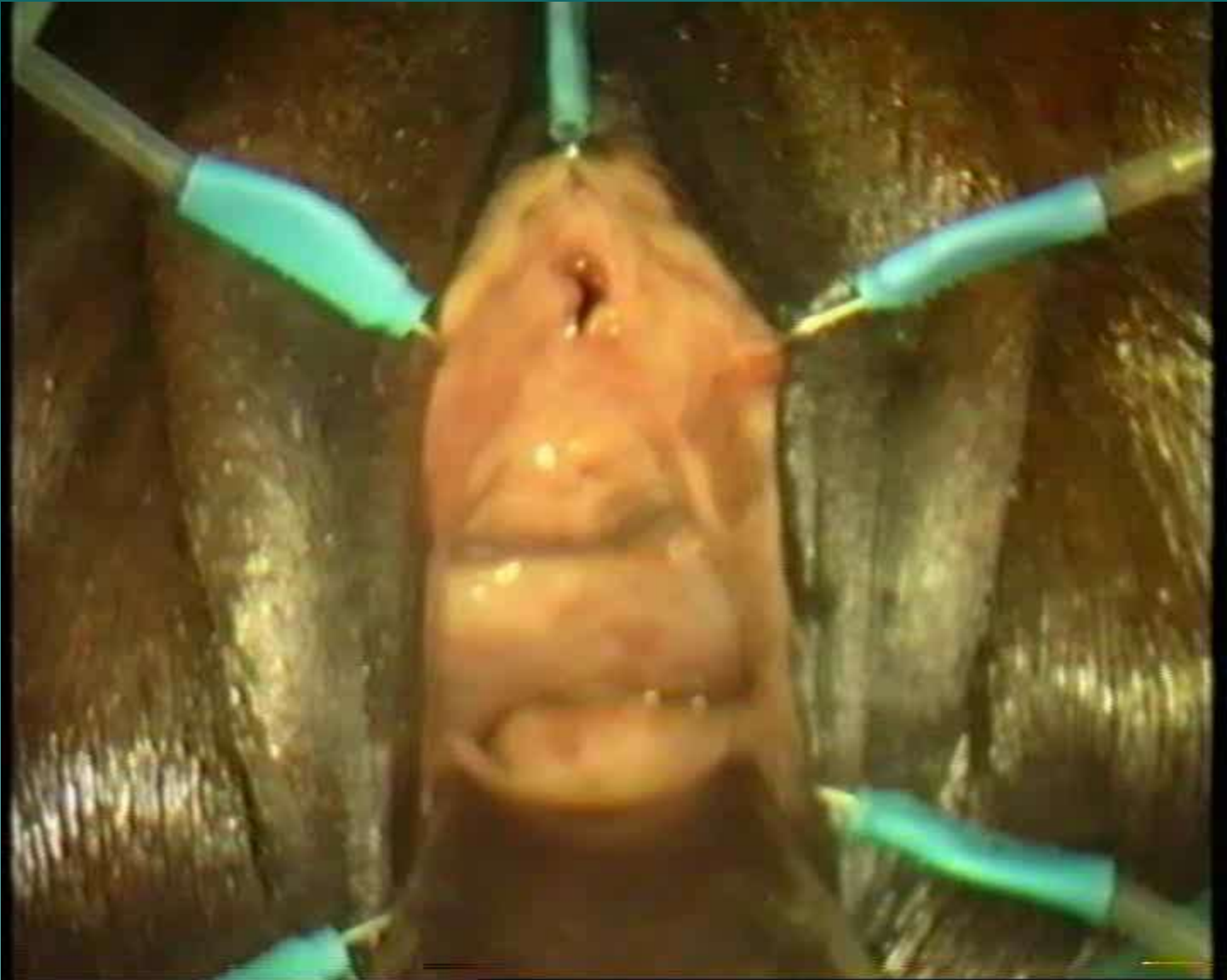
Complex fistula

- Fibrotic tissue
- Loss of tissue
- Urethral involvement
- Retracted bladder
- Aberrant tract
- Previous failed surgery



Complex VVF





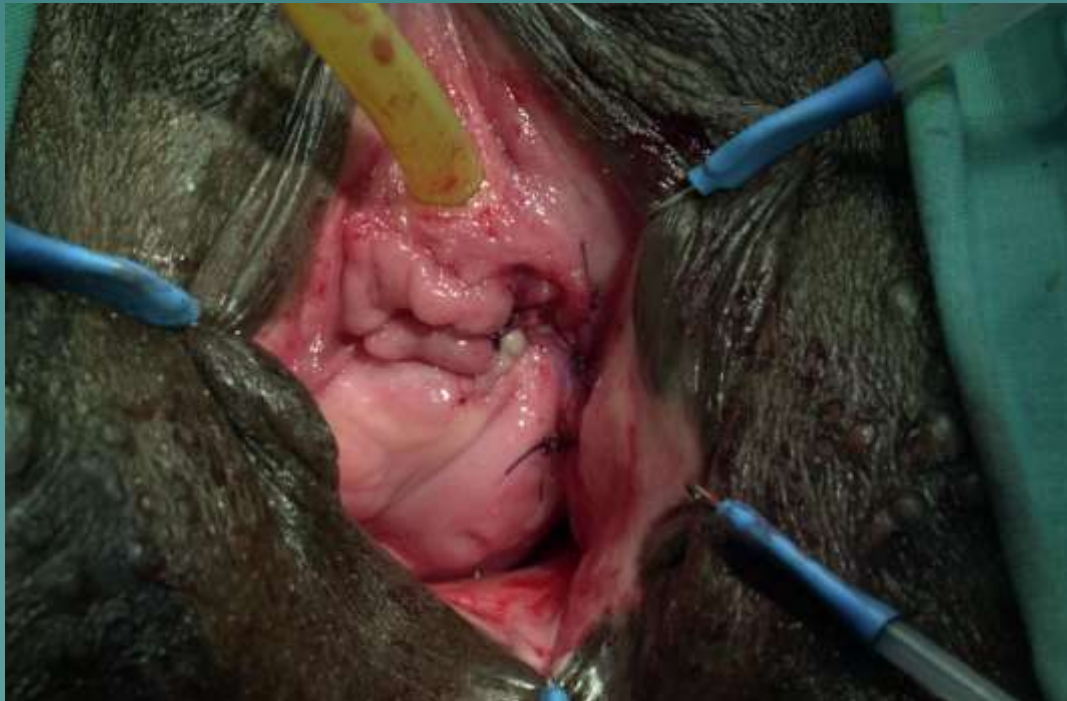
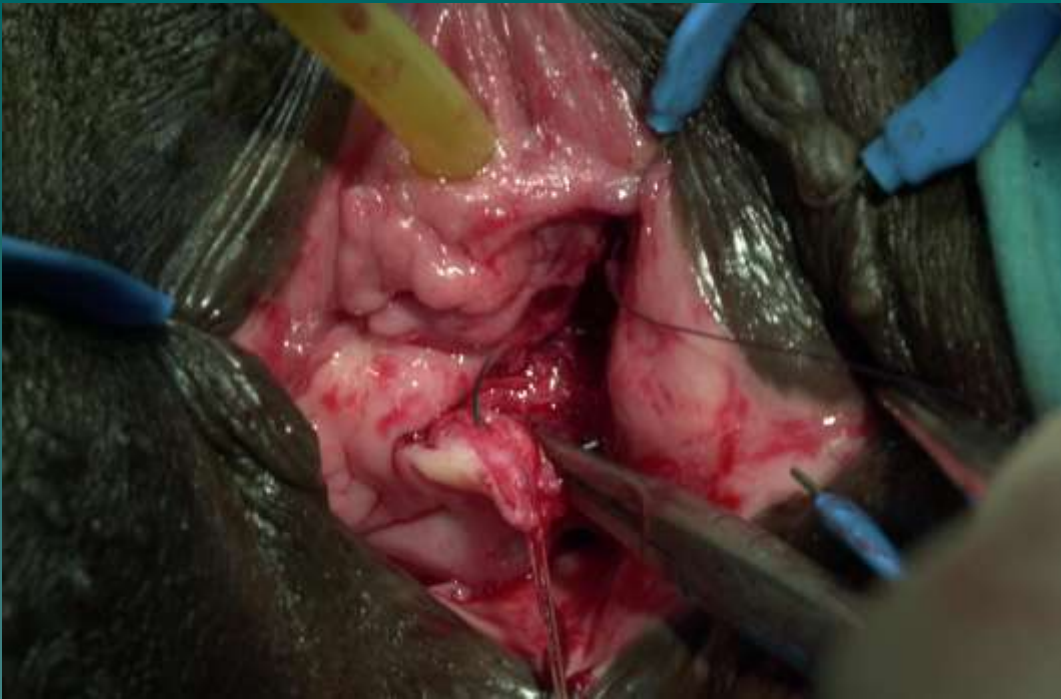
http://www.gfmer.ch/Video/Extrait_fistules.wmv

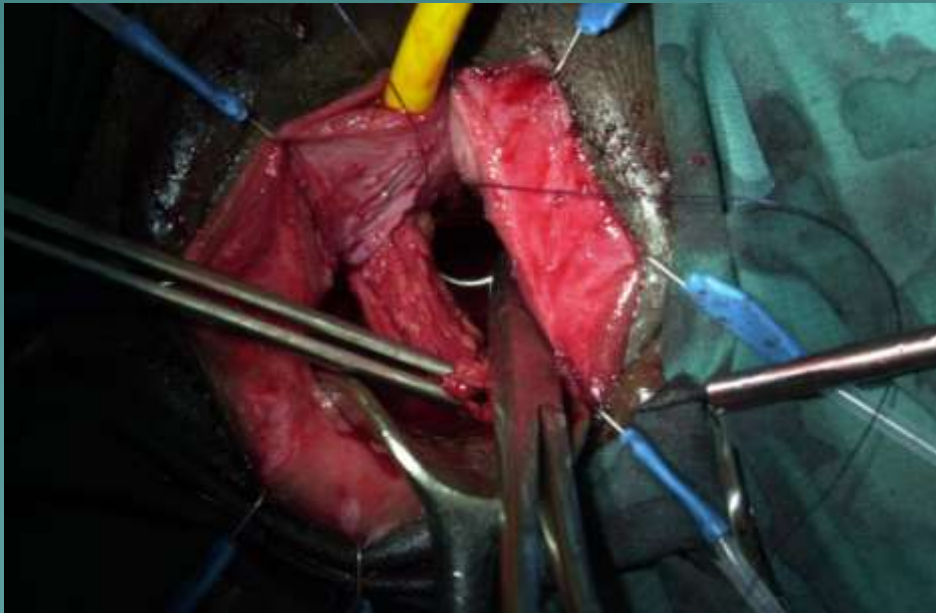
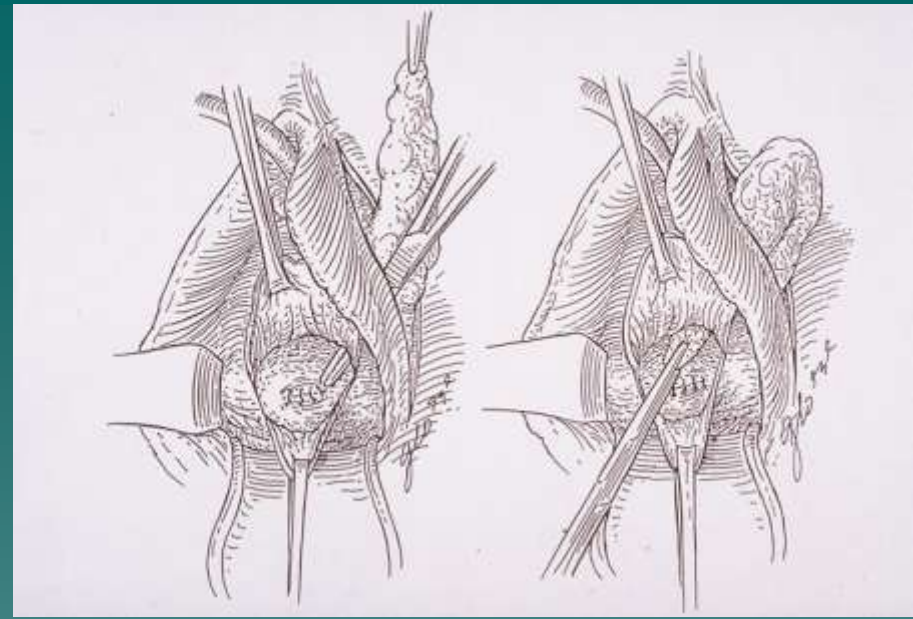
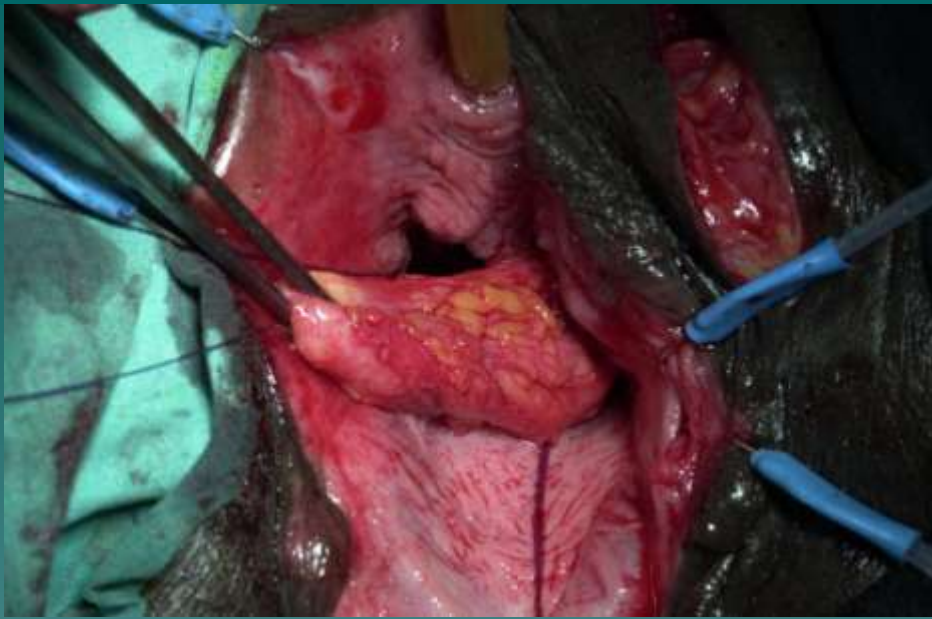
Surgical tips

- ◆ Extended Trendelenburg position
- ◆ Scott retractor
- ◆ Headlight
- ◆ Sharp scissors
- ◆ Suture material
 - Post op follow-up
 - Cave: obstructed catheter !

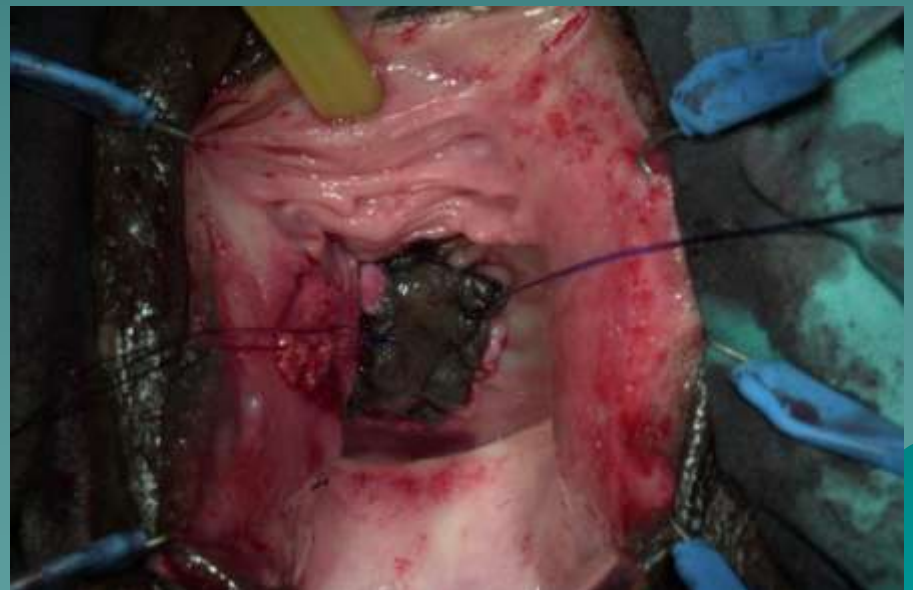
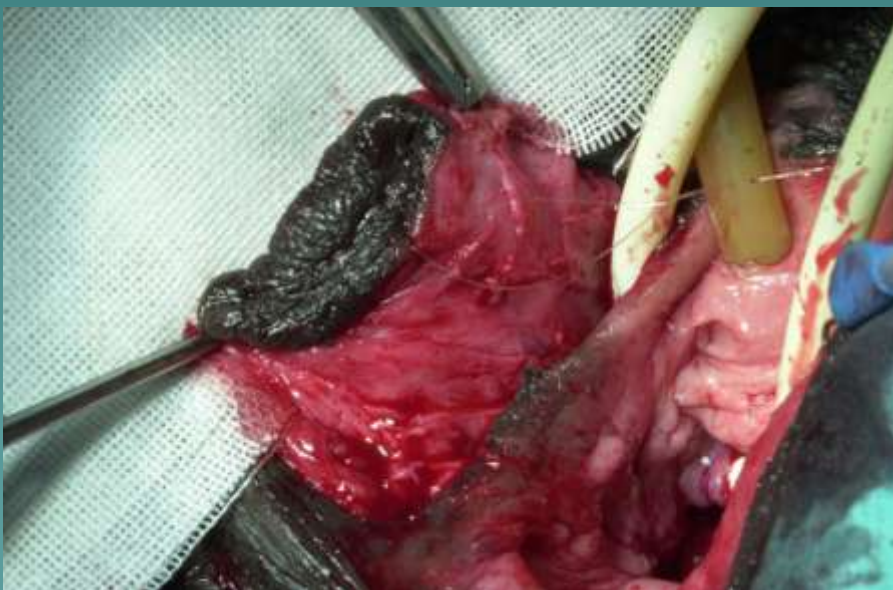
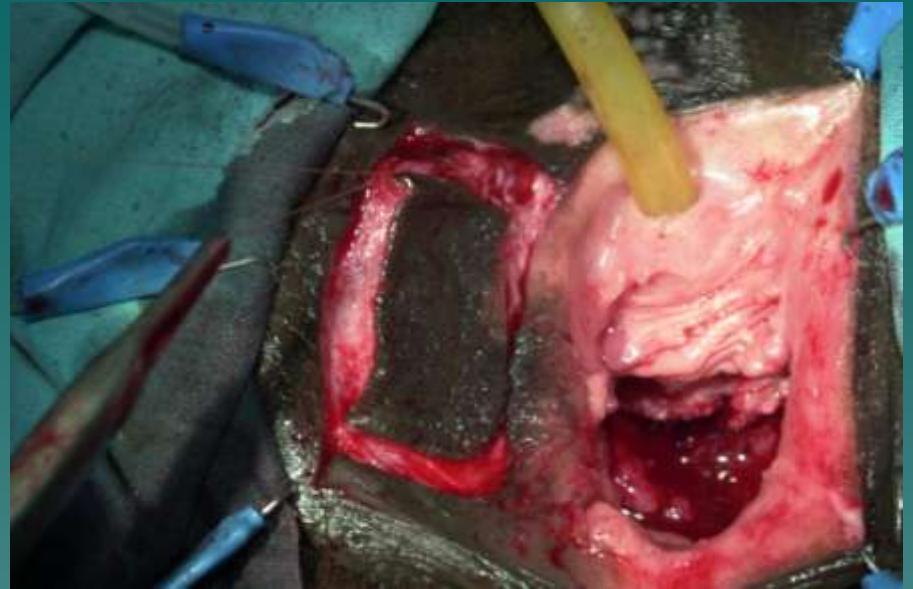


Simple closure

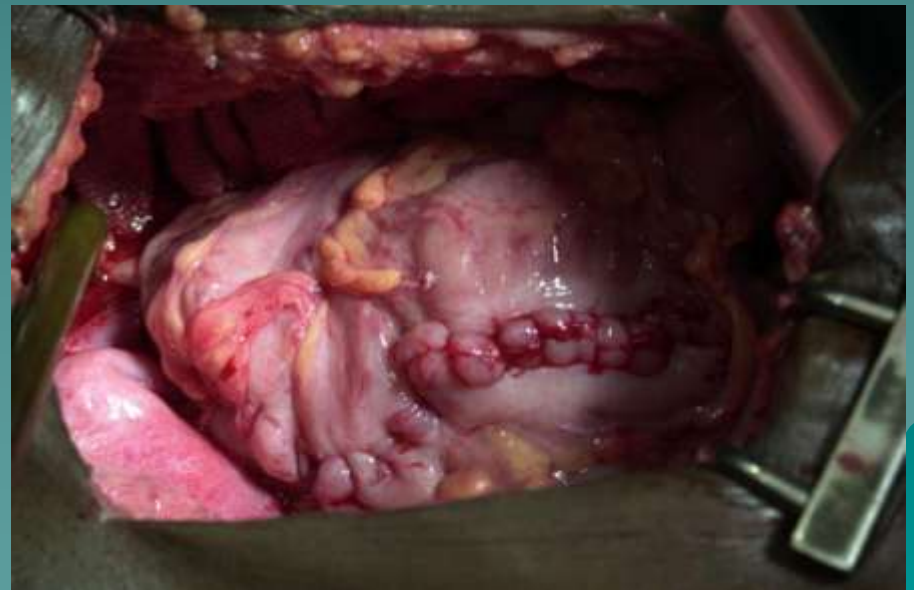
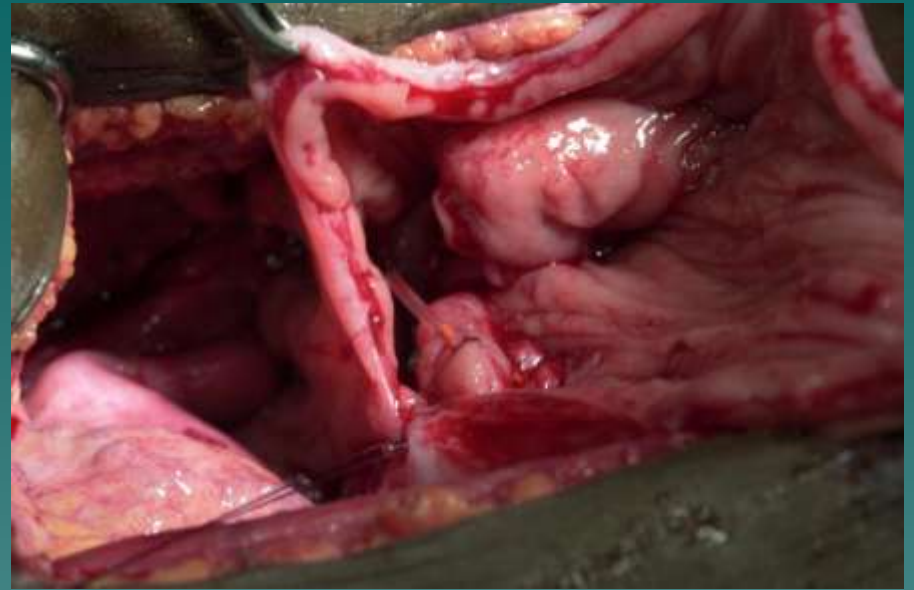




Martius Flap



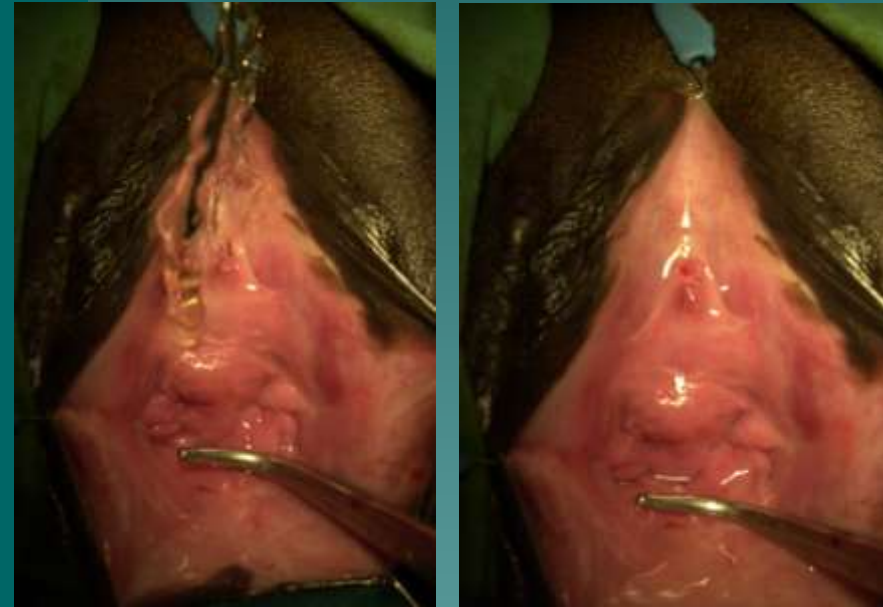
Symmonds / Falandry



Mainz II

Stress incontinence

- ◆ Junction bladder/urethra most often concerned
- ◆ Closure mechanismus damaged
- ◆ Residual stress incontinence
- ◆ Surgical challenge



For experts and motivated surgeons



**Reconstruction
cervico-urétrale complexe**

A new Web-Based Data Entry System : the GFMER Database

- ◆ Collection and evaluation of prospective data
- ◆ Demographic characteristics of fistula patients
- ◆ Various surgical and clinical procedures for fistula repair
- ◆ Social reintegration

A new Web-Based Data Entry System : the GFMER Database

- ◆ Facilitate the development of a standardized fistula classification
- ◆ Comparative research across surgical centers
- ◆ Identification of cases requiring expert fistula surgeon

Areas covered by the GFMER Database

- ◆ Circumstances leading to the occurrence of fistula
- ◆ Socioeconomic and preoperative health status
- ◆ Surgical and other medical treatments received
- ◆ Postoperative health status and follow-up

The screenshot displays the GFMER Database website interface. At the top, there is a navigation menu with links for Language, Home, Foundation, Search, Education, Partners, Publications, Databases, links, and Navigation. The main heading is 'Fistula' with a sub-heading 'Welcome shown (My account | Logout | Help)'. Below this, there are 'Instructions' and a section for 'Currently displayed study: Fistula'. A menu bar includes 'Data', 'New Patient', 'Statistics', 'Resource', and 'Meta'. The 'Admission' tab is selected, showing a form with sections for 'Admission Form', 'A. Date of data collection', 'B. Identification of the centre', and 'C. Identification of the patient'. The form includes fields for day, month, and year, dropdown menus for 'Code of the centre' and 'Code of the surgeon', and a text field for 'File number'. A checkbox for 'Previous hospitalization in our hospital' is also present.



Transitioning to Robotics



The four-armed probe follows the commands of a surgeon seated in a hooded console a few feet away, shades of the wizard at the court of Oz.

SCENE 1
The scene opens on a futuristic operating room. A woman in a red sequined dress lies on a surgical table. A large, complex robotic probe with four arms is positioned over her. The room is filled with medical equipment, including monitors and overhead lights. The scene is set in a room with large windows showing greenery outside.

Robotic Surgery GFMER Internet Data Base

- ◆ Web oriented interface connected to a data base
- ◆ Study of clinical practices of DVP
- ◆ Multicenter / multiple users
- ◆ Real time statistics
- ◆ Access and anonymity secured (users/patients)



A screenshot of a web-based login form titled "Security Access Login". The form has a light purple header. Below the header, there are two input fields: "User ID" with the text "sdd" entered, and "Password" which is empty. A "Submit" button is located at the bottom right of the form.

Security Access Login	
User ID	sdd
Password	
<input type="submit" value="Submit"/>	

Concluding Remarks

- ◆ Humanitarian medicine: A global commitment and mutually beneficial
- ◆ Drawing Connections: Translating high tech solutions into practice in low-resource settings

