

SEMEY STATE MEDICAL UNIVERSITY

Department of visual diagnostics

SIW

Discipline: Visual diagnostics

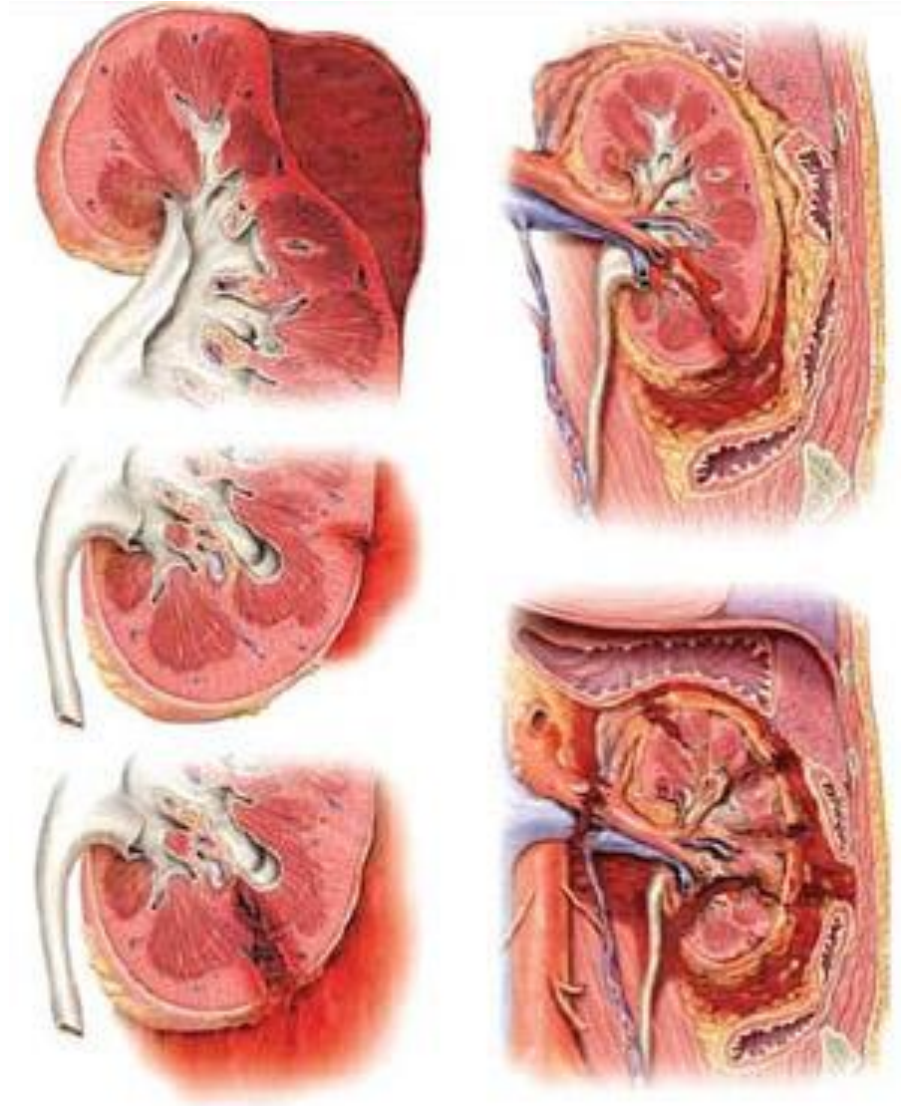
Theme: «Traumatic injuries of kidneys, ureter, bladder»

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Closed kidney damage

- Damage to the fat and fibrous capsules with the formation of a hematoma in perirenal cellulose
- Breaks of the parenchyma of the kidney, not penetrating into the renal cups and the pelvis
- Tears of the parenchyma of the kidney, penetrating into the renal cups and the pelvis
- Crushing a kidney
- The separation of the kidney from the vessels and ureter



Mechanism of closed kidney damage

Causes:

Blunt blunt objects

Shaking

Pressure

The degree of damage depends on:

Forces and directions of impact, places of its application

Anatomical location of the kidney

Topographic relation to XI and XII edges, spine

Development of musculature, fat and perirenal fiber

The degree of filling the intestines

Values of intra-abdominal and retroperitoneal pressure

Hydrodynamic pressure inside the kidney (urine, blood)

If there are pathological changes in the kidney that precede the trauma (hydronephrosis, pyonephrosis, kidney abnormalities, chronic pyelonephritis), kidney damage occurs with minor strokes - the so-called spontaneous rupture of the kidney.

Open kidney damage

By the type of the hurting projectile:

- firearms (bullet, shrapnel, explosive);
- non-fireable

In the course of the wound channel:

- the blind
- through;
- tangents.

By the nature of the damage:

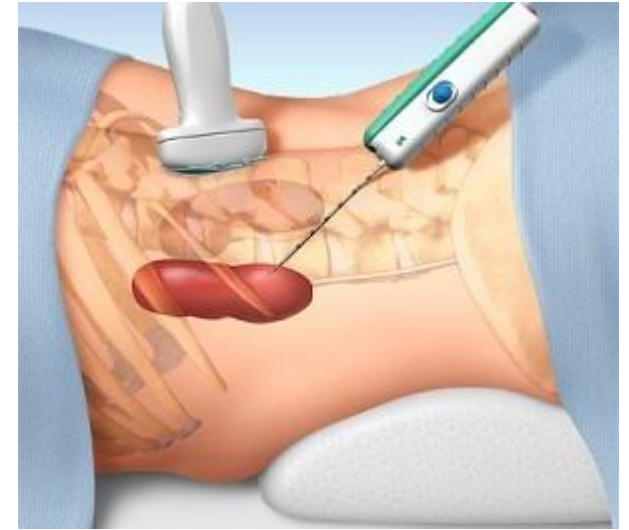
- injury;
- wound;
- crush kidney;
- injury to the vascular pedicle.



Is accompanied by shock, bleeding, phlegmon, peritonitis

Iatrogenic exposure

Retrograde pyelography
Puncture
Shockwave remote lithotripsy



Clinical manifestations

Lumbar pain

Hematuria

Swelling

Dysuria

Symptoms of peritoneal irritation

Nausea

Vomiting

Fever

Gastrointestinal dysfunction

Three degrees of severity

Mild kidney injury - the general condition of the victim is poorly impaired, there are moderate pains in the lumbar region, short-term minor micro- or gross hematuria, pararenal hematoma is absent, no signs of peritoneal irritation. This type of damage is referred to as kidney contusion.

Medium-grade kidney injury - the general condition from a satisfactory quickly becomes a moderate severity state (pulse quickens, blood pressure decreases), hematuria is pronounced and can continue to increase. The accumulation of blood in the bladder can cause dysuria (urinary disturbance), up to a complete retention of urine. Under the skin in the area of injury, in some patients, a hematoma is clearly visible. The pain is insignificant and often radiates to the lower abdomen, groin and genitals. Obstruction of the ureter by blood clots can lead to the development of renal colic. The urohematoma may lead to the development of symptoms of peritoneal irritation.

Severe kidney injury - collapse and shock come to the fore, severe pain in the lumbar region on the affected side, profuse and prolonged gross hematuria. Urohematoma and signs of internal bleeding tend to increase

Diagnostics

On examination:

Hematoma, swelling in the lumbar region

Local muscle tension

Rib fractures

Paleness of the skin

Rachiocampsis

AS / BH (hematocrit, hemoglobin)

OAM (hematuria)

CT scan with contrast enhancement (mandatory in the presence of hematuria)

MRI

Ultrasound (fluid in the abdominal cavity)

Excretory urography

Renal Angiography

Survey urography



Contrast
radiography

Rupture of the left kidney



Treatment

Stopping bleeding

Bed rest 10-15 days

Control of hemodynamics and hematocrit

Preventive parenteral administration of antibiotics and uro-antiseptics

Analgesics

Surgical treatment:

An organ-preserving operation (nephro / pyelostomy) is performed with removal of the urohematoma, perirenal hematoma of the pr-va, resection of a part of the kidney with impaired blood circulation, closure of gaps, drainage of the retroperitoneal space.

Nephrectomy is performed at breaks, tears of the kidney, provided that the second kidney is functionally active.

Damage of the ureters

Ureters are rarely damaged due to elasticity, displaceability and location.

Iatrogenic damage

More often closed damage

Ureteroscopy

Cystoscopy

Ureteral stent

Bladder catheterization

During operations on the pelvic organs, large intestine, external ileal vessels, lymphadenectomy and suturing of the posterior leaflet of the parietal peritoneum, in gynecology.

Classification

By type:

Closed ureteral injury (subcutaneous).

Open ureteral injury (wound).

By the nature:

An isolated injury of the ureter.

Combined ureteral injury.

By localization:

Injury of the ureter of the upper third.

Trauma to the ureter of the middle third.

Injury of the ureter of the lower third.

By type:

Ureteral injury.

Incomplete rupture of the ureter from the mucous membrane.

Incomplete rupture of the ureter from the outer layers of the ureter.

Complete rupture (injury) of the ureter wall.

Break the ureter with the discrepancy of its layers.

Accidental ligation of the ureter during surgery

Diagnosics

Diagnosis is based on an analysis of the circumstances and mechanism of injury, clinical manifestations and data of special research methods. Diagnostcs includes 3 stages:

Clinical: localization of the wound, direction of the wound channel, evaluation of urine and wound discharge, clinical manifestations - should suggest the possibility of ureteral injury.

Instrumental: ultrasound of the abdominal and retroperitoneal space; general radiography; excretory urography; infusion urography with the implementation of deferred urogramm (if indicated); retrograde pyeloureterography, computed tomography. The severity of the patient's condition may contraindicate to some instrumental method of examination.

Operative - the most accurate method for diagnosing damage to the ureter.



Antegrade
pyeloutrrogram

Differential diagnostics

To distinguish between injuries of the ureter and bladder, use the method of filling the bladder with a colored fluid (methylene blue, indigo carmine). If the bladder is damaged, the colored fluid is released from the urinary fistula; in case of damage to the ureter, unpainted urine is still excreted from the fistula.

Treatment

Nephrostomy or ureteral stenting with mandatory bladder katherization

Bladder damage

Causes: blunt or penetrating injury leading to rupture

Mechanism

- Blunt blow to full bladder;
- Iatrogenic damage (cystoscopy, endoscopy, catheterization)
- Catastrophe

Classification

Closed (with integer integument):

- injury;
- incomplete rupture (external and internal);
- complete break;
- two-stage rupture of the bladder:
- separation of the bladder from the urethra.

Open (injured):

- injury;
- incomplete wound (tangent):
- complete injury (through, blind);
- separation of the bladder from the urethra.

Injuries to the abdominal cavity

- Intra-abdominal.
- Extraperitoneal.
- Mixed.

By the presence of damage to other organs

- Isolated
- Combined:
 - damage to the bones of the pelvis;
 - damage to the abdominal cavity (hollow, parenchymal);
 - damage to the extraperitoneal organs of the abdomen and pelvis;
 - damage to other organs and areas of the body.

Clinical manifestations

Intraperitoneal

Pain over pubis

Anuria

Signs of peritonitis

Bloating

Symptom "Vanka-Vstanki"

Extraperitoneal

Pain over the bosom and pelvis

Hematuria

State of shock

Frequent false and painful urge to urinate

The appearance of swelling of the skin in the suprapubic area

Increasing intoxication

Diagnostics

Catheterization

Zeldovich positive symptom (inconsistency between the injected and exiting fluid from the catheter)

AS / OAM

Overview of the pelvic region

Retrograde cystography with the introduction of at least 250 ml of contrast media

Ultrasound

CT

MRI

A retrograde cystogram showing contrast medium filling the bladder. The contrast medium is seen extravasating from the bladder into the retroperitoneum, indicating an extraperitoneal bladder rupture. The surrounding pelvic structures, including the bony pelvis and soft tissue, are visible in grayscale.

Retrograde cystogram.
Extraperitoneal bladder rupture



Intraperitoneal
bladder rupture



Flow of contrast
fluid into paravesical
space

Treatment

Conservative

Bed rest

Uroseptics and antibiotics

Hemostatic therapy

NSAIDs

Cold compresses on the stomach

Catheterization

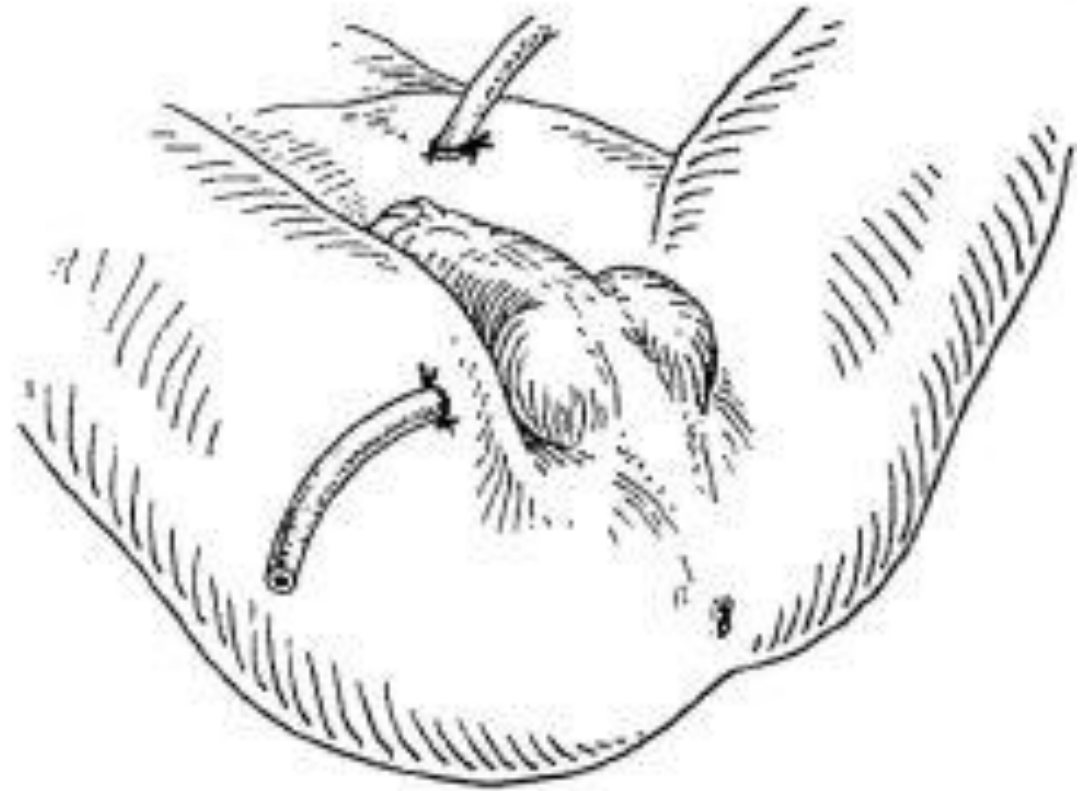
Surgical

Restoring the integrity of the bladder

Urine removal

Drainage

Drainage by Buyalsky-McWorthier



Literature

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