Contusion rénale

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1-Généralités –intérêts de la question

- Traumatisme fermé du rein
- 90-95% in rural settings. In urban settings, the percentage of penetrating injuries increases to 20%
- Renal trauma occurs in approximately 1-5% of all traumas
- male to female ratio being 3:1

- Dgc:clinique(Hurie) ; Exa paraclinique(Ech/Tdm)

- Classification anatomo-Rx:A total of 26 classifications (standardize groups of patients,appropriate therapy ,predict results)

- Trt:fx du type lésionnel

- Surveillance +++

2-PHYSIOPATHOLOGIE

A-mécanisme:-direct

-indirect: décélération

B-Lésion anatomique:

Capsule , fissure , fracture, voie excrétrice,

vaisseaux(A=incomplete ,s/intimale .V=complete)

C-Evolution:

°Hématome et Uroh: augmentation V3

résorption, surinfection, organisation

°Lésions fissurées et fracturées: rapprochement !?

°Zones infarcis et ischémique: nécrose ou atrophie

° *Lésions de la voie excrétrice*

Hématurie avec cailloutage

Cicatrisation (voie d'aval perméable)

° *Lésions vasculaires*

Ischémie totale plus de 2 H° ==nécrose tubulaire

A=thrombose second. Cas de lésion incomplète

V=thrombose

3-CLINIQUE

Il s'agit d'un adulte jeune, plus souvent un homme qui a été victime d'un traumatisme direct en position lombaire au cours d'un accident

- rechercher en priorité des signes de choc, securing of the airway, external bleeding
- and resuscitation of shock as required

✓ une lésion rénale est évoquée devant :

-des lésions ecchymotiques du flanc

-douleurs lombaires, sensibilité ou empattement lombaire

-des fractures de côte (8e-12e), des fractures des apophyses transverses (D12-L1),

✓ une hématurie macroscopique 70% +++

✓ recherche d'une lésion associée : neurologique, thoracique, abdominale, orthopédique

✓ lésions pédiculaires :absence hurie +++++

✓ Anurie: secondaire a un état de choc qu'a une thrombose des VR

GUIDELINES ON HISTORY AND PHYSICAL EXAMINATION

- Haemodynamic stability should be decided upon admission
- History should be taken from conscious patients, witnesses, and rescue team personnel regarding the time and setting of the incident.
- Past renal surgery, and known pre-existing renal abnormalities (ureteropelvic junction obstruction, large cysts, lithiasis) should be recorded
- A thorough examination of thorax, abdomen, flanks and back for penetrating wounds should be obtained
- Findings on physical examination, such as haematuria, flank pain, flank abrasions and ecchymoses, fractured ribs, abdominal tenderness, distension or mass, may indicate possible renal involvement

4-GUIDELINES ON LABORATORY EVALUATION

- Urine from a patient with suspected renal injury should be inspected grossly and then by dipstick analysis

- Serial haematocrit measurement indicates blood loss. However, until evaluation is complete, it will not be clear whether it is due to renal trauma or/and associated injuries

- Creatinine measurement may highlight patients with impaired renal function prior to injury

5-Imaging:

- Indications for radiographic evaluation :

  gross haematuria, microscopic haematuria and shock, or presence of major associated injuries , patients with a history of rapid deceleration injury with clinical indicators of renal trauma or associated injuries also need immediate imaging .

5.1 Échographie « Ultrasonography »

- des lésions viscérales associées(hémopéritoine, foie, rate)
- une première analyse de l'état du parenchyme rénal
- l'importance de l'hématome rétro péritonéal.
- surveillance

5.2 L'échographie-doppler

permet, si c'est techniquement possible, une première analyse du pédicule rénal et de la vascularisation du rein.

5.3 Urographie intra veineuse « *Intravenous pyelography (IVP)* »

- Formal IVP has been the preferred imaging study for evaluating renal trauma until its replacement by CT.
- should establish the presence or absence of one or both of the kidneys, clearly define the renal parenchyma,and outline the collecting system.
- In order to stage renal trauma, the IVP should include nephrotomograms, delineate the renal contour, and visualize the excretion of contrast material from both kidneys into the renal pelvis and ureter. Non-visualization, contour deformity, or extravasation of contrast implies a major renal injury and should prompt further radiological evaluation with CT or angiography
- *The most significant findings on IVP* :

  Non-function is usually a sign of extensive trauma to the kidney, **pedicle injury** (vascular avulsion or thrombosis) or a **severely shattered kidney**.

  Extravasation of the contrast medium also implies a severe degree of trauma, involving the capsule, parenchyma and collecting system. Other less reliable signs are delayed excretion, incomplete filling, calyceal distortion and obscuring of the renal shadow. The sensitivity of IVP is high (> 92%) for all degrees of trauma severity

5.4 Uroscanner « Computed tomography (CT) »

gold standard :assessment of stable patients with renal trauma

more sensitive and specific than IVP, ultrasonography or angiography

Spiral CT

Diagnostic

- Location and depth of injuries ,contusions and devitalized segments, visualizes the entire retroperitoneum and any associated haematomas, a view of the abdomen and pelvis. evaluating traumatic injuries to kidneys with pre-existing abnormalities

- injury of the renal collecting system

- Renal vein injury : difficult to diagnose (the presence on CT of a large haematoma, medial to the kidney and displacing the renal vasculature =suspicion)

- Three-dimensional post-processing modalities allow the assessment of the renal vascular pedicle by CT angiography and improve the demonstration of complex lacerations of the renal parenchyma

indications:

- hématurie macroscopique associée à un traumatisme abdominal,
- une anomalie échographique

Thérapeutique

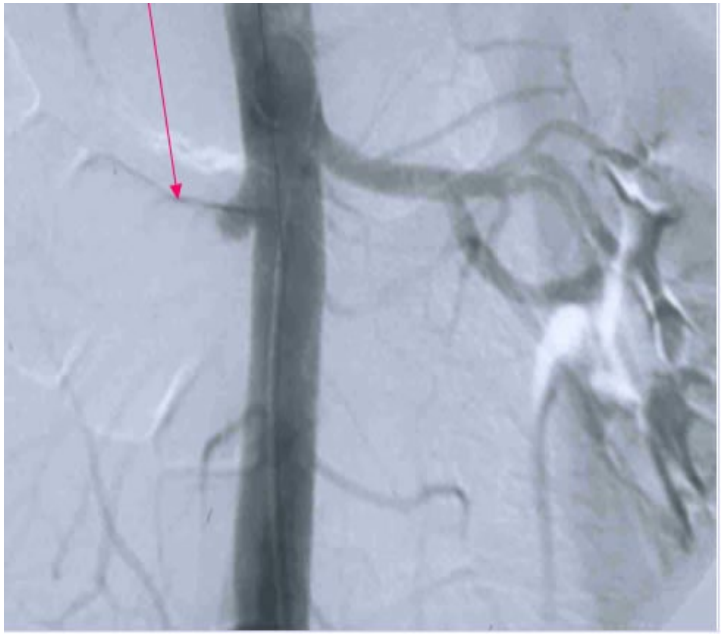
Surveillance

5.5 Angiography:

Diagnostic:

Indications: -non-visualization of a kidney on IVP after major blunt renal trauma when a CT is not available.

-stable patients to assess pedicle injury, if the findings on CT areunclear, and for those who are candidates for radiological control of haemorrhage(Total avulsion of the renal vessels, Renal artery thrombosis,Severe contusion causing major vascular spasm).



Thérapeutique

embolisation artérielle

5.6 Magnetic resonance imaging (MRI)

perirenal haematomas, assessing the viability of renal fragments, and detecting

pre-existing renal abnormalities, but failed to visualize urinary extravasation

On initial examination.

MRI could replace CT in patients with iodine allergy

initial staging if CT was not available .

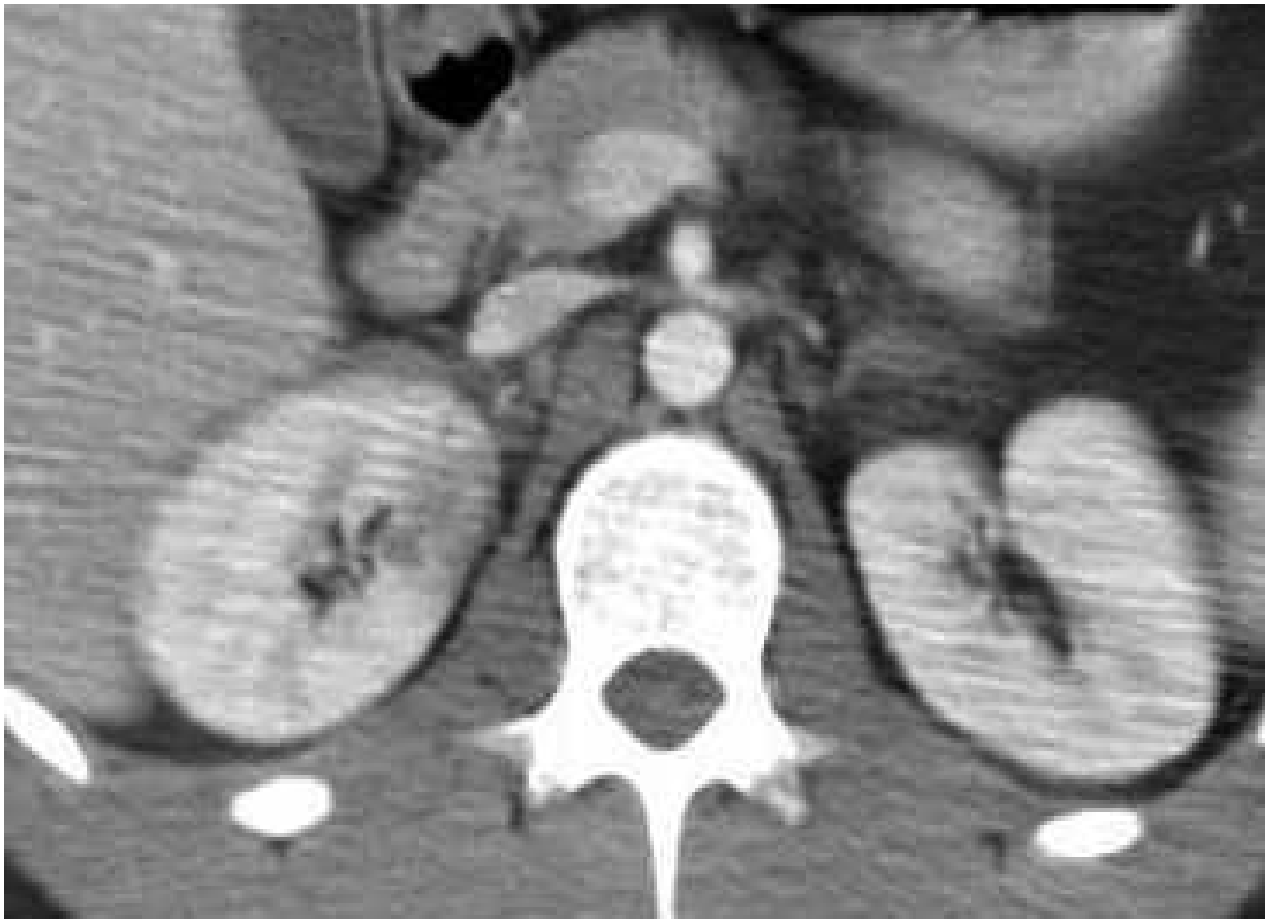
GUIDELINES ON RADIOGRAPHIC ASSESSMENT

- Blunt trauma patients with macroscopic or microscopic haematuria (at least 5 rbc/hpf) with hypotension (systolic blood pressure < 90mmHg) should undergo radiographic evaluation
- Radiographic evaluation is also recommended for all patients with a history of rapid deceleration injury and/or significant associated injuries
- All patients with any degree of haematuria after penetrating abdominal or thoracic injury require urgent renal imaging
- Ultrasonography can be informative during the primary evaluation of polytrauma patients and for the follow-up of recuperating patients
- A CT scan with enhancement of intravenous contrast material is the best imaging study for diagnosis and staging renal injuries in haemodynamically stable patients
- Unstable patients who require emergency surgical exploration should undergo a one-shot IVP with bolus intravenous injection of 2 ml/kg contrast
- Formal IVP, MRI and radiographic scintigraphy are reliable alternative methods of imaging renal trauma when CT is not available
- Angiography can be used for diagnosis and simultaneous selective embolization of bleeding vessels

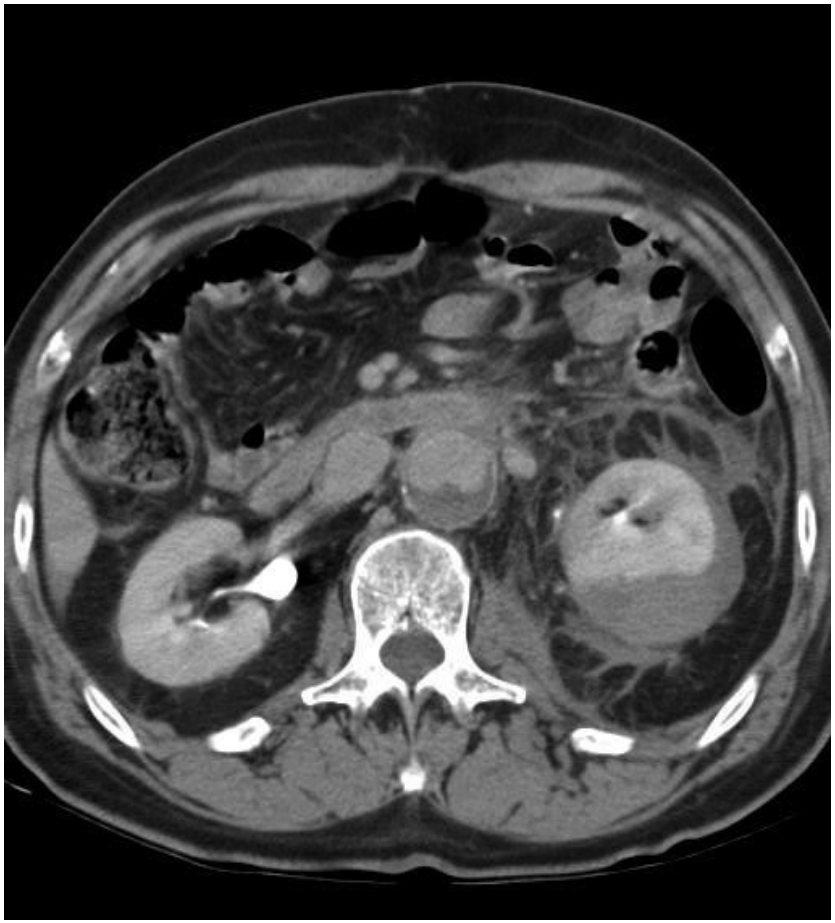
6-Classifications anatomo radio clinique

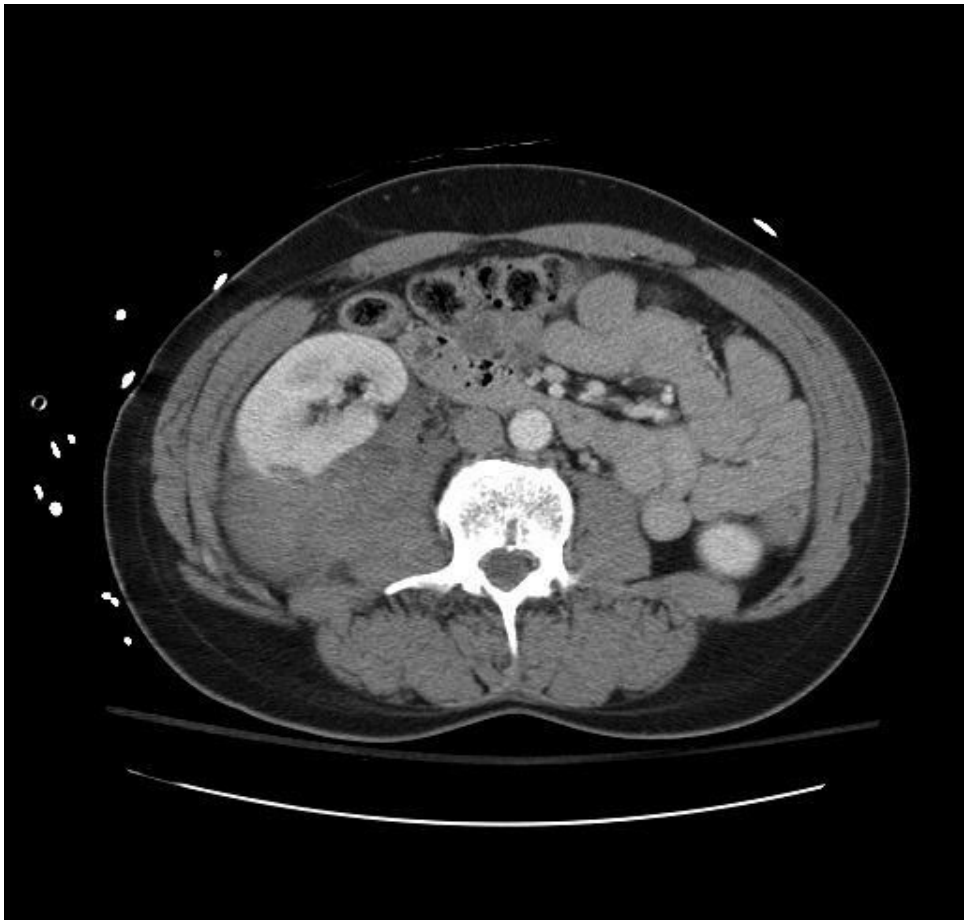
Classification de l'American Association for the Surgery of Trauma

Grade I : Contusion rénale, hématome sous-capsulaire non expansif, pas de lacération parenchymateuse



Grade II: Hématome péri rénal, non expansif, lacération du cortex de moins de 1 cm de profondeur et pas d'extravasation urinaire





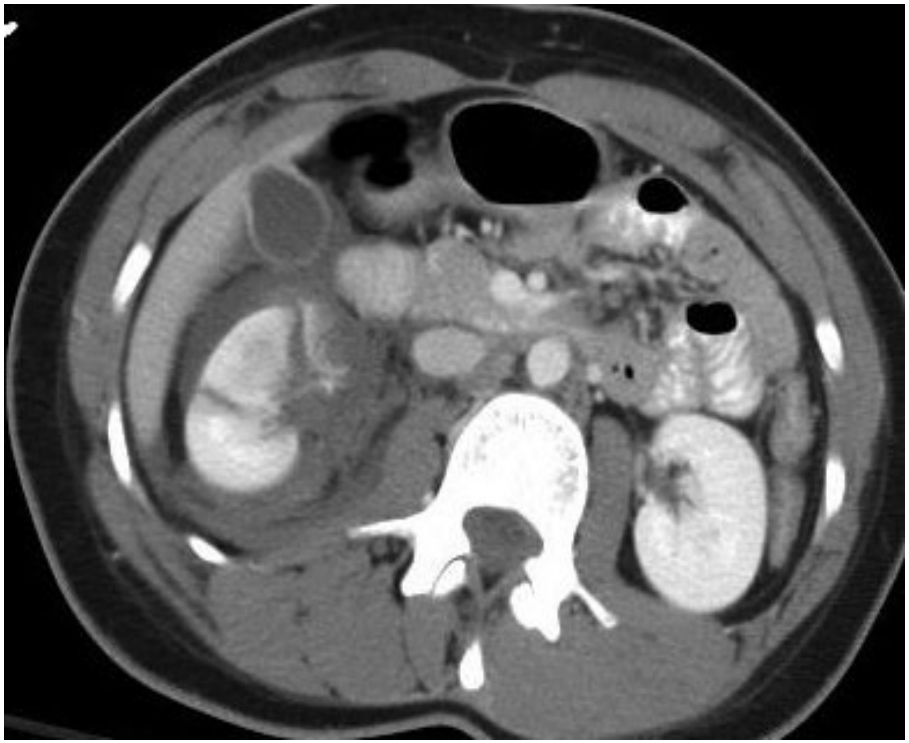
Grade III : Lacération du cortex de plus de 1 cm et pas d'extravasation urin

Grade IV : Lacération du cortex rénal s'étendant dans le système collecteur (extravasation de produit de contraste)

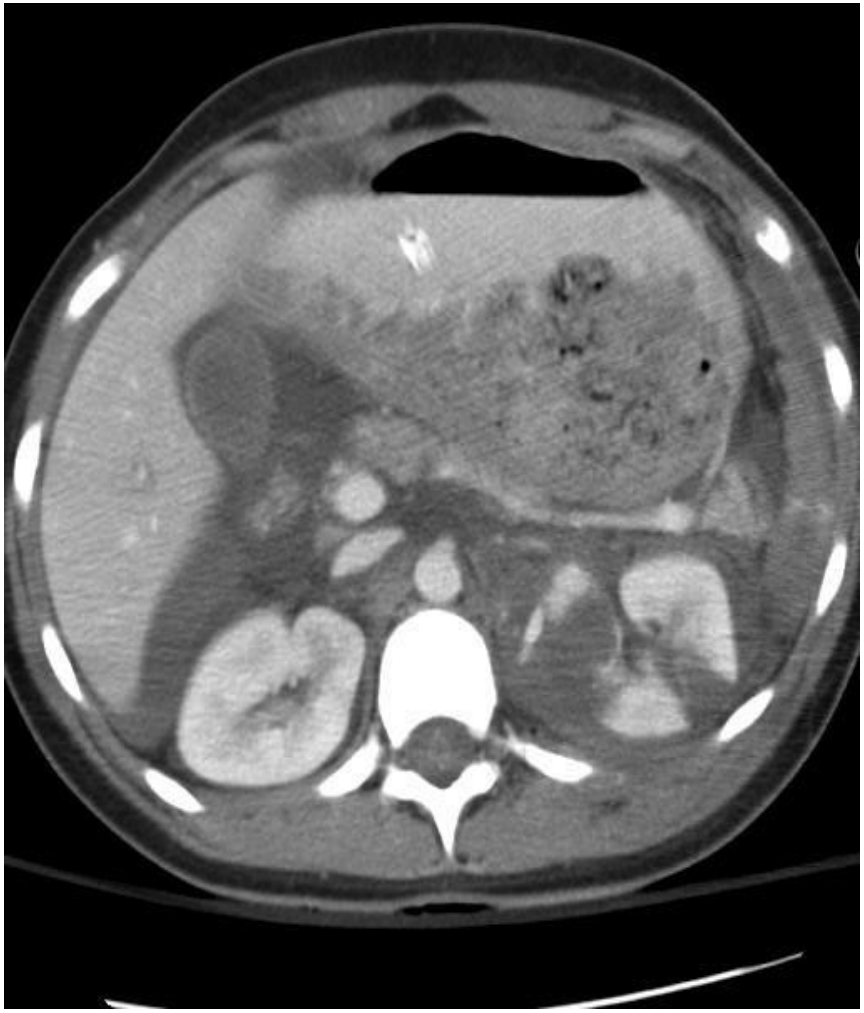
Lésion segmentaire d'une artère ou d'une veine se traduisant par un infarcissement.

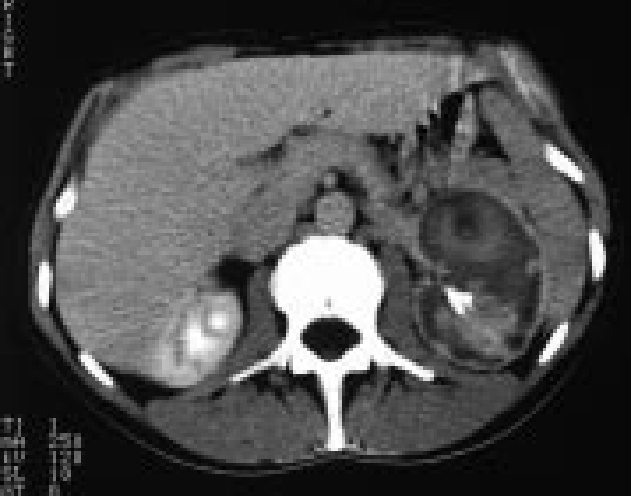
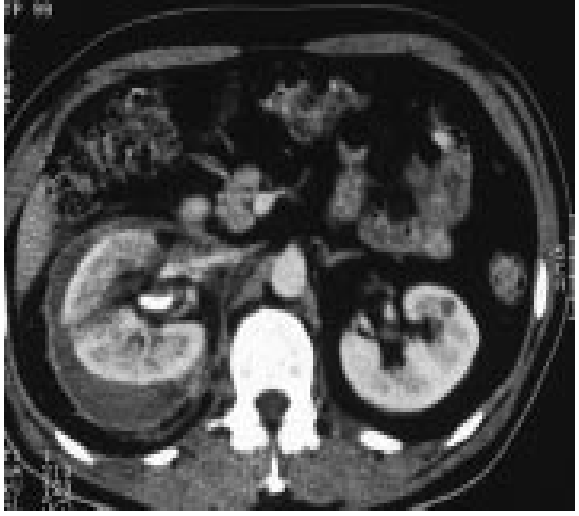
Lésion pédiculaire artérielle ou veineuse avec hématome contenu

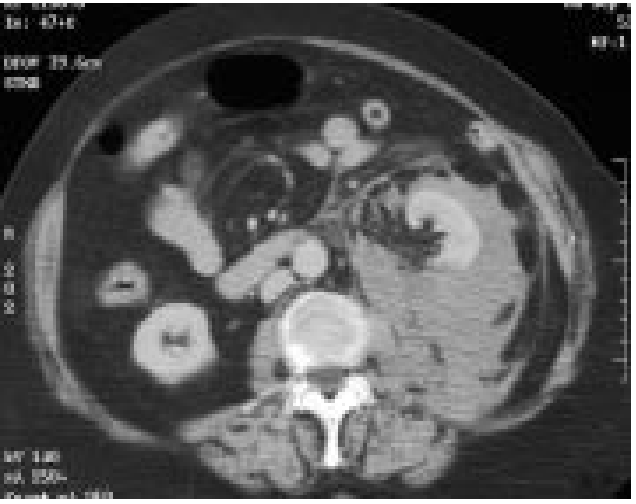
Thrombose artérielle pédiculaire sur dissection

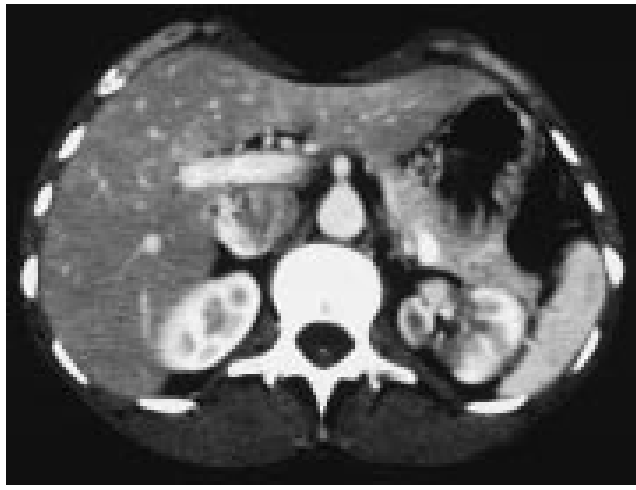


Grade V Avulsion du pédicule rénal , Rein multi fracturé







A. Hématome sous-capsulaire du pôle supérieur du rein gauche.
B. Fracture du rein droit avec hématome périrénal contenu dans la loge rénale.
C. Extravasation de produit de contraste au temps urinaire associée à un hématome périrénal droit.
D. Fracture du pôle inférieur du rein gauche avec volumineux épanchement périrénal refoulant le rein vers l'avant.
E. Reconstruction tomodensitométrique montrant une fracture du rein dans le plan transversal.
F. Contrôle à distance d'une fracture du pôle supérieur du rein gauche après traitement conservateur. L'hématome périrénal a disparu ; il persiste une séquelle parenchymateuse.

Classification de Chatelain (for history)

Stade I contusion légère, intégrité de la capsule

Ia : la voie excrétrice est ouverte

Ib : la voie excrétrice est non ouverte

Stade II la capsule est rompue

IIa : la voie excrétrice est déchirée

IIb : la voie excrétrice est intacte

Stade III capsule, parenchyme et voie excrétrice sont rompus

fracturaires importants et séquestres parenchymateux, lésions de voie excrétrice importantes,

zones ischémiques

Stade IV lésions pédiculaires

- IVa : rupture artérielle complète
- IVb : rupture artérielle partielle (intima)
- IVc : rupture veineuse

7-Formes cliniques et cas particuliers

Lésions associées

Les lésions viscérales retrouvées dans 15 à 20 % des traumatismes fermés

L'atteinte du bas appareil urinaire et l'atteinte rénale bilatérale concomitante sont exceptionnelle

Traumatismes sur rein pathologique : anomalie congénitale, lésion tumorale sous-jacente,

les reins pelviens ou les reins en « fer à cheval » pourraient être plus vulnérables car non protégés par les côtes et la graisse péri rénale

Formes symptomatiques:

f. Hémorragique gravissime

f. Anurique

Forme chez l'enfant:2eme rang après trauma crânien

Cas particulier=LEC

8-EVOLUTION COMPLICATION

Grades mineurs: favorable , Autres: séquelles possibles

Phlegmon perinéphritique

HDN post traumatique

HTA: labile et précoce /tardive et persistante

Atrophie rénale

Fistules arterio-veineuse

Lithiases rénales

9-Traitement

-Sauver pc vital

-Trt des lésions associées

-préserver la fx R

-Eviter les complications

❖ Trt medical:

- Etat de Choc
- Repos
- Antalgiques +Antibioprophylaxie

❖ Trt chirurgical :

overall exploration rate for blunt trauma is less than 10%

But:

- Nettoyer la loge
- Assurer l'hémostase
- Réparation de la VE du et parenchyme
- Repermeabilisation Vx

Type:

1-Chi précoce en urgence:

Tr. pédiculaire

état de choc réfractaire a une bonne réanimation

expanding or pulsatile perirenal haematoma identified at exploratory laparotomy.

2-chi précoce différée : 3-7 j

3-attitude conservatrice :

Montée de jj+drainage percutané+ embolisation

4-chirurgie tardive

❖Indications

Grades mineurs: *T*rt medical Surveillance clinique(Ta; T°;diurèse),biologique(nfs) et Rx (ech voir tdm+++)

*Grades graves(4,5):*Chi en urgence+Tm+S

Grade 3 :controversial for many years. Improved results in all recent studies support expectant treatment.

GUIDELINES ON MANAGEMENT OF RENAL TRAUMA

- Stable patients, following grade 1-4 blunt renal trauma, should be managed conservatively with bed-rest, prophylactic antibiotics, and continuous monitoring of vital signs until haematuria resolves
- Indications for surgical management include:
  1. Haemodynamic instability
  2. Exploration for associated injuries
  3. Expanding or pulsatile perirenal haematoma identified during laparotomy
  4. A grade V injury
  5. Incidental finding of pre-existing renal pathology requiring surgical therapy
- Renal reconstruction should be attempted in cases where the primary goal of controlling haemorrhage

GUIDELINES ON POST-OPERATIVE MANAGEMENT AND FOLLOW-UP

- Repeat imaging is recommended for all hospitalized patients within 2 to 4 days following renal trauma
- Nuclear scintigraphy before discharge from the hospital is useful for documenting functional recovery
- Within 3 months of major renal injury, patients' follow-up should involve:
  1. Physical examination
  2. Urinalysis
  3. Individualized radiological investigation
  4. Serial blood pressure measurement
  5. Serum determination of renal function

- Long-term follow-up should be decided on a case-by-case