



Namaste
 مرحبا
 Bem Vindo
 Selamat Datang
Willkommen
 Welcome
 Bienvenidos
 أهلا وسهلا
 Croeso
 Namaste
Welcome
 Welcome
 Welkom
 Croeso
 Namaste
 أهلا وسهلا
 مرحبا
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 Benvenuti
 Willkommen
 Benvenuti
 добре
 дошъл
 Καλώς ήρθατε

Transplantation



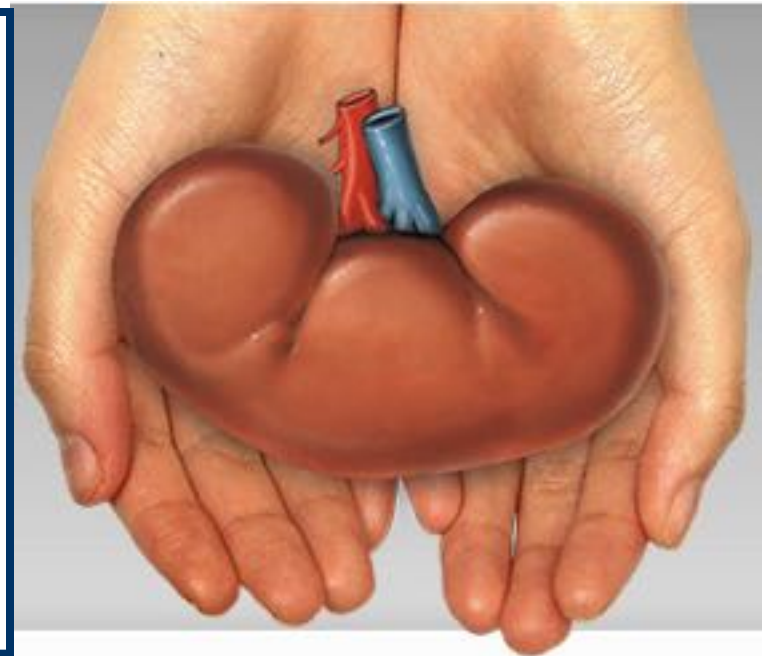
- The best survival
- The best quality of life

- A treatment modality
(a very good one)

NOT a radical cure

- On-going process

NOT fire-and-forget



Complications → Graft loss



The BAD !

Complications → Graft loss



The BAD!

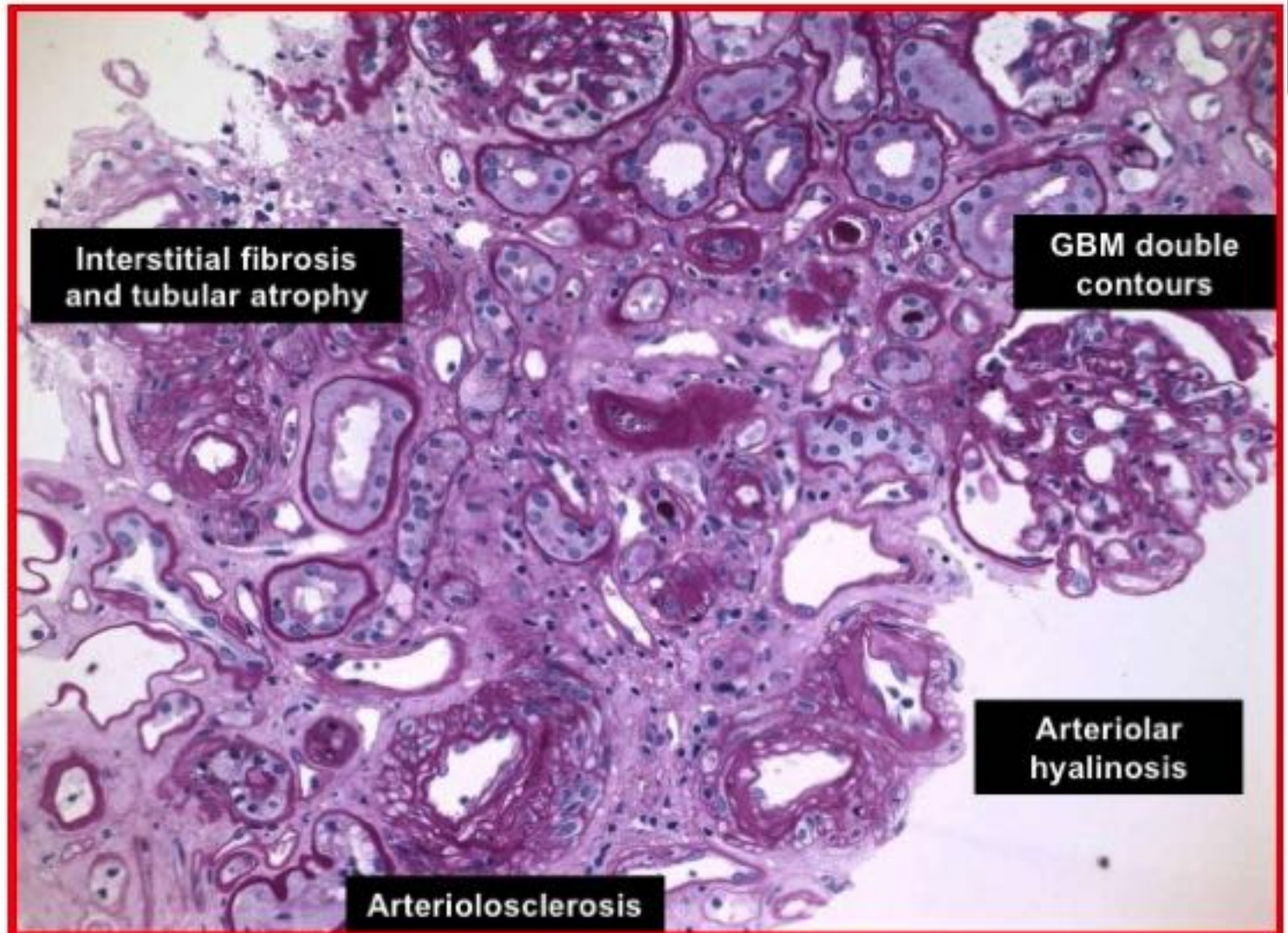
- IF/TA
- **Death with a functioning graft**

Cardiovascular disease
(adolescents & older)

Infections (children, early deaths)

Malignancy

CAN / IFTA: a non-specific descriptive entity defined by pathology



CAN, chronic allograft nephropathy;
IFTA, interstitial fibrosis and tubular atrophy; GBM, glomerular basement membrane

Fletcher JT *et al. Pediatric Nephrol* 2009;24:1465–71

CONTRIBUTORS

Graft senescence

Chronic immune-mediated
graft injury esp. ch. AMR

IF/TA

Ch. CNI toxicity

Viral inf.

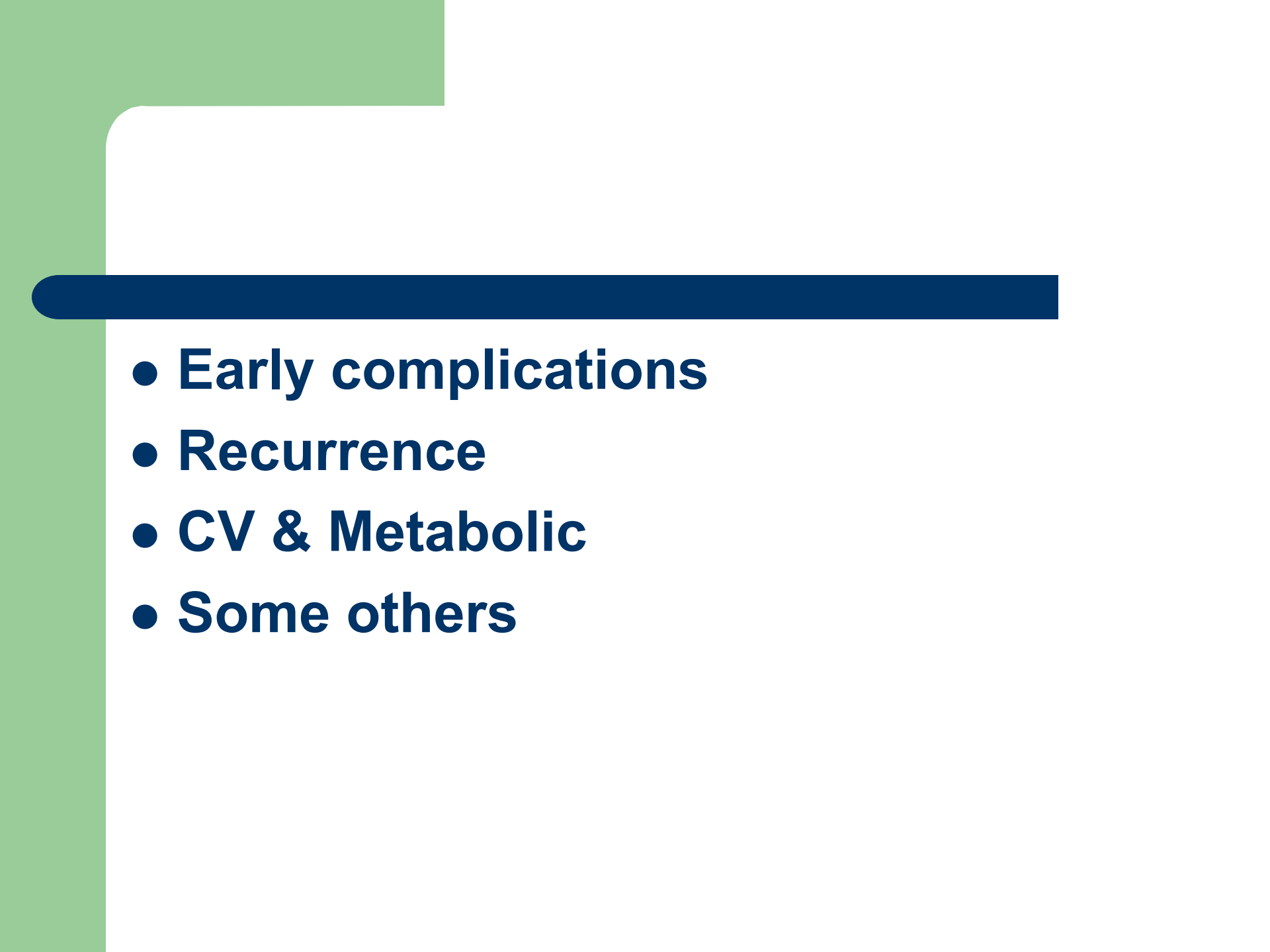
HTN,
atherosclerosis

- **Rejection**
- **Infections**
- **Malignancies**
- **Drug-specific adverse effects**
- **Multifactorial conditions**





- **Rejection**
- **Infections**
- **Malignancies**
- **Drug-specific adverse effects**
- **Multifactorial conditions**

- 
- **Early complications**
 - **Recurrence**
 - **CV & Metabolic**
 - **Some others**

Let's start at the beginning;



A BIT EARLIER



A BIT EARLIER

Timing & donor source

- Preemptive best
- Shorter dialysis better
- PD better

- Early recognition & referral of CKD
- Timely planning of RRT (CKD4)
- Retransplantation?

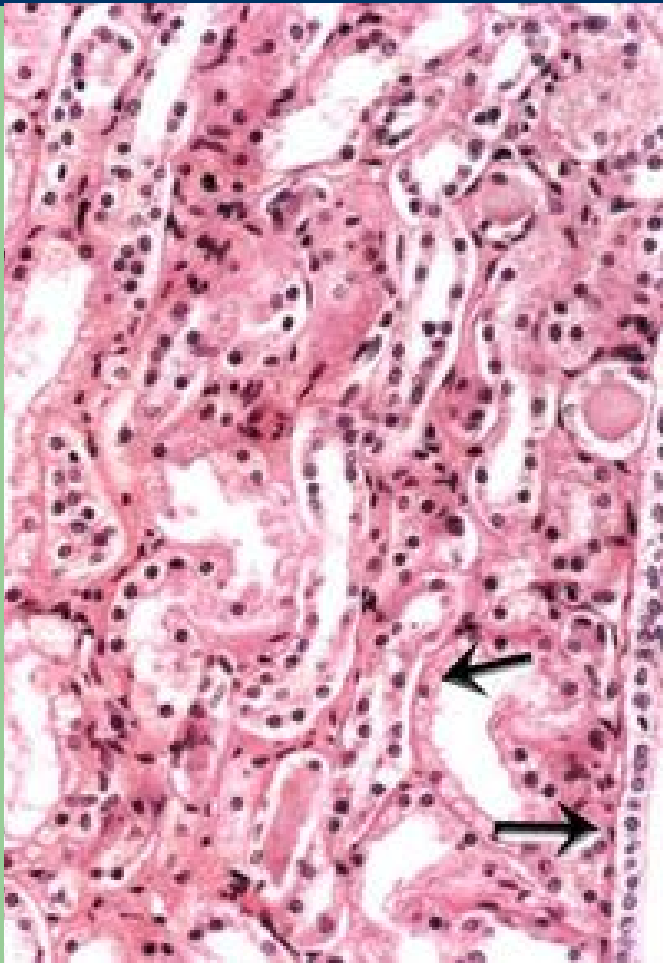
TRANSPLANTATION-FRIENDLY DIALYSIS

- Counsel
- Transfusions
- Femoral/iliac vessels
- HCV seroconversion

Delayed Graft Function

- **Persistence of RF after transplantation**
- **Need for dialysis within 1st wk**
 - <5% living-donor**
 - ~20% deceased-donor**

Delayed Graft Function



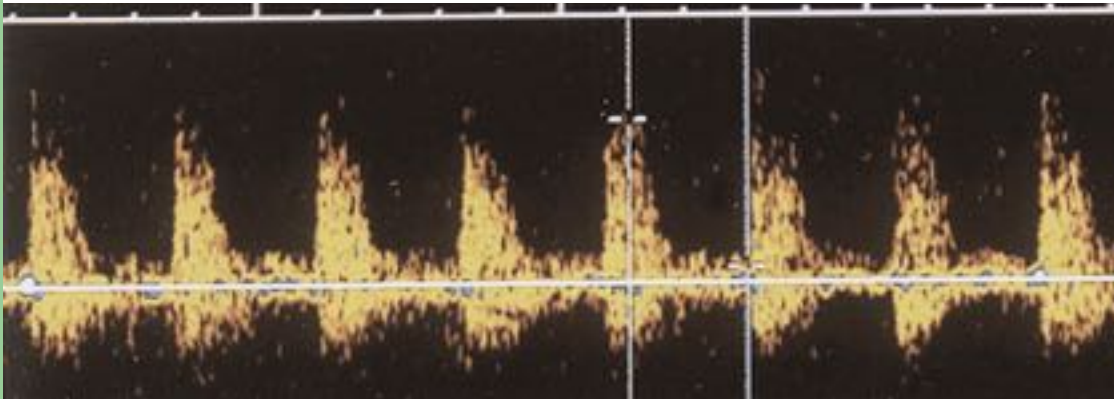
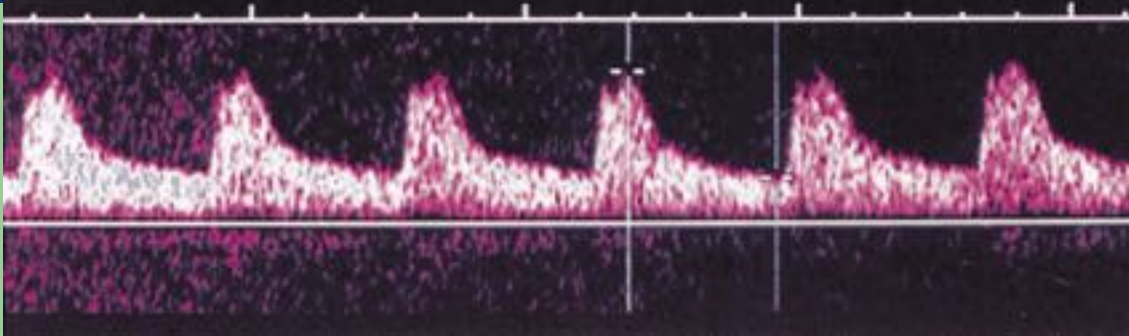
ISCHEMIC ATN

- **Commonest cause**
- **Prolonged ischemic time**
- **MOST REVERSIBLE**

Delayed Graft Function: Management

- **Optimize graft perfusion**
- **Rule out vascular complications**
- **Rule out urinary obstruction or leak**
- **Supportive management & dialysis**
- **Superimposed rejection?**

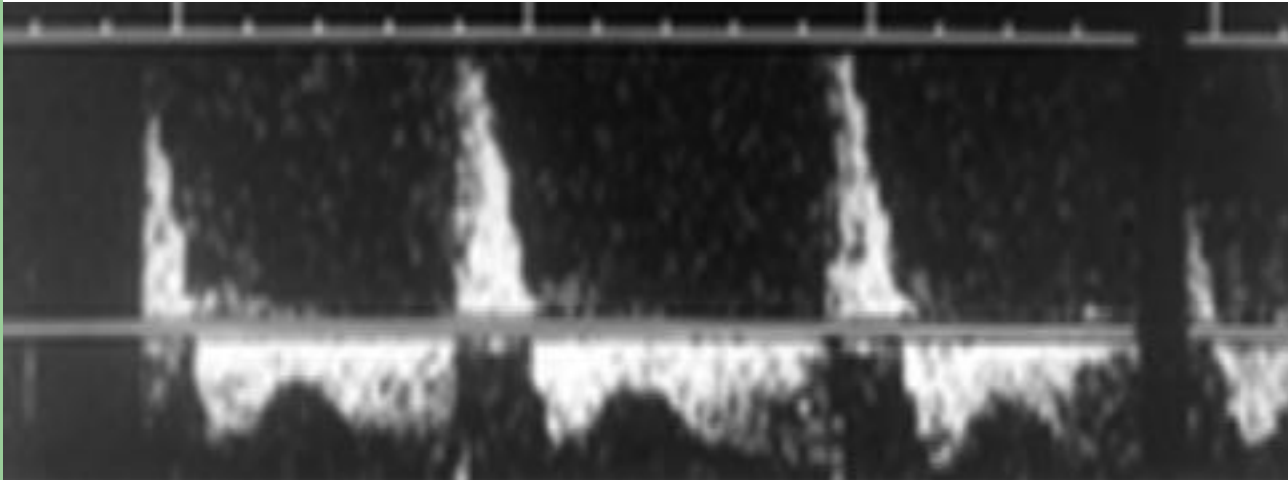
Delayed Graft Function



**brisk systolic upstroke, low end-diastolic flow, \uparrow RI
typical of ATN**

Vascular complications

- Arterial or venous thrombosis



Renal vein thrombosis

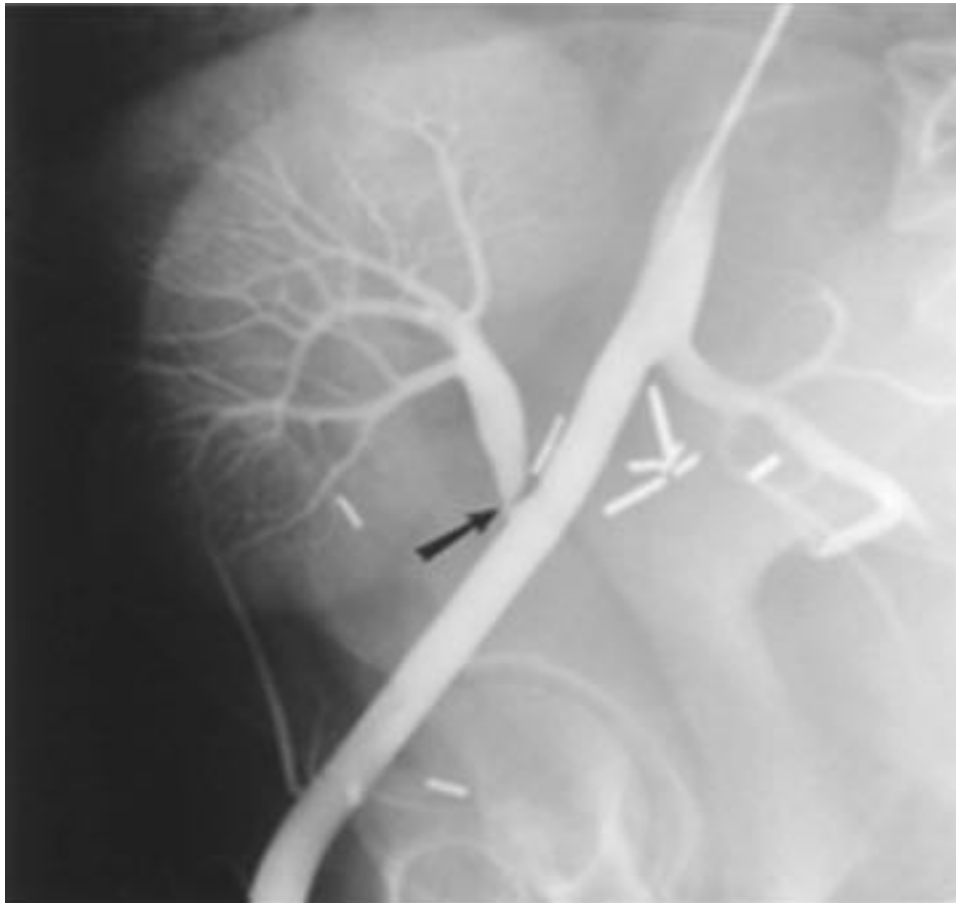
Reversed and plateauing diastolic flow in artery

No venous signal could be obtained

Vascular complications

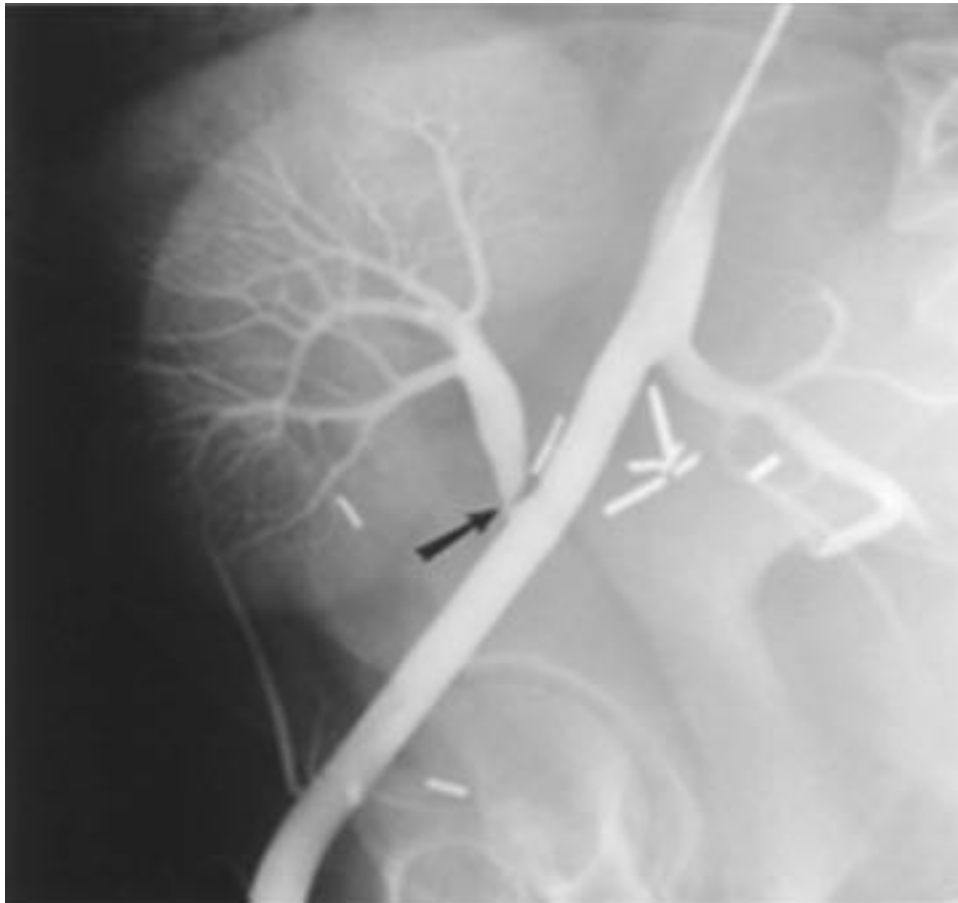


Vascular complications: RAS



- **Slow graft function**
- **Creatinine not reaching expected**
- **Hypertension**

Vascular complications: RAS



Early anastomotic site stenosis common & resolves

Significant cases → angioplasty & stent

Urological complications

- High output from drain
- Elevated creatinine in drained fluid

URINARY LEAK



Vescico-ureteric anastomosis revision

Urological complications

- Urinary leak
- **Urinary obstruction**

Lymphocele



**Hydronephrosis
secondary to a
lymphocele**

**hydronephrotic
kidney adjacent to a
large fluid collection
(arrow).**

Vascular, DGF and others

- Anesthesia
- Hemorrhage
- Metabolic complications
hypothermia, hyperglycemia, electrolyte, acidosis
- Oedema, Pulm. Oedema
- Post-op infections
- Post-op urological complications

Patient care:

Perioperative, surgical and follow-up

- **Minimize perioperative morbidity**
- **Adequate graft perfusion (intra- & post-operative)**
- **Vascular anastomosis**
- **Role of prophylactic anticoagulation**
- **Vascular imaging**
- **Non-refluxing VU anastomosis**
- **Asepsis**

Graft dysfunction: unique causes

Any cause of RF (prerenal, renal, UT disorder) can be involved:

- **Rejection**
- **CNI toxicity**
- **Viral infections (BK-CMV)**
- **Pre/ post renal**
- **Recurrence**
- **De novo renal disease**

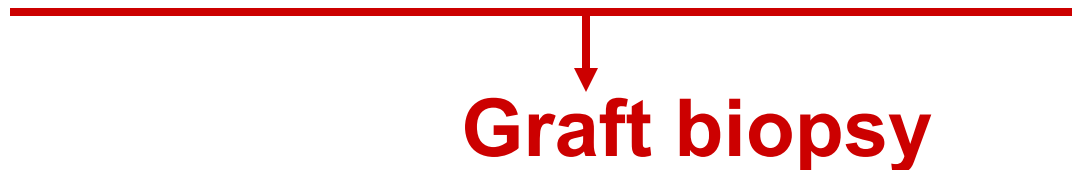
Acute graft dysfunction: workup

- Rule out prerenal causes
- Rule out vascular causes
- Rule out collections/
obstruction
- CNI vs AR
- Infectious causes

Acute graft dysfunction: workup

- Rule out prerenal causes **CLINICAL**
- Rule out vascular causes
- Rule out collections/
obstruction
- **CNI vs AR** *both low FENa* **CNI level**
- Infectious causes **UC, virology**

} **U/S & Doppler**



- **Early complications**
- **Recurrence**
- **CV & Metabolic**
- **Some others**

Recurrence

- **Primary hyperoxaluria**
- **Atypical HUS (genetic complement defects)**
- **FSGS (mainly non-genetic)**
- **MPGN**
- **Membranous nephropathy**
- **IgAN (slow progression)**
- **Lupus**
- **Wilm's**

Non-recurrence implications of etiology

- Lower UT
- Native nephrectomy
- ch PN, refractory HTN, size- large ARPKD*
- **Alport → AntiGBM nephritis**
- **Finnish → AntiNephrin**
- **Non-CKD related comorbidity (portal HTN, Neurological)**

- **Early complications**
- **Recurrence**
- **CV & Metabolic**
- **Some others**

Remember the fatal triad;

Infection, CVD & Malignancy



Cardiovascular risk

- **Pre Tx. duration of CKD/ ESRD especially with poorly controlled anemia, HTN, MBD, etc**
- **Children with CKD have evidence of endothelial dysfunction, LVH & LV dysfunction**



Cardiovascular risk

- **Pre Tx. duration of CKD/ ESRD especially with poorly controlled anemia, HTN, MBD, etc**
- **Obesity**
- **Hypertension**
- **Dyslipidemia**
- **Diabetes**
- **Tobacco**



Hypertension & LVH

- **BP check at each visit (simple, common)**
- **Maintain BP <90th percentile for sex, age & Ht**
- **Drug therapy:**
 - **Monitor closely for adverse effects and drug interactions**
 - **Consider an ACEI as first-line therapy for proteinuric patients ($\geq 1\text{g}$ or 600 mg/m^2 daily)**
 - **CCB & CNI, diuretics with oedema or $\uparrow\text{K},\dots$**

Dyslipidemia

- **Causes:**
 - Steroids, CsA & mTORi
 - Graft dysfunction & proteinuria
- **Monitor:**
 - 2-3 Mo post Tx
 - after risky medication change
 - annually otherwise
- **Management:**

NoDAT

- **Screen:**
 - *weekly for 4 wks, q 3Mo for 1st yr*
 - *after starting or substantially ↑
steroids, CNIs or mTORi*
 - *annually otherwise*
- **Consider medication modification**
- **Treatment of DM**
- **Address other risk factors**

- 
- A decorative graphic on the left side of the slide, consisting of a light green vertical bar and a dark blue horizontal bar with rounded ends.
- **Early complications**
 - **Recurrence**
 - **CV & Metabolic**
 - **Some others**

Bone disease

- **Monitor for MBD**
 - **Initially weekly until stable**
 - **Then as for CKD according to stage**
- **Management**

Blood disease

- **Anemia & neutropenia**
 - Medications
 - Infections
 - Graft dysfunction
- **Erythrocytosis**
 - ➔ ACEi

GIT complications

- **Infections**
- **Drug effects**

Growth

- **Status at Tx**
- **Graft function**
- **Steroids**
- **Nutrition & metabolic control**
- **Role for GH**

The DIFFERENT !!

- √ **Adult to child kidney**
- √ **Immunological balance**
- √ **Implications of etiology**
- √ **Growth & child health**

- **Compliance**
- **Transitioning**

**The UGLY,
substantial,
unacceptable &
avoidable losses**

Compliance & Non-adherence

- **5% of graft losses**
“probably an underestimate”

Non-adherence: risk factors

- **Poor socioeconomic status**
- **Family stress and conflicts**
- **Lack of parental supervision**
- **Patient depression**
- **Cosmetic side effects of medications**
- **Large number of medications**
- **Size of tablets and difficulty swallowing tablets**
- **Taste of medication**
- **Poor patient knowledge**
- **Striving for autonomy and independence**

Non-adherence: prevention

Education and medical intervention

- Patients know their medications, reason for prescription & adverse effects.
- Written instructions for each change.
- Reduce the number and frequency of medications.
- Must continue even if well, ch. Rejection
- Monitor compliance & problems

Non-adherence: prevention

Behavioral and psychosocial approaches



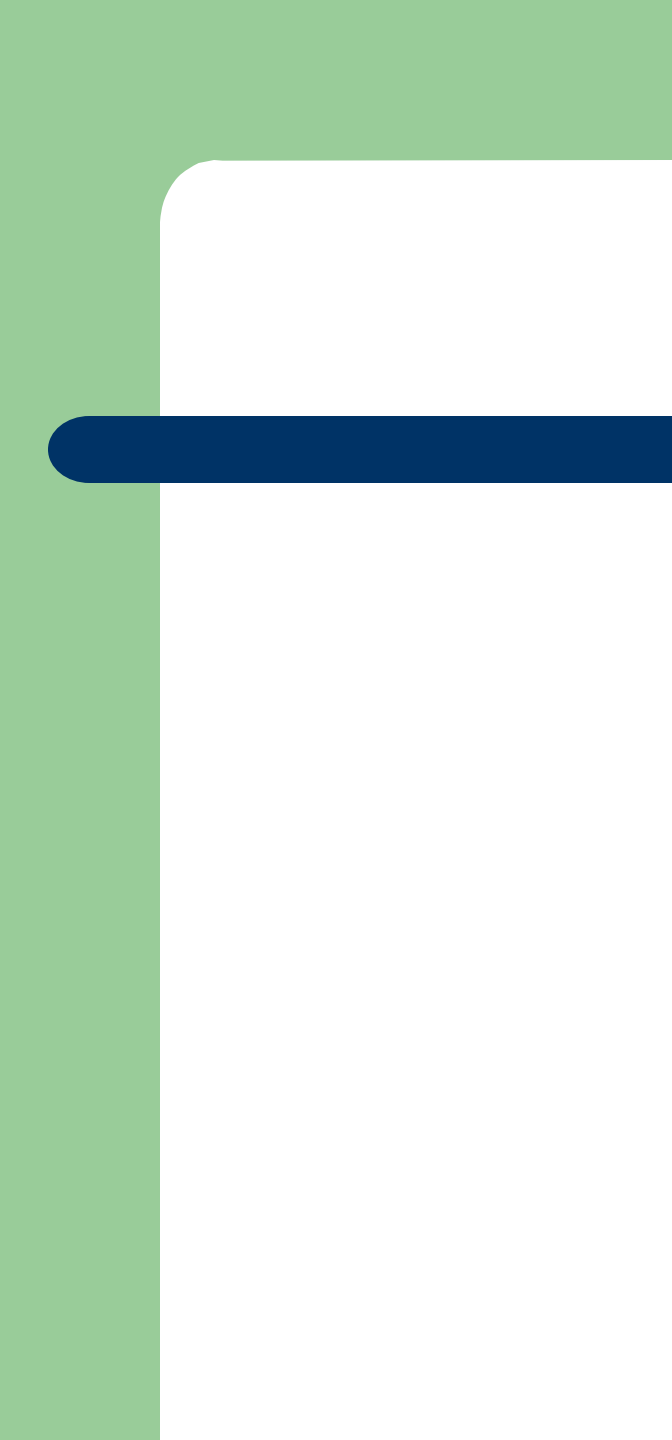
Hoping for successful transition

- **In a good condition**
- **With due continuity**
- **Without serious omissions**
- **Without insurance problems**



Summary of preventive targets

- **The earlier the better (referral, preemptive)**
- **Search for etiology (especially those with treatment implications)**
- **Appropriate perioperative care**
- **Appropriate immunosuppression**
- **Prevent and treat infections**
- **Follow up and monitoring**
- **Improve CV risk**
- **Address non adherence. It's not just the patient's problem**



Delayed graft function is usually defined as

- A slow decline of serum creatinine following transplantation**
- B persistence of renal failure after transplantation with early need for dialysis**
- C irreversible failure of a transplanted kidney**
- D immune-mediated graft dysfunction**
- E graft arterial or venous thrombosis**

Recurrence after transplantation is most likely when renal failure has been due to

- A familial focal segmental glomerulosclerosis**
- B Alport syndrome**
- C nephropathic cystinosis**
- D complement factor H deficiency**
- E Finnish-type congenital nephrosis**

Regarding hypertension in transplant recipients, it is NOT true that

- A calcineurin inhibitors and steroids are contributors**
- B it may be a sign of acute rejection**
- C it may be a sign of renal artery stenosis**
- D ACEi are contraindicated as antihypertensive medications in proteinuric patients**
- E some calcium channel blockers can increase CsA levels**

A serene sunset scene over a calm lake. The sun is low on the horizon, casting a warm, golden glow across the sky and reflecting on the water. Silhouettes of trees and a weeping willow are visible against the bright sky. In the foreground, a wooden slatted bench sits on the grassy bank, partially in shadow. A street lamp is visible on the far left.

Thank you

The withering away of
the darkness and the rising of the sun
signifies the most important aspect of
life – despair giving way for **HOPE**