



Dental management of patient with renal diseases



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Renal circulation

- ❑ Renal circulation receives 20 - 25 % of cardiac output under normal physiologic conditions.
- ❑ The body's blood volume circulates through the kidney every 6 minutes (12 times/hour).



Function of the kidneys

- ❑ Renin secretion and the regulation of volume and composition of extracellular fluid.
- ❑ Prostaglandins (PGs) synthesis
- ❑ Excretion: Over 200 waste products excreted : Only 2 are used for clinical assessment
 - ❑ □ Blood Urea nitrogen (BUN) Normal 8 - 20 mg/dl
 - ❑ □ Creatinine (A waste product of muscle metabolism) Normal value 0.6 - 1.2 mg/dl
- ❑ Blood pressure control: Electrolyte regulation
- ❑ Vitamin D activation: The liver and the kidney make the vitamin D active in the body.
- ❑ Acid-base balance regulation: Kidneys regulate acid-base balance by stabilizing body fluid volume & flow rate to enhance the reabsorption or excretion of bicarbonate & hydrogen ions



Diagnosis of renal diseases

Investigations

1. Blood Tests

- BUN elevated (norm 10-20)
- Creatinine elevated (norm 0.6 - 1.2)
- K elevated
- PO₄ elevated
- Ca decreased

2. Urinalysis

- Specific gravity
- Protein
- Creatinine clearance

Diagnostic tools

- Biopsy
- Ultrasound
- X-Rays



Acute renal failure (ARF)

- Sudden onset - hours to days
- Often reversible
- Severe - 50% mortality rate overall; generally related to infection.
- Sudden fall in glomerular filtration rate (GFR)
- Retention of nitrogenous (BUN and creatinine) and other wastes

Hours to days

- About 5% of all hospitalizations
- About 20% of ICU admissions
- Mortality 50 - 80%
- Independent risk factor for death - 5x increase risk

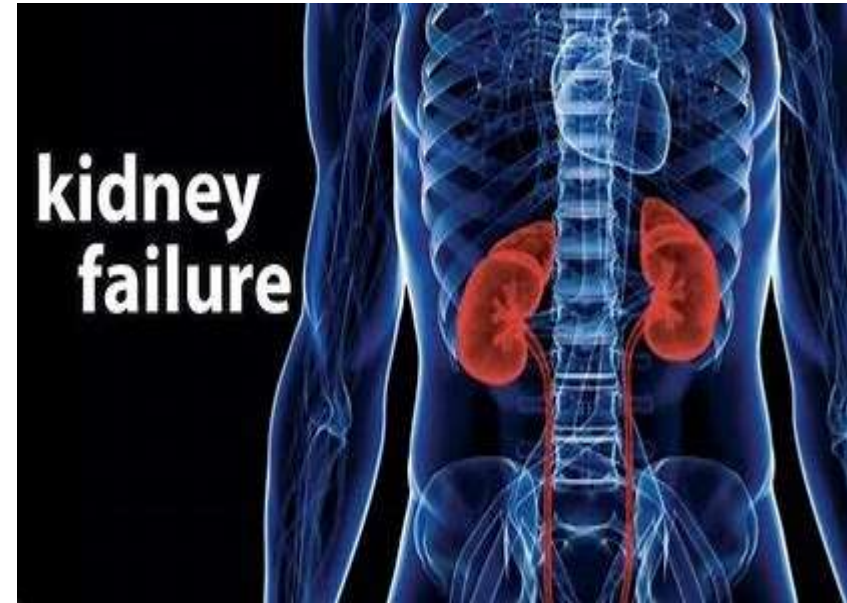


Chronic renal failure (CRF)

Slow progressive renal disorder related to nephron loss, occurring over months to years

Causes

- Diabetes
- Hypertension
- Glomerulonephritis
- Infectious Disease
- Neoplasms
- Obstructive disorders
- Autoimmune diseases (SLE)
- Hepatorenal failure
- Scleroderma
- Amyloidosis
- Drug toxicity





Oral manifestations



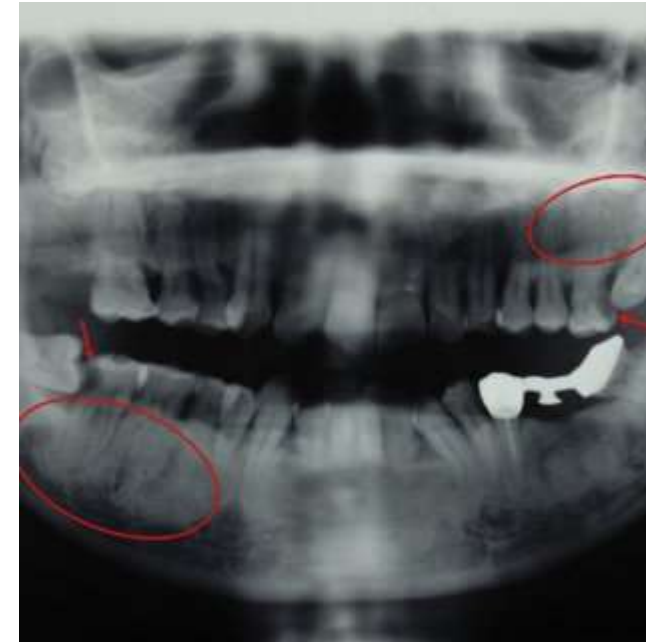
- Enlarged (asymptomatic) salivary glands
- Decreased salivary flow
- Dry mouth
- Odor of urea on breath
- Metallic taste
- Increased calculus formation
- Enamel hypoplasia
- Dark brown stains on crowns
- Extrinsic (secondary to liquid ferrous sulphate therapy)
- Intrinsic (secondary to tetracycline staining)
- Dental malocclusions
- Pale mucosa with diminished color demarcation between attached gingiva and alveolar mucosa
- Low-grade gingival inflammation
- Petechial and ecchymosis
- Bleeding from gingiva
- Prolonged bleeding
- Candidal infections
- Burning and tenderness of mucosa
- Erosive glossitis
- Tooth erosion (secondary to regurgitation associated with dialysis)
- Dehiscence of wounds

Oral manifestations



Radiographic manifestations

- ❑ Demineralization of bone
- ❑ Loss of bony trabeculation
- ❑ Ground-glass appearance
- ❑ Loss of lamina dura
- ❑ Giant cell lesions, “brown tumours”
- ❑ Socket sclerosis
- ❑ Pulpal narrowing and calcification
- ❑ Tooth mobility
- ❑ Arterial and oral calcifications

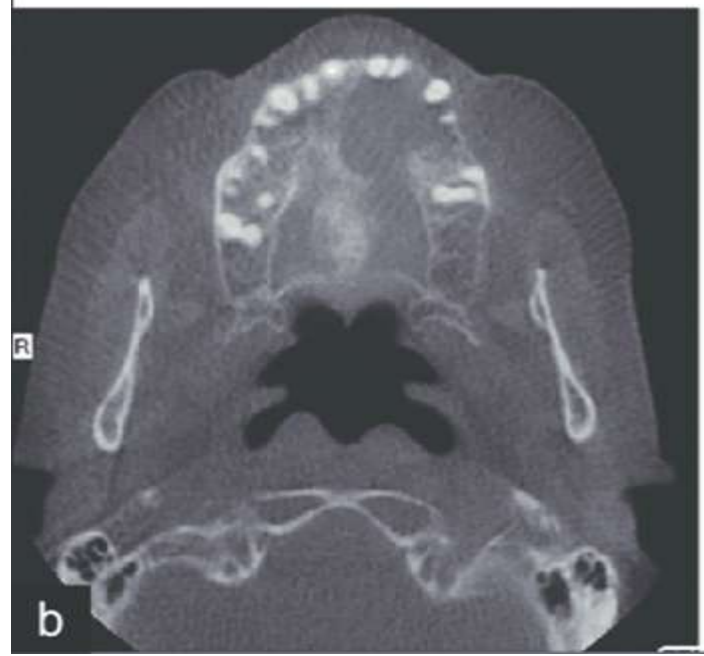
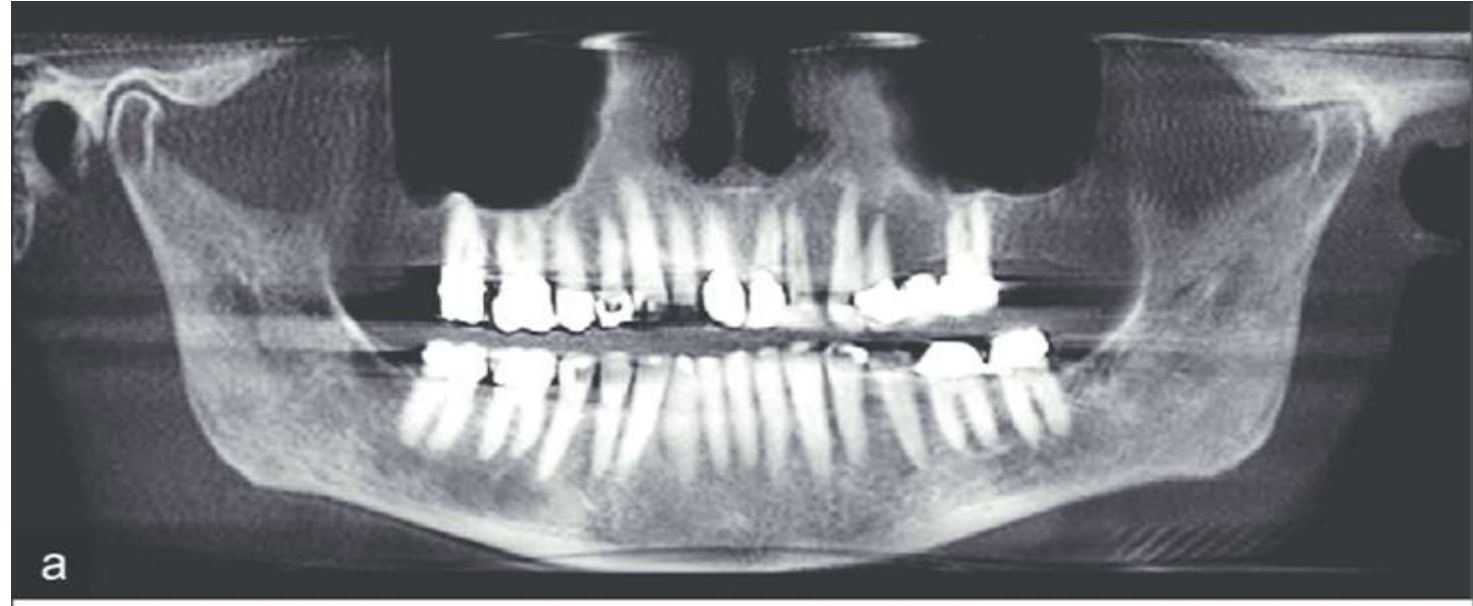


Panoramic radiograph of extraction sites representative of socket sclerosis. Teeth were extracted six years before the radiograph and two years before diagnosis of end-stage renal disease.



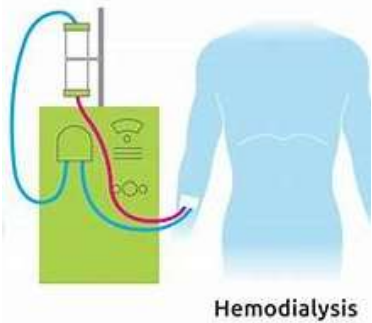
Mandibular anterior loss of trabeculation.

Giant cell lesions, "brown tumours"

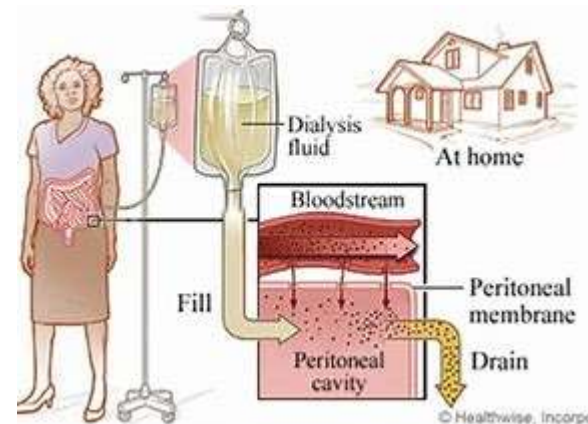
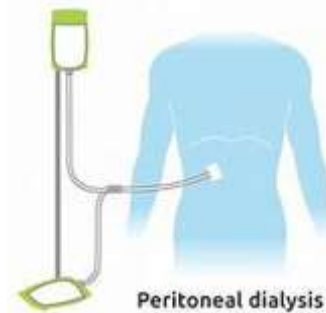


Treatment of CRF

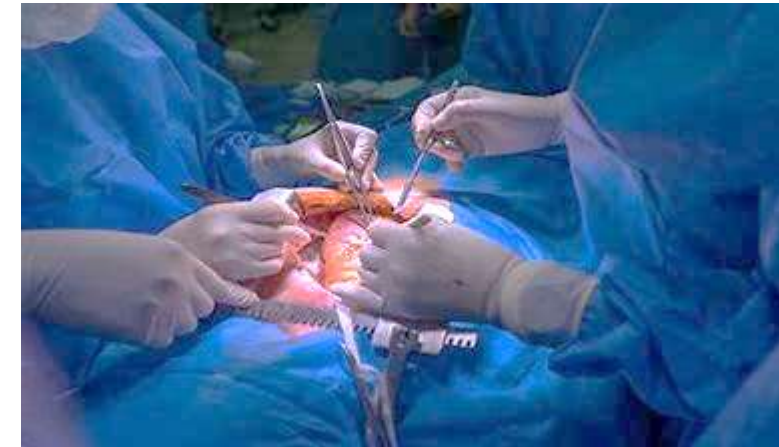
Haemodialysis Dialysis



Peritoneal Dialysis



Transplant





Management of Patient with renal diseases

Before treatment

- Determine dialysis schedule and treat on day after dialysis.
- Consult with patient's nephrologist for recent laboratory tests and discussion of antibiotic prophylaxis.
- Identify arm with vascular access and type; notate in chart and avoid taking blood pressure measurement/injection of medication on this arm.
- Evaluate patient for hypertension/hypotension.
- Institute preoperative haemostatic aids (Desmopressin) when appropriate.
- Determine underlying cause of renal failure (underlying disease may affect provision of care).
- Obtain routine annual dental radiographs to establish presence and follow manifestations of renal osteodystrophy.
- Consider routine serology for HBV, HCV, and HIV antibody.
- Consider antibiotic prophylaxis when appropriate.
- Consider sedative premedication for patients with hypertension



Management of Patient with renal diseases



During treatment

- Perform a thorough history and physical examination for presence of oral manifestations.
- Aggressively eliminate potential sources of infection/bacteremia.
- Use adjunctive hemostatic aids during oral/periodontal surgical procedures.
- Maintain patient in a comfortable position in the dental chair.
- Allow patient to walk or stand intermittently during long procedures



Management of Patient with renal diseases



After treatment

- Use postsurgical haemostatic agents.
- Encourage meticulous home care.
- Institute therapy for xerostomia when appropriate.
- Consider use of postoperative antibiotics for traumatic procedures.
- Avoid use of respiratory-depressant drugs in presence of severe anaemia.
- Adjust dosages of postoperative medications according to extent of renal failure.
- Ensure routine recall maintenance.



Pre-transplantation considerations

Significantly ill patient with end-organ damage

- Medical consultation required
- Consider postponing elective treatment
- Dental consultation prior to anticipated transplant:
- Rule out dental infectious sources, definitively Perform necessary treatment; this will require consultation with transplantation physician to determine medical risk-to-benefit ratio
- Obtain laboratory information/supplemental information as needed
- prophylactic antibiotics that may need to be employed if treatment is rendered.



Post-transplantation considerations

1. Immediate post-transplantation period

- No elective dental treatment performed
- Emergency treatment only with medical consultation and consideration of specific management needs

2. Stable post-transplantation period

- Elective treatment may be performed after medical consultation with the transplantation physician
- Issues of immunosuppression must be recognized
- Oral mucosal disease must be diagnosed and treated
- Supplemental corticosteroids (steroid boost) may be necessary
- Consideration of antibiotic prophylaxis needed
- Consideration of specific management needs

3. Post-transplantation chronic rejection period

Only emergency treatment

Patients are very ill as they are immunosuppressed and have organ failure



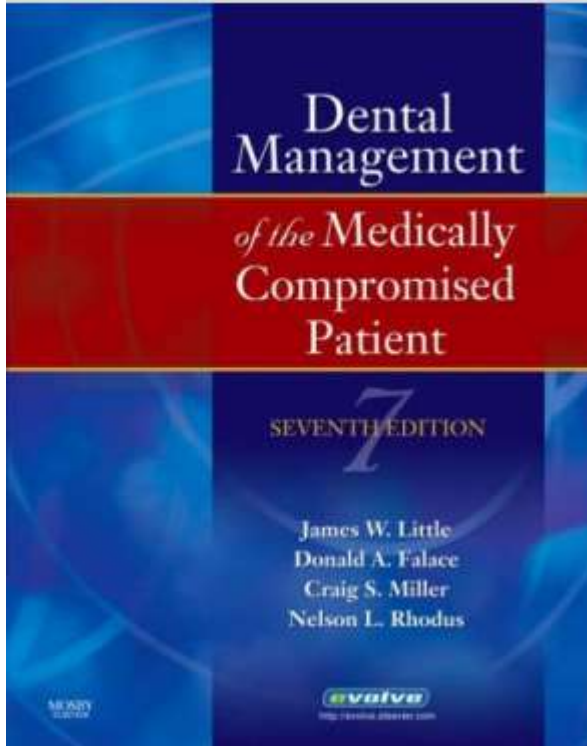
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References



And Google images