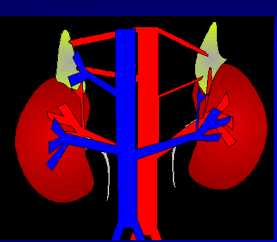


# ENDOKRINA HIRURGIJA

Nadbubrežna žlezda i endokrini tumori pankreasa

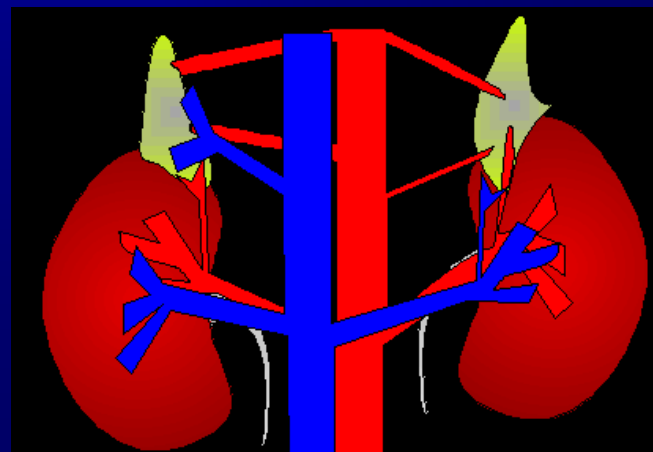
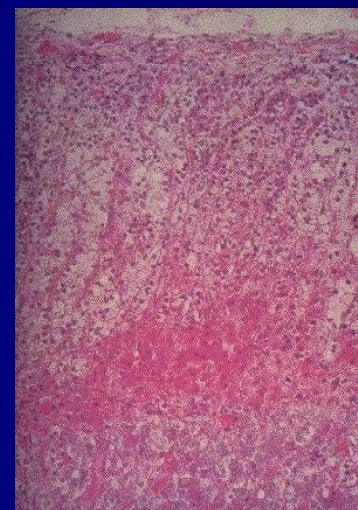
Prof. dr Ivan Paunović





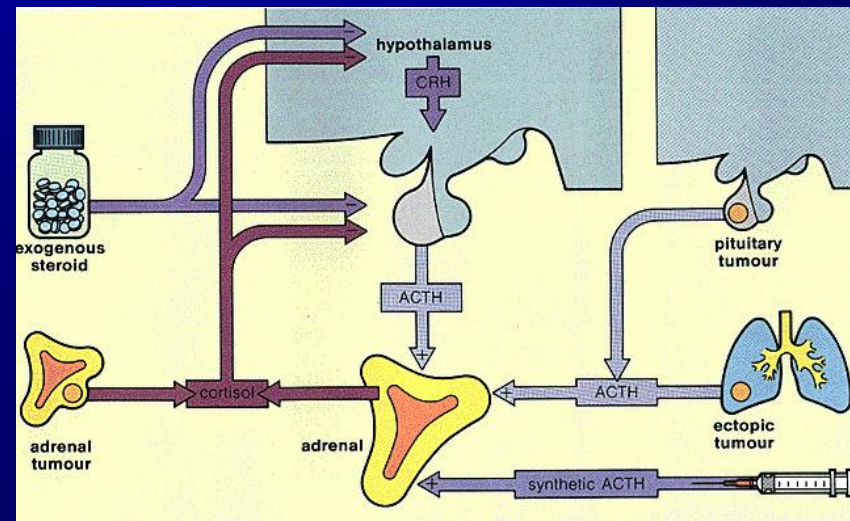
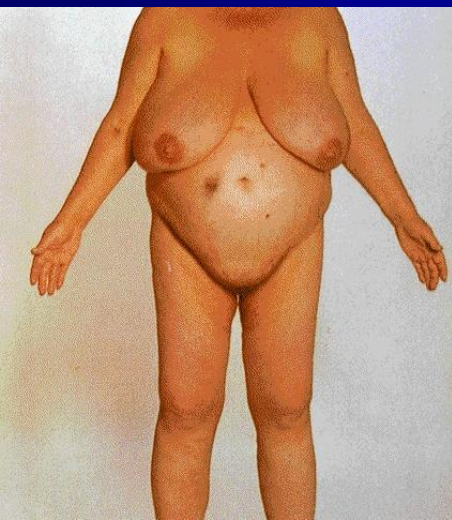
# Nadbubrežne žlezde

- Dvostruki organ
- Različito embrionalno poreklo kore i srži nadbubrega
- Različita produkcija hormona
- Neophodna supstitucija hormona kore kod obostrane adrenalektomije



# Cushingov sindrom uzroci

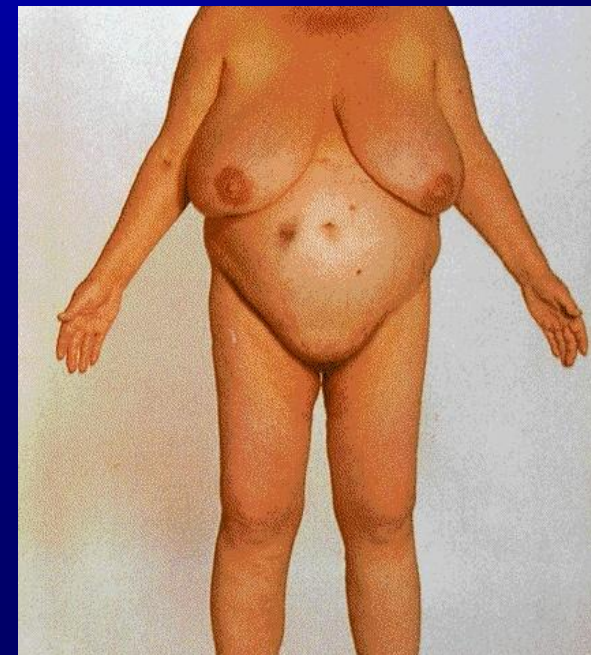
- Adenom prednjeg režnja hipofize
- Adenom ili karcinom kore nadbubrega
- Ektopična sekrecija ACTH ili CRH
- Jatrogeni Cushing

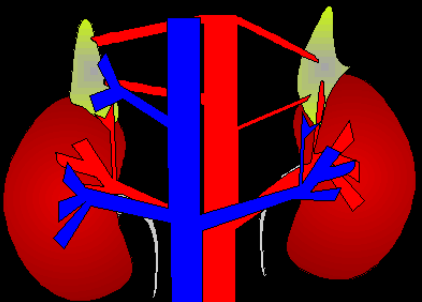




# Cushingov sindrom: rizik

- Nelečen 50% preživi 5 godina
- Hipertenzija:  
glukokortikoidi imaju 30%  
mineralokortikoidnog efekta
- Steroidni dijabetes
- Arterioskleroza
- Infekcije
- Tromboze
- Plućna embolija
- Kardijalne komplikacije

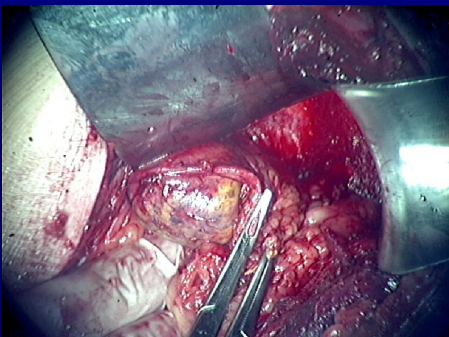
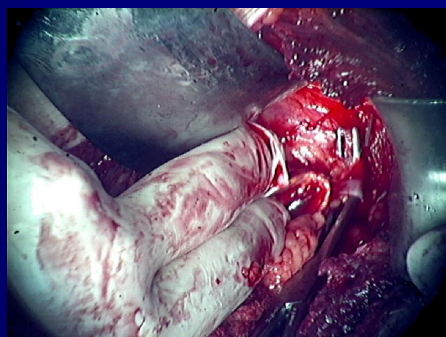
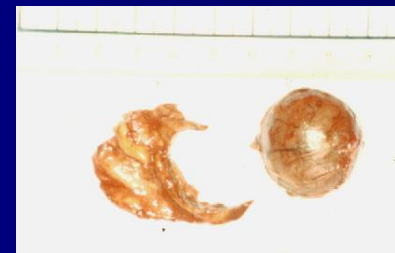
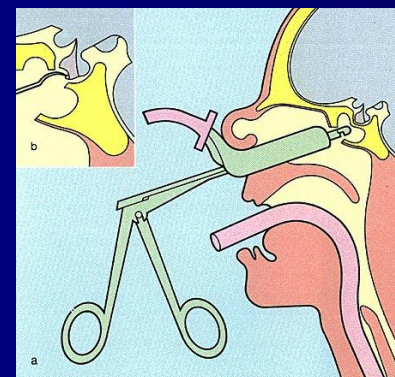


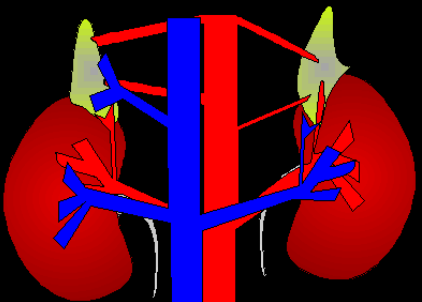


# Cushingov sindrom

## lečenje

- Operacija adenoma prednjeg režnja hipofize
- Bilateralna adrenalektomija
- Adrenalektomija kod tumora kore
- Bilateralna adrenalektomija kod ektopične sekrecije ACTH ili CRF

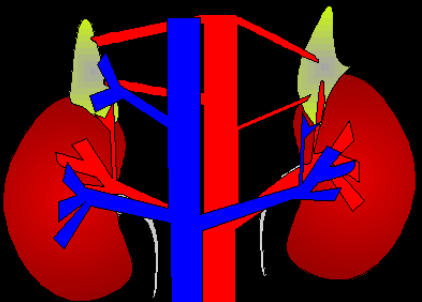




# Cushingov sindrom

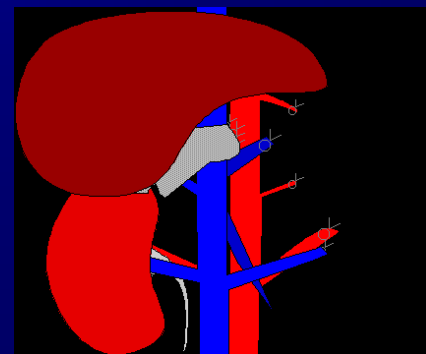
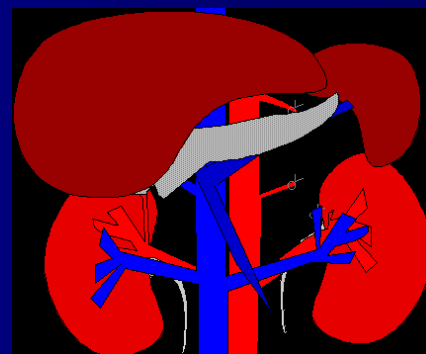
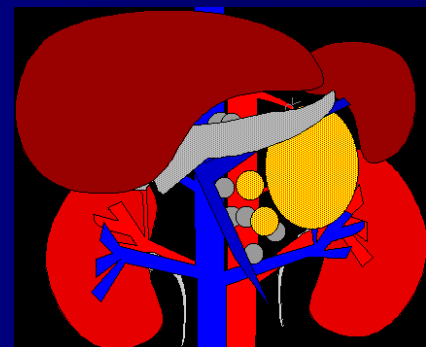
## Medikamentno lečenje

- Metyrapon inhibira konverziju 11-deoksikortizola (compound S) u kortizol
- Aminoglutetimid inhibira konverziju holesterola u pregnenolon (sve steroide)
- Trilostan blokira konverziju pregnenolona u progesteron, inhibira sintezu kortizola i aldosterona, ali ne i gonadnih funkcija
- Mitotan (opDDD): nekroza zone fascikulate ii retikularis kore nadbubrega
- Bromkriptin antagonist dopamina  
Ciproheptadin antagonist serotoninina

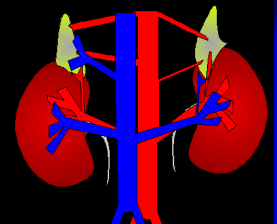


# Karcinomi kore nadbubrega

- Retko manji od 6 cm u prečniku
- Loša prognoza
- Česta mešovita sekrecija
- Virilizujući
- Feminizujući
- Kombinovani
- Neaktivni metaboliti i prekursori hormona

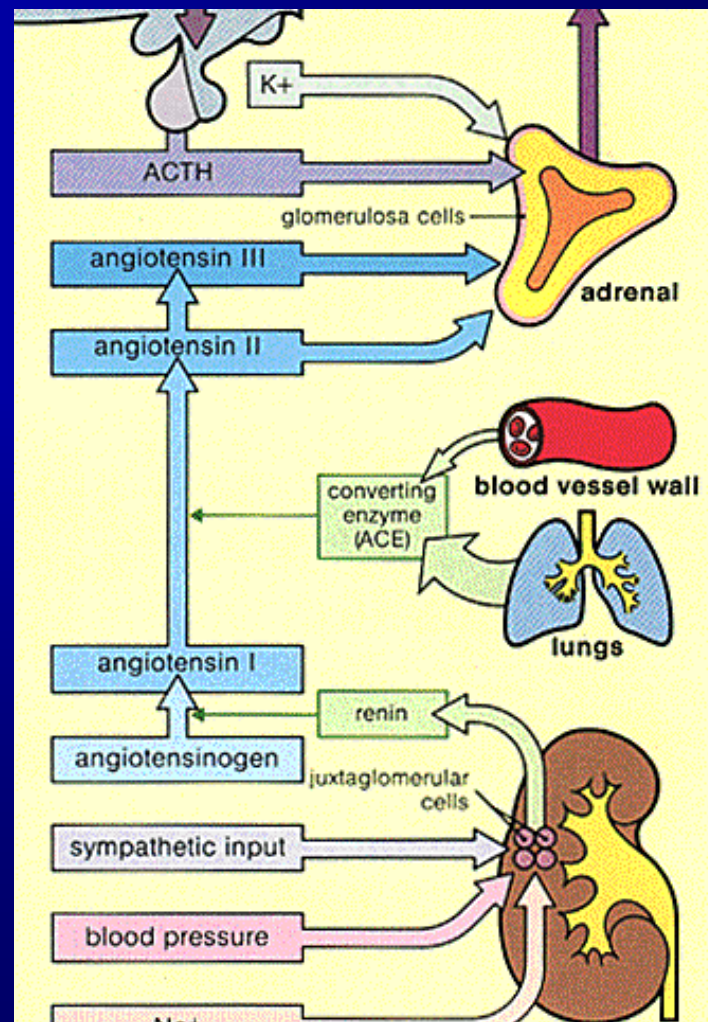
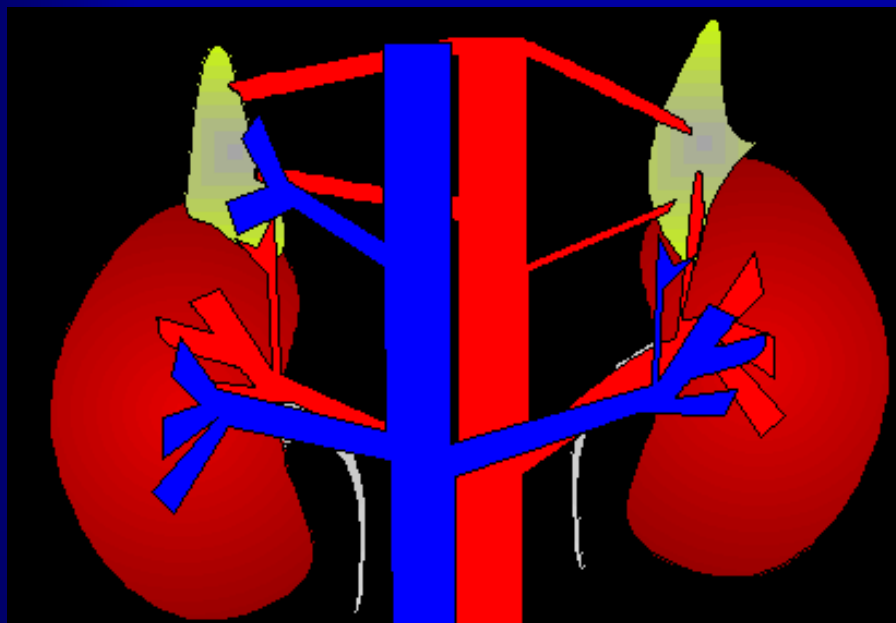




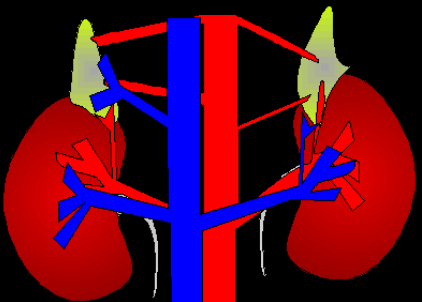


# Mineralokortikoidna patofiziologija

- Aldosteron i DOCA
- Kortikosteroidi 30%
- Svi steroidi ?



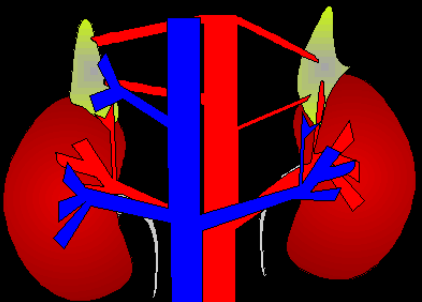




# Sindroma Conn

- Hipertenzija 1% uzroka
- Mineralokortikoidi: Aldosteron i DOCA
- Hipokalemija, Hipernatremija
- Hiperaldosteronizam
  - Primarni, nizak renin (PRA)
- Adenom zone glomeruloze kore nadbubrega žute boje
- Hiperplazija ređe
- Prognoza operativnog efekta: terapija aldaktonom i porast aldosterona na uspravni stav

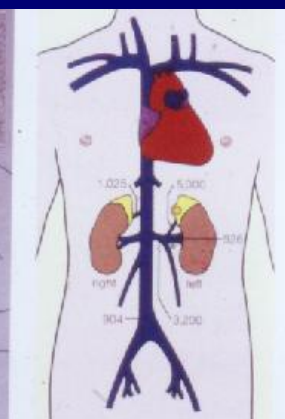
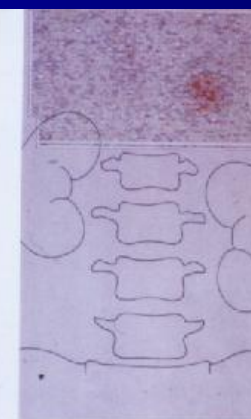
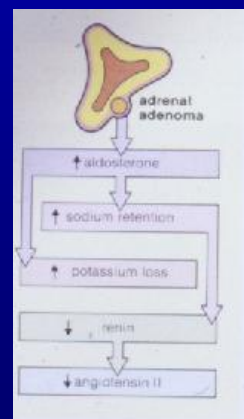
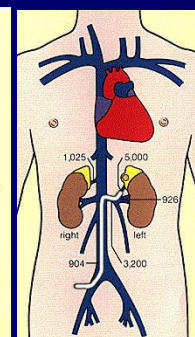
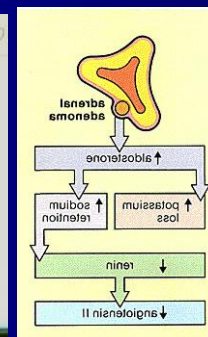


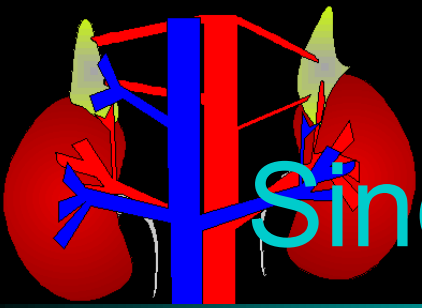


# Sindroma Conn

## • Lokalizacija:

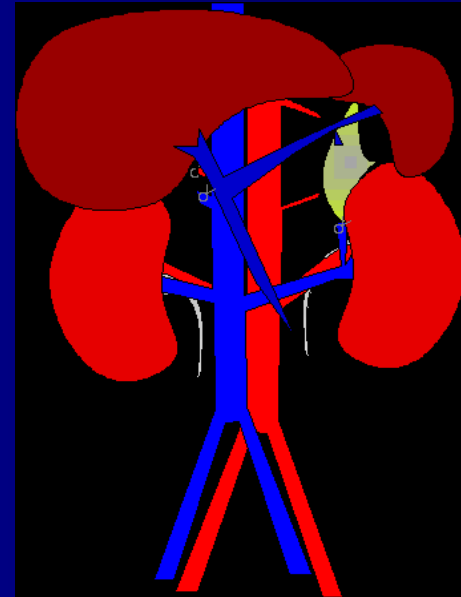
- Scintigrafija J131-19-jodoholesterolom
- Venska kateterizacija i određivanje aldosterona u uzorku
- Paralelno određivanje kortizola u uzorku
- EHO
- CT, NMR





# Sindroma Conn

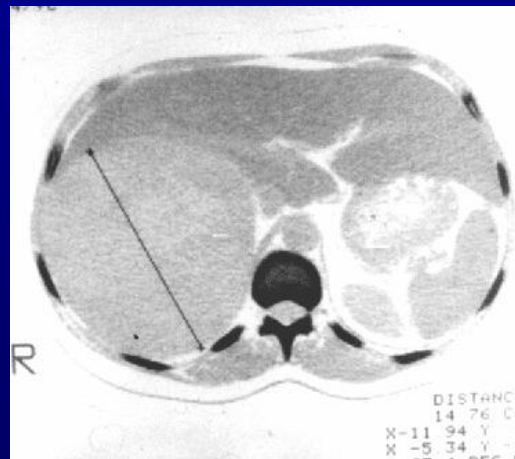
- Adenom:  
Adrenalektomija
- Hiperplazija:  
Konzervativni tretman  
Spironolakton (ginekomastija)  
Distalni tubularni diuretici
- Hiperplazija:  
Kogan:  
desna adrenalektomija  
leva spora obliteracija adrenalne vene  
- deaktivacija aldosterona u jetri



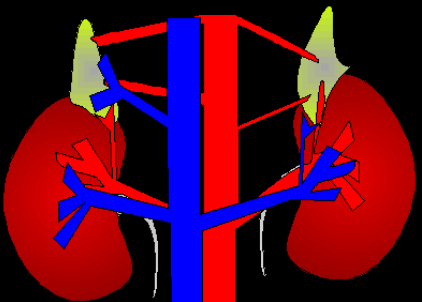
# Tumori nadbubrega lokalizacija



- Eho
- CT
- NMR
- Scintigrafija
- Arteriografija



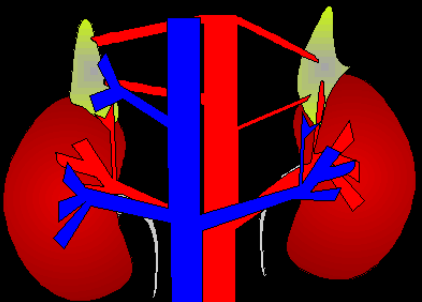




# Feohromocitom

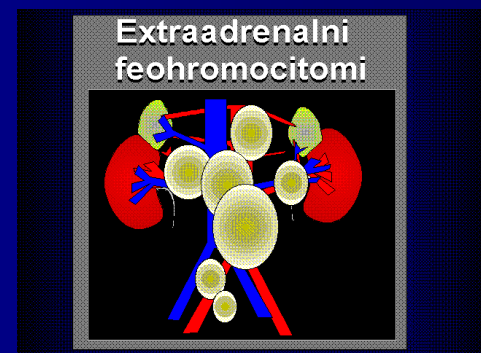
- Redak tumor hromafinog tkiva
  - 1:1000000 stanovnika godišnje
- Tumori desetke
  - 10% maligni 10% multicentrični 10% bilateralni 10% ekstraadrenalni
- Klička slika
  - Hipersekrecija kateholamina  
neproporcionalna veličini tumora
  - Hipertenzija fiksirana ili paroksizmi
  - Panični sindrom
- Dijagnoza: povišeni kateholamini u serumu ili 24h urinu

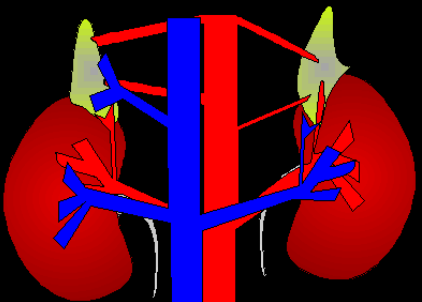




# Feohromocitom

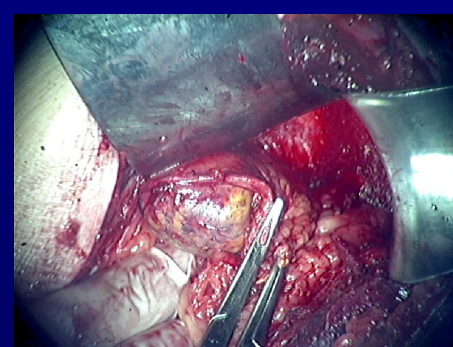
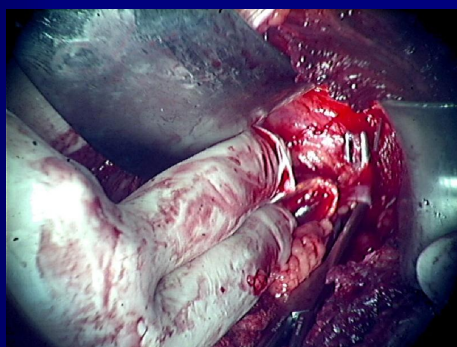
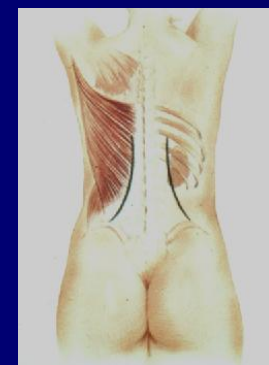
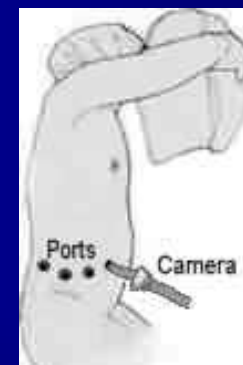
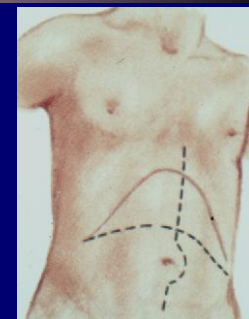
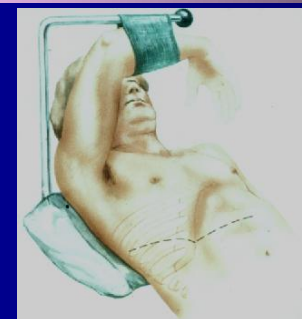
- Pouzdana lokalizacija
  - dva sigurna nalaza scintigrafija MIBG + CT ili NMR
- Preoperativna priprema alfablokatorima
  - Lek izbora fenoksibenzamin
- Anestezija intraoperativna kontrola ii operativna tehnika delikatne
- Ekstraadrenalni posebne karakteristike
  - 50% maligni





# Pristupi nadbubregu

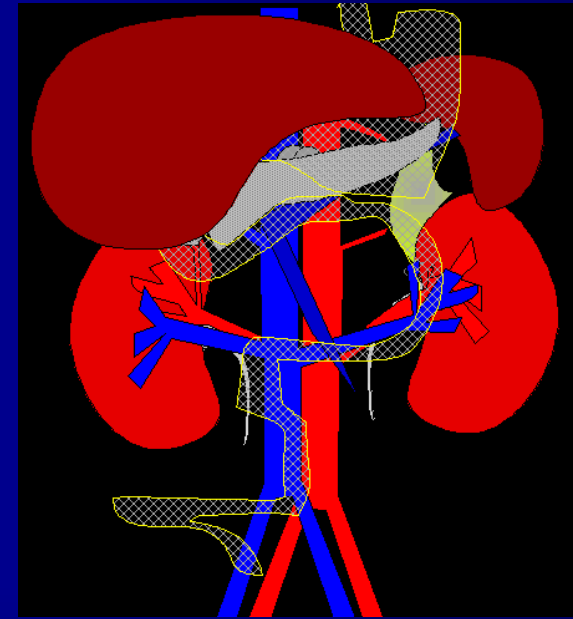
- Transabdominalni
  - Uspravni
  - Poprečni
  - Kombinovani torakofrenolaparo
- Lumbalni
- Dorzalni
- Laparoskopski





# Endokrini tumori pankreasna

- Insulinomi
  - Hipoglikemijski sindrom
- Gastrinomi
  - Zollinger Ellisonov sindrom
- Glukagonomi
  - Dijabetes-dermatitis sindrom
- Somatostatinomi
  - Dijabetes, holelitijaza, steatoreja i hipohlorhidrija
- VIP-omi
  - Pankreasna kolera
- Karcinoid, ACTH-omi, PP-omi, Afunkcioni
  - Karcinoid sindrom, Cushingov sindrom, afunkcioni







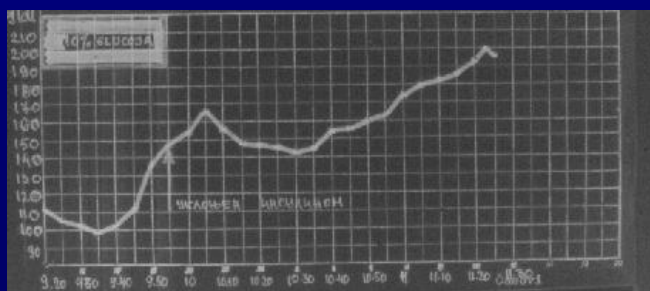
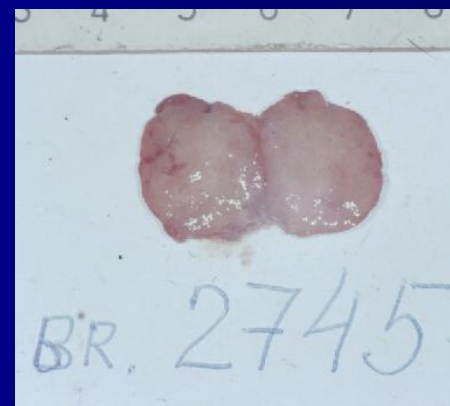
# Insulinomi

-



# Insulinomi

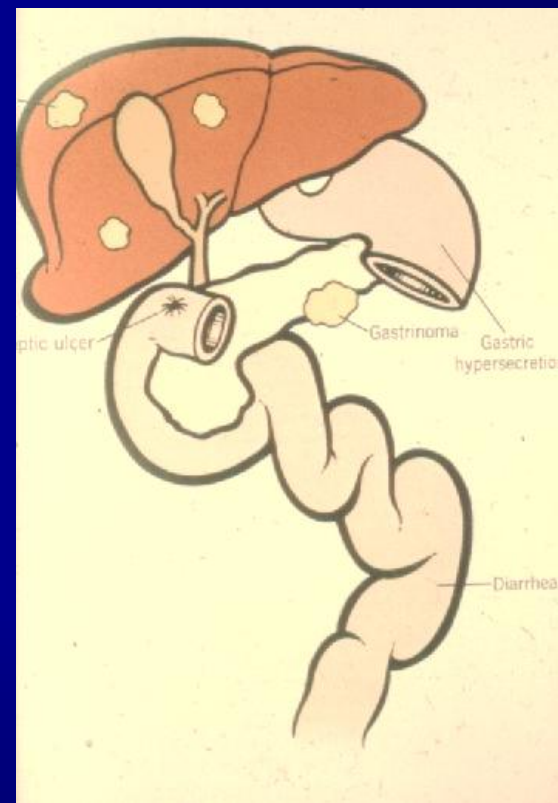
- Adenomi 75%
  - 0.5-2cm ravnomerno rapoređeni
- MEN I 10%
  - češće maligni
- Maligni 10%
  - promera 6cm 50% metastaze u vreme dijagnoze
- Difuzna nesidioblastoza 5%
  - češća kod dece, retka kod odraslih



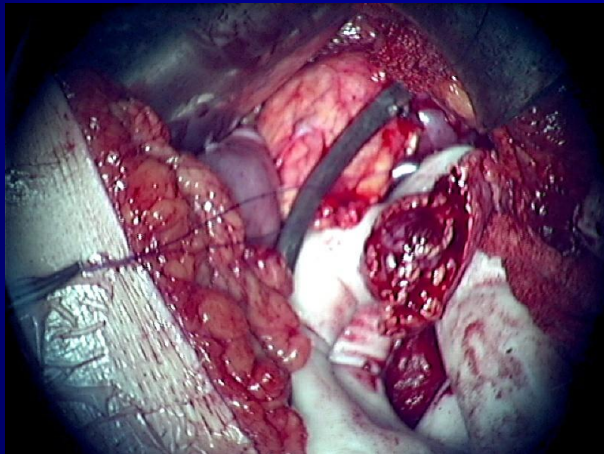
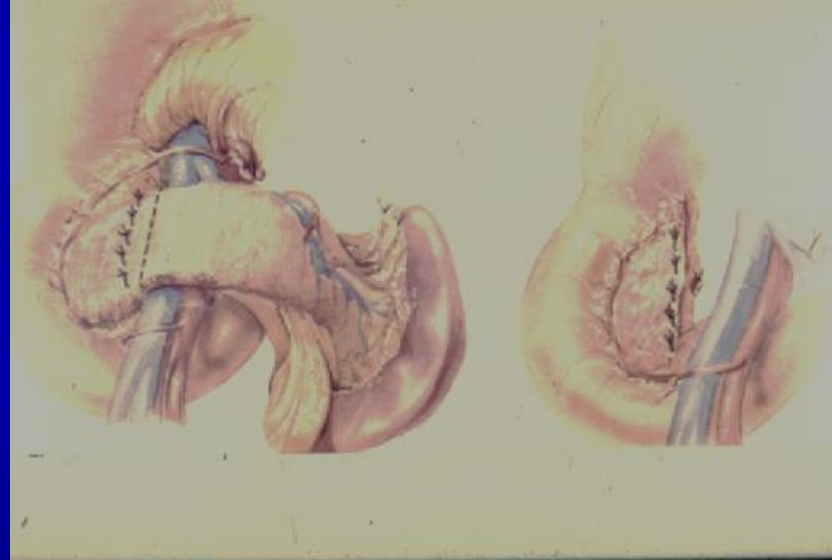
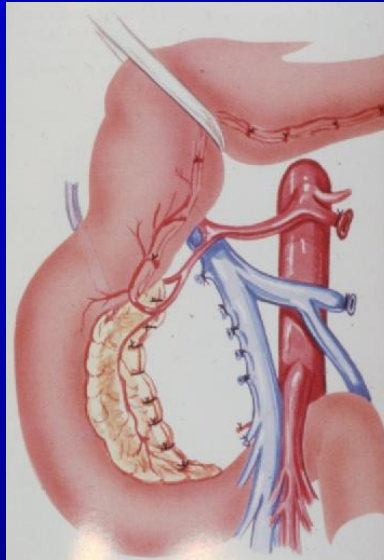


# Gastrinomi

- Zollinger-Ellisonov sindrom 1955
- Klinička slika
  - Ulkusna bolest, 1/3 sa ezofagitisom i dijarejom
  - 25% MEN I (hiperkalcemija)
- Dijagnoza
  - HCl  $>15\text{mEq/h}$   $>25\text{mEq/h}$ , Gastrin  $>500\text{pg/ml}$
  - Sekretin 2U/kg (200pg/ml skok gastrina) +Ca
- Lokalizacione metode
  - Dinamčki CT, NMR, arteriografija, PTP kat.
- Lečenje
  - Medikamentno H<sub>2</sub> blokatori, omeprazol
  - Ekscizija, ekspanzija (duodenuma), gastrektomija



# Resekcija pankreasasa







# Efekat ...







# Endokrina hirurgija

- Funkcionalna dijagnostika
- Lokalizaciolna dijagnostika
- Preoperativna korekcija
- Precizna operacija
- Postoperativna korekcija
- Trajna supstitucija ?