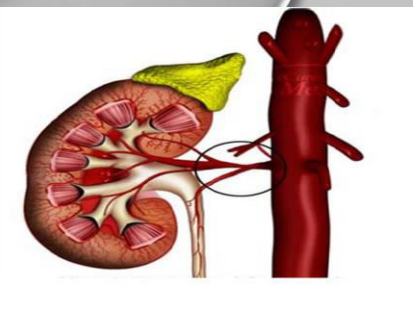
Dr. D.Y. PATIL VIDYAPEETH, PUNE
(DEEMED UNIVERSITY)

A CASE OF SURGICALLY CORRECTABLE HYPERTENSION

UNIT 4 &7

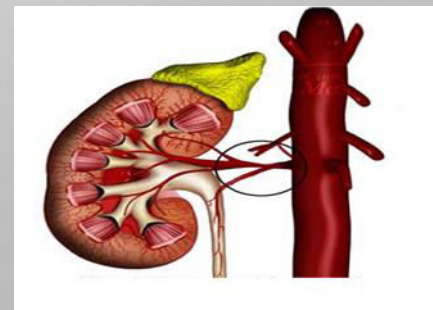
DEPARTMENT OF GENERAL SURGERY

DR DY PATIL MEDICAL COLLEGE AND HOSPITAL, PUNE



- **“ SECONDARY” HYPERTENSION ACCOUNTS FOR 5-10% OF OTHER CASES AND REPRESENTS POTENTIALLY CURABLE DISEASE ”.**

- WE INTEND TO PRESENT A CASE OF SURGICALLY CORRECTABLE HYPERTENSION.



CLINICAL SCENARIO

- A LADY PRESENTED WITH CHIEF COMPLAINTS OF -

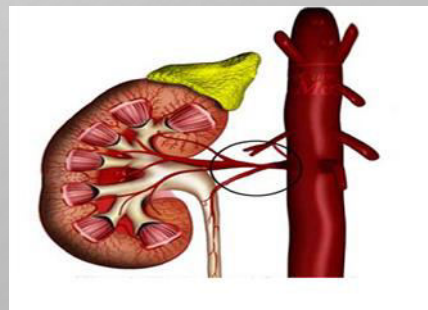
1. PAIN IN RIGHT LOWER ABDOMEN
2. NON – PROJECTILE, NON - BILIOUS VOMITING 3-4 EPISODES → 3 DAYS
3. HEADACHE, BACKACHE
4. GENERALISED WEAKNESS

- NO HISTORY OF FEVER / BOWEL & URINARY COMPLAINTS / CHEST PAIN / BREATHLESSNESS.

- KNOWN CASE OF HYPERTENSION SINCE 10 YEARS & ON REGULAR MEDICATION.

- NOT A KNOWN DIABETIC / ASTHMATIC.

- HISTORY OF HAVING UNDERGONE TUBAL LIGATION 22 YEARS BACK AND OPEN APPENDICECTOMY YEARS AGO.



- **GENERAL EXAMINATION** – PATIENT CONSCIOUS, AFEBRILE, PULSE – 102–110 / MIN, BLOOD PRESSURE – 160 -170/100 - 110 MM HG.

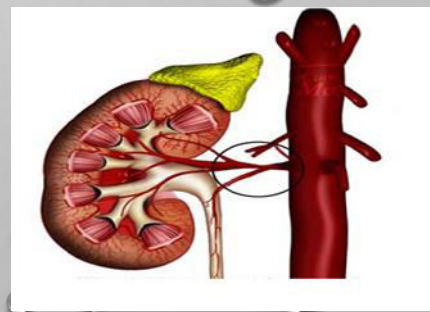
- NO EVIDENCE OF PALLOR, ICTERUS, CLUBBING, CYANOSIS, LYMPHADENOPATHY, OEDEMA.

- **SYSTEMIC EXAMINATION** – WITHIN NORMAL LIMITS.

- **PER ABDOMINAL EXAMINATION** – SOFT, NON DISTENDED, TENDERNESS PRESENT IN RIGHT LUMBAR REGION, NO ORGANOMEGALY, NO PALPABLE LUMP, BOWEL SOUNDS PRESENT IN ALL 4 QUADRANTS.

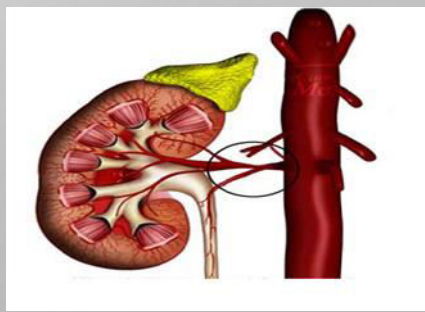
- **DIGITAL RECTAL EXAMINATION** – NORMAL.

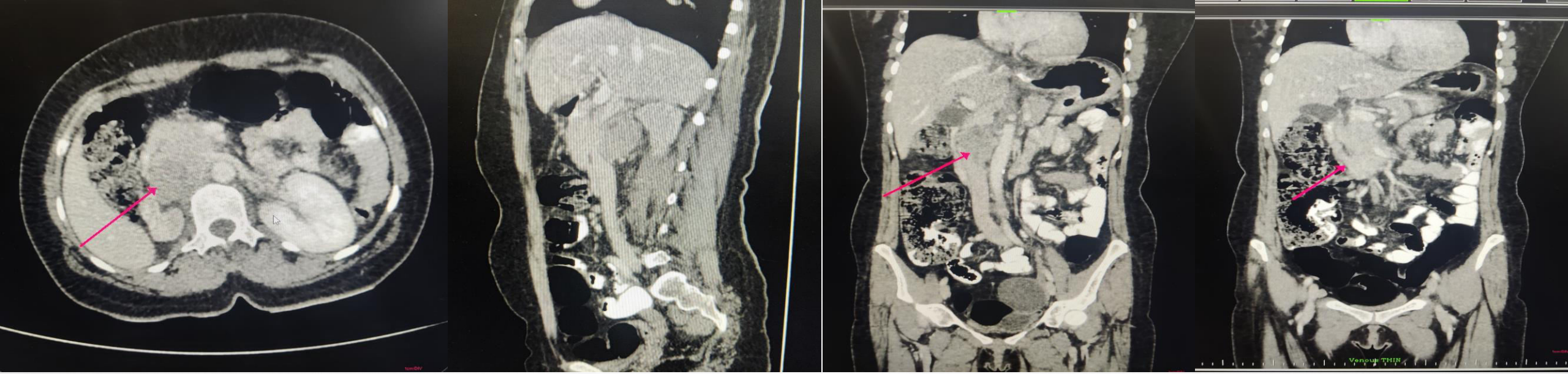
- NO NECK SWELLINGS OR OTHER PALPABLE SWELLINGS / LUMPS IN THE BODY.



INVESTIGATIONS

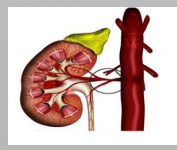
- ROUTINE BLOOD INVESTIGATIONS - HB – 11.9 TLC -10400 PLATELET COUNT 289000 LFTS –WNL RFTS – WNL, BSL (R) – 116 SEROLOGY – NEGATIVE.
- SERUM ELTECTROLYTES - SODIUM 139 **POTASSIUM – 4.1** CHLORIDE 98.
- PT 11.1 INR 0.98.
- **ECG – NORMAL , CHEST XRAY – NORMAL**.
- **2D ECHO – NORMAL.**
- USG ABDOMEN & PELVIS - S/O
- 1. SMALL CONTRACTED RIGHT KIDNEY.
- 2.WELL DEFINED HETEROGENOUS MASS ADJACENT TO THE RIGHT KIDNEY IN THE RETROPERITONEAL REGION. SHOWING PERIPHERAL VASCULARITY.
- **USG NECK** – NO OBVIOUS ABNORMALITY DETECTED.





CONTRAST ENHANCED CT SCAN OF ABDOMEN & PELVIS -
A FAIRLY WELL DEFINED SMOOTHLY MARGINATED RETROPERITONEAL SOFT TISSUE LESION OF SIZE MEASURING **~ 46 X 30 X 35 MM** IS NOTED IN THE RIGHT PARA AORTIC REGION EXTENDING FROM T12 TO L1, SHOWING HETEROGENOUS ENHANCEMENT ON POST CONTRAST .
THE LESION IS SEEN CAUSING SIGNIFICANT MASS EFFECT IN THE FORM OF DISPLACING AND COMPRESSING THE IVC ANTERIORLY ABUTTING DISTAL PORTION OF LEFT RENAL VEIN AND RIGHT RENAL ARTERY.
RIGHT KIDNEY IS MEASURING **~ 66 X 24 X 26 MM** AND APPEARS SMALL IN SIZE.

IMPRESSION – FINDINGS ARE SUGEESTIVE OF NEOPLASTIC ETIOLOGY ? RETROPERITONEAL SARCOMA NEEDS TO BE RULED OUT.



- BLOOD REPORTS SHOW NORMAL PLASMA METANEPHRINE LEVELS(19 PG/ML; 0-65 PG/ML) &

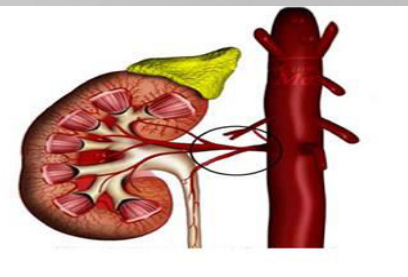
24 HRS URINARY VANILLYL MANDELLIC ACID (12.77 MG/24HRS ; <13.6MG/24HRS).

- AS THE SUSPICION WAS PHEOCHROMOCYTOMA WAS THERE

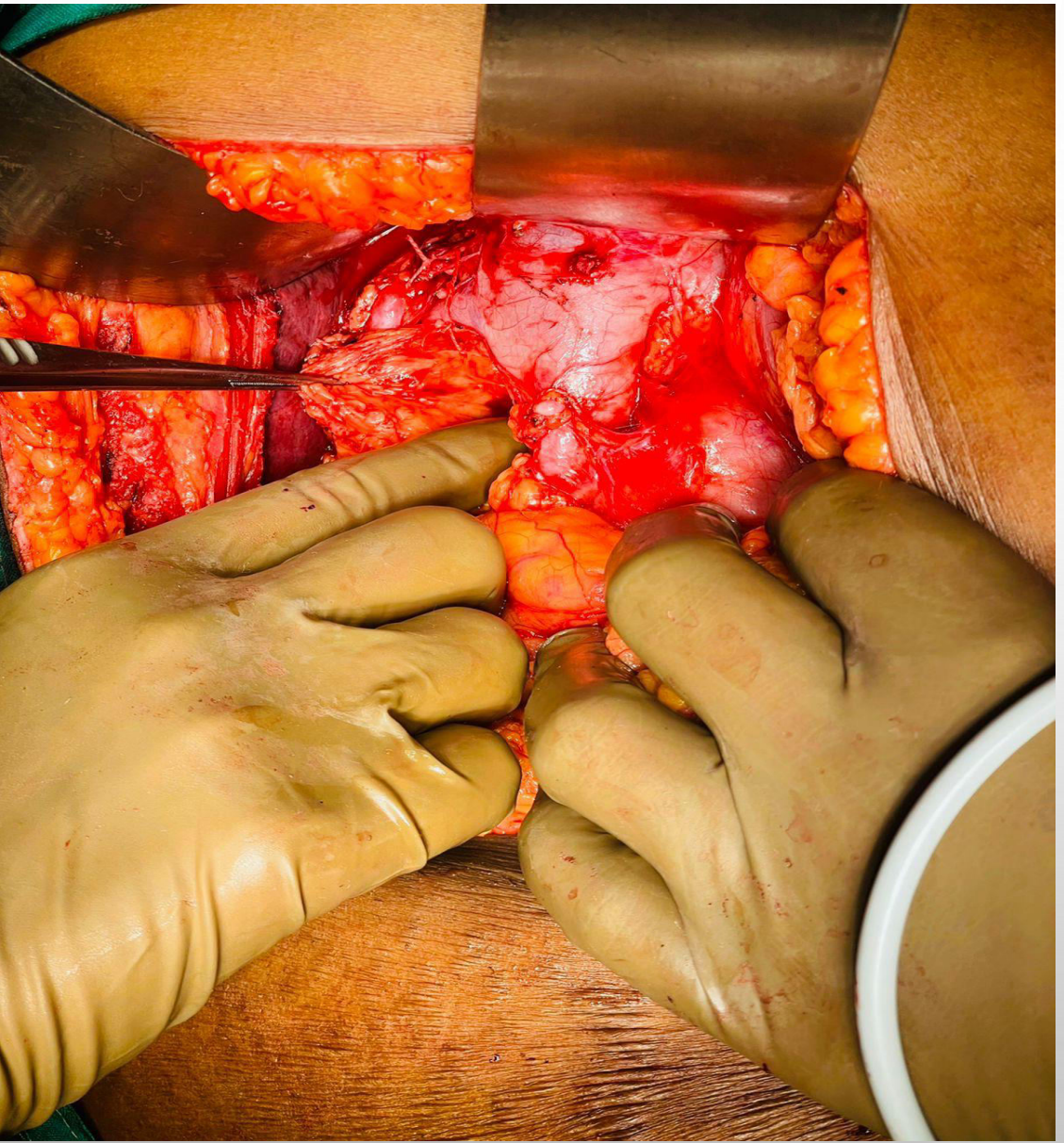
- PATIENT WAS STARTED ON ALPHA BLOCKER (PRAZOSIN 5MG 1-0-1) AND BETA BLOCKER (TAB MET XL 25MG 1-0-0).

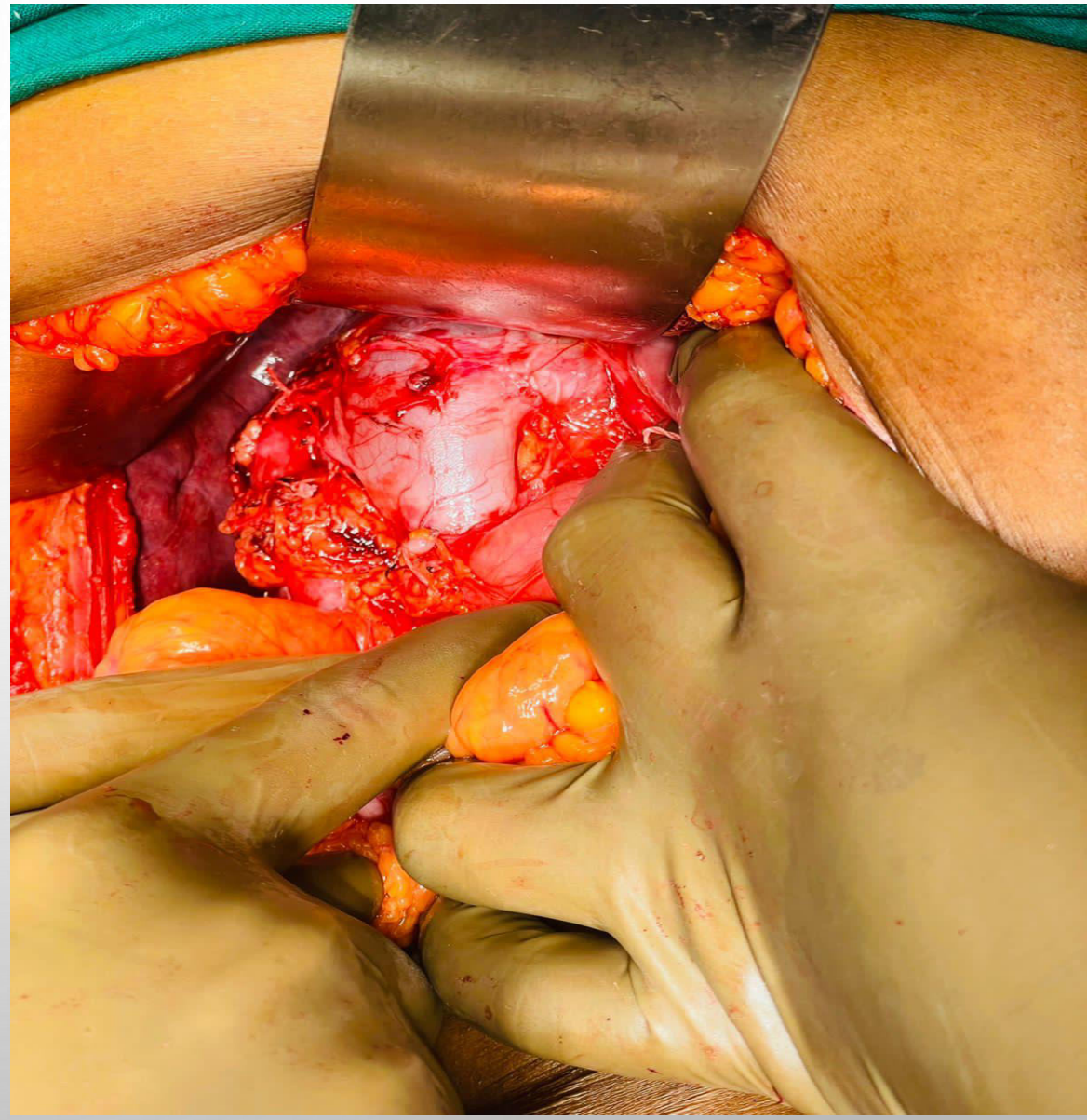
- AFTER 2 WEEKS OF PRE OPERATIVE OPTIMIZATION & COMPLETE CARDIAC EVALUATION PATIENT WAS PLANNED FOR TUMOUR EXCISION.

- PATIENTS BLOOD PRESSURE 140 / 90 MM HG ON THE DAY OF SURGERY AND MORNING DOSE OF TAB STAMLO 5MG WAS GIVEN AS PER ANESTHESIOLOGIST ADVICE.



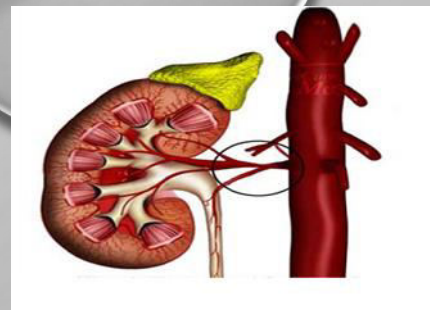
RETROCAVAL EXTENSION - EXTREMELY RAREST ANATOMICAL VARIANT OF ADRENAL TUMOUR WHICH GIVES SIGNIFICANT MASS EFFECT BY DISPLACING IVC ANTERIORLY.

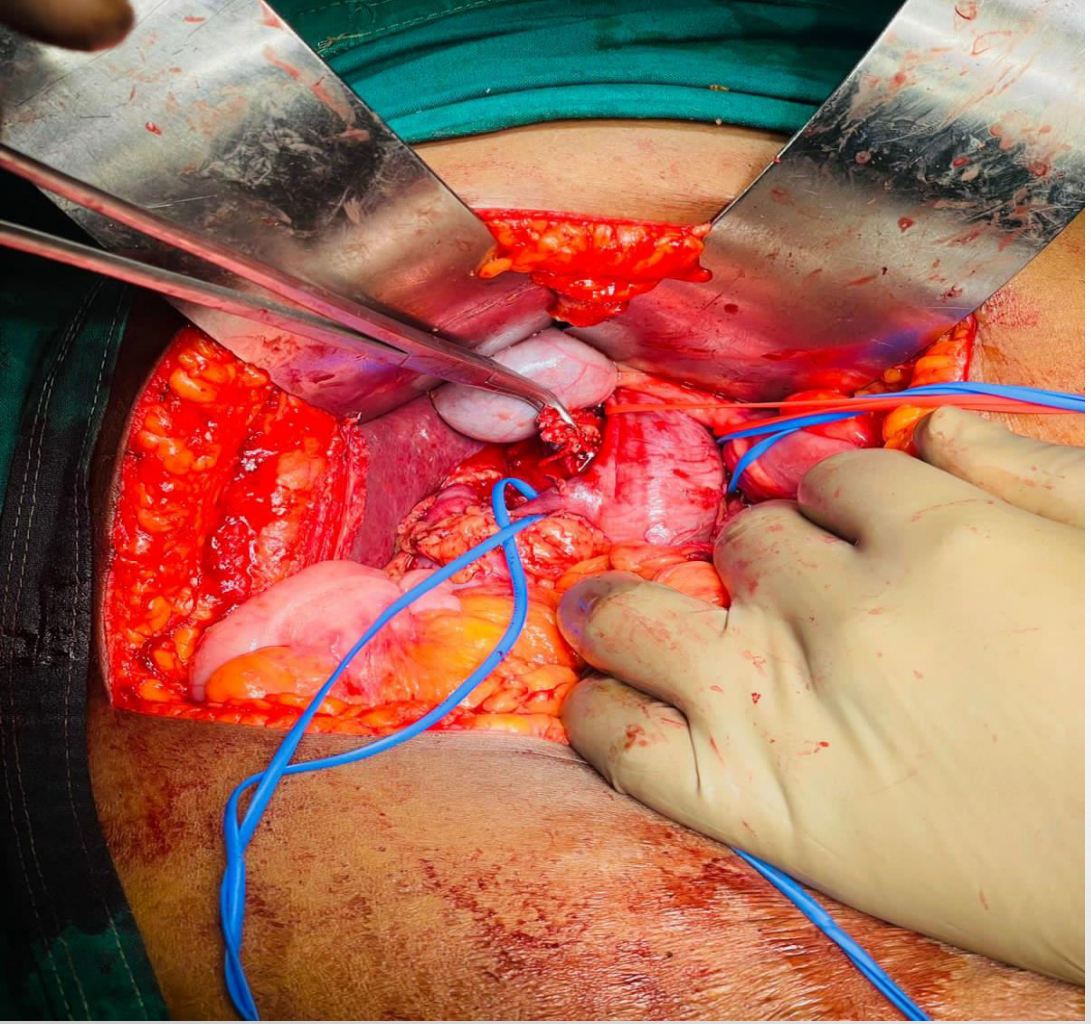




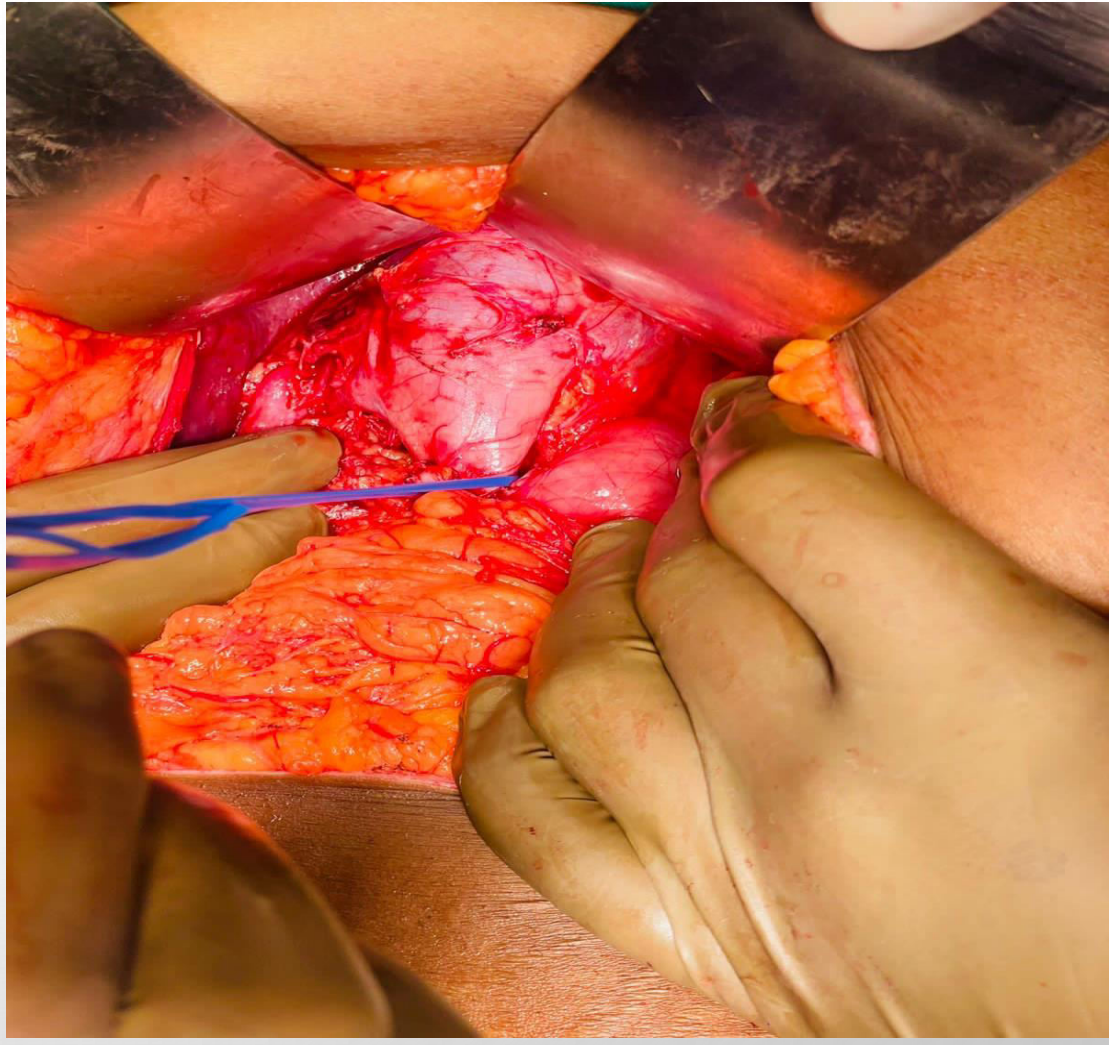
INTRA – OPERATIVE MANAGEMENT

- INVASIVE BLOOD PRESSURE (IBP) MONITORING IS IMPERATIVE IN THESE PATIENTS.
- THE MAIN COMPLICATION ANTICIPATED DURING SURGERY IS THE HEMODYNAMIC INSTABILITY, *HYPERTENSION* BEFORE TUMOUR REMOVAL AND *HYPOTENSION* AFTER TUMOUR ISOLATION.
- MANAGEMENT OF HYPERTENSION SHOULD BE DONE WITH SHORT ACTING AND POTENT VASODILATORS.
- SODIUM NITROPRUSSIDE AND NITRO GLYCERINE ARE THE TWO DRUGS WHICH ARE COMMONLY USED FOR INTRAOPERATIVE CONTROL OF HYPERTENSION AND HAVE ESTABLISHED SAFETY PROFILE.

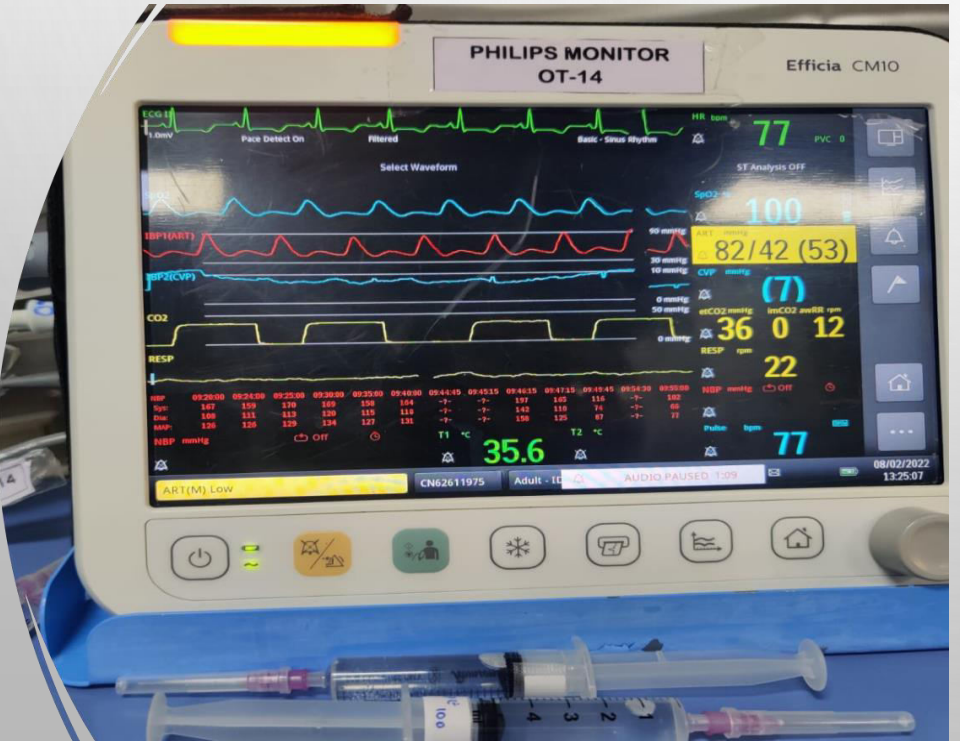




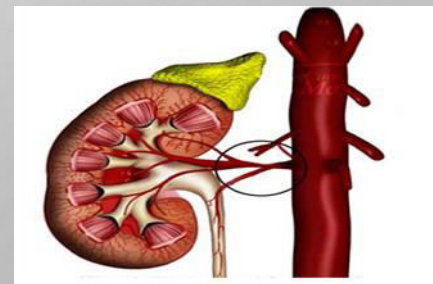
BILATERL RENAL VEIN IDENTIFIED & LOOPED



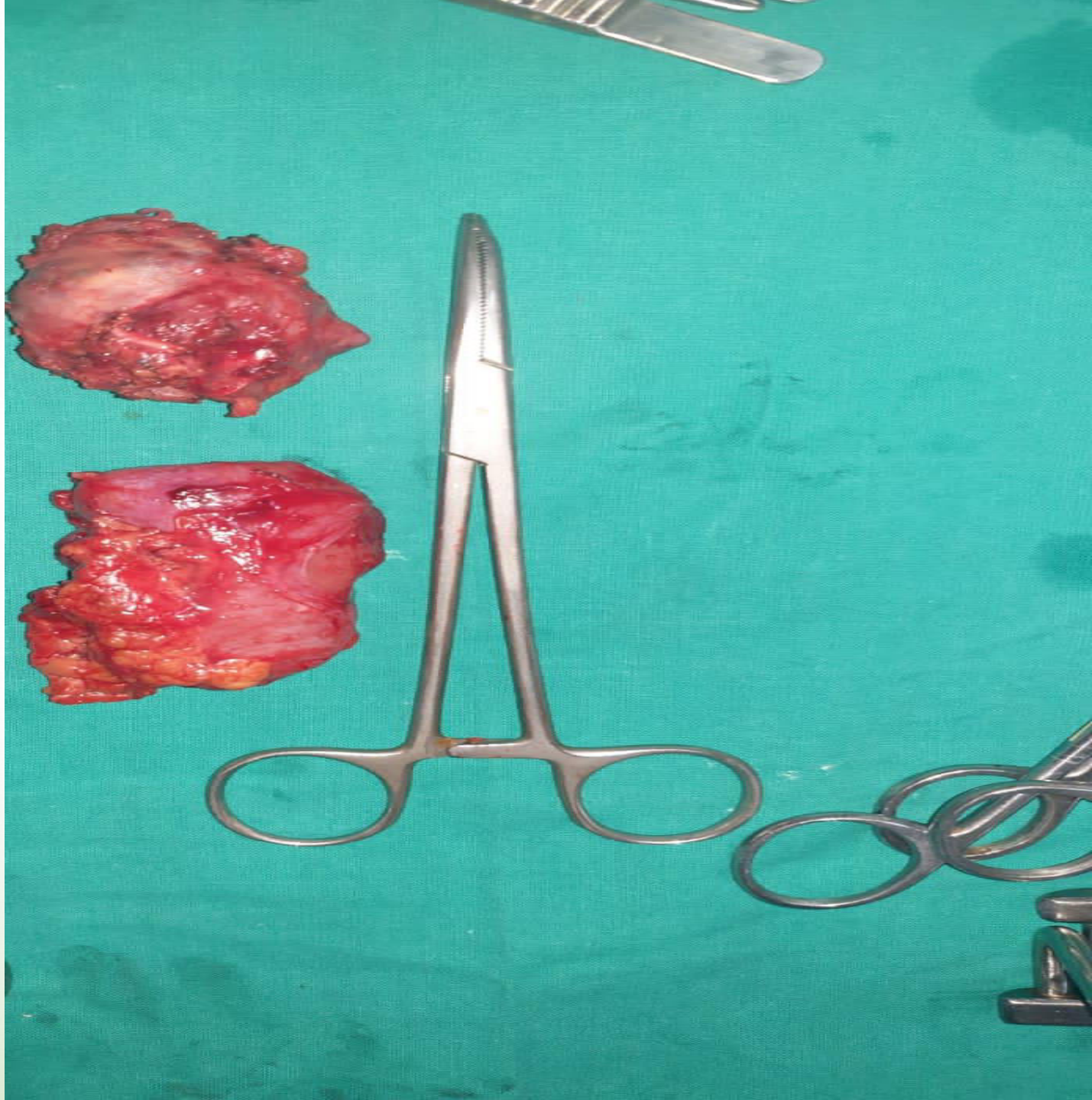
INFERIOR VENA CAVA LOOPED



RIGHT ADRENAL TUMOUR VEIN IDENTIFIED LIGATED AND CUT.
AFTER HANDLING THE TUMOUR THERE WAS CONTINUOUS SURGE OF BLOOD PRESSURE
LUMBAR VEIN DRAINING THE RIGHT ADRENAL MASS IDENTIFIED LIGATED SECURED AND CUT.
BLOOD PRESSURE THEN STARTED FALLING.
NEPHRECTOMY DONE AFTER THE IDENTIFICATION OF RIGHT RENAL ARTERY AND VEIN.



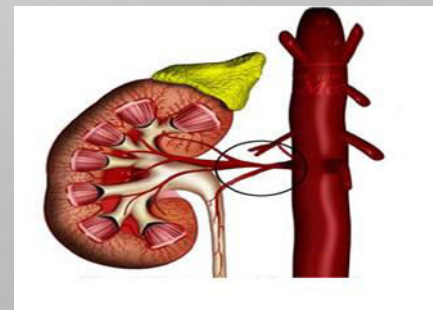
RESECTED SPECIMEN



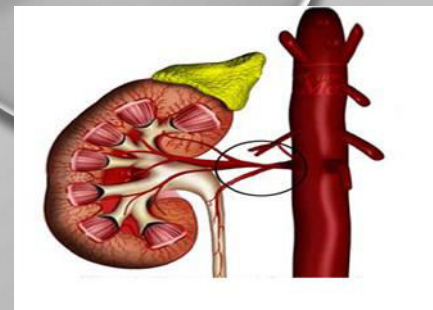
HISTOPATHOLOGICAL REPORT

CONSISTENT WITH PHEOCHROMOCYTOMA

CHROMAGRANIN A & SYNAPTOPHYSIN POSITIVE



DISCUSSION



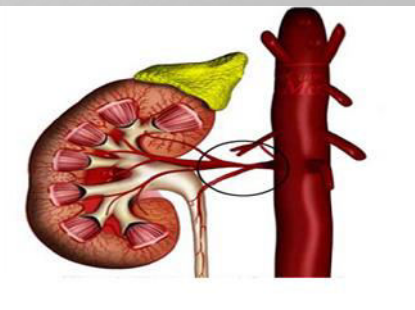
INCIDENCE AND EPIDEMIOLOGY

- PHEOCHROMOCYTOMA IS A TUMOUR OF THE CATECHOLAMINE – PRODUCING CELLS OF THE ADRENAL MEDULLA.

- INCIDENCE OF APPROXIMATELY 1 TO 2 PER 100000, OF WHICH APPROXIMATELY 0.5% GIVE RISE TO HYPERTENSION.

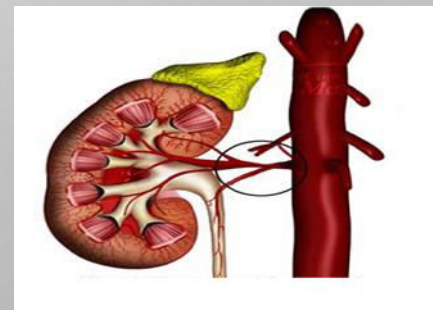
- INCIDENCE OF APPROXIMATELY 1 PER 54000 PREGNANCIES, MOSTLY IN THE SECOND TRIMESTER.

- PHEOCHROMOCYTOMA IS POTENTIALLY DANGEROUS TO MOTHER & FOETUS, THAT IS WHY EARLY DIAGNOSIS, TIMELY APPROPRIATE MANAGEMENT IS REQUIRED, AS IT DECREASES FETAL & MATERNAL COMPLICATIONS.



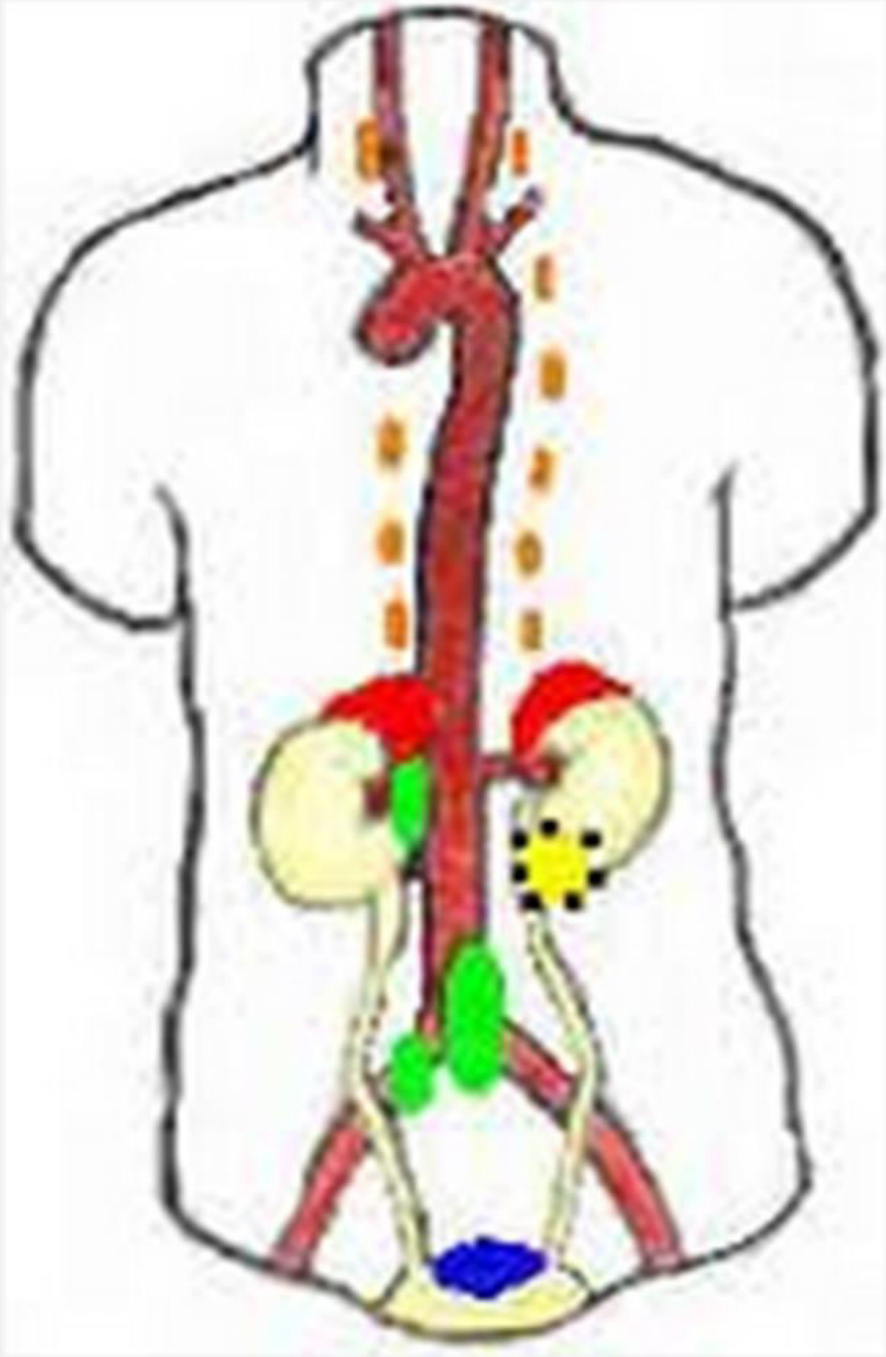
SURGICALLY CORRECTABLE HYPERTENSION / SECONDARY HYPERTENSION

- PHEOCHROMOCYTOMA.
- RENO VASCULAR HYPERTENSION.
- PRIMARY ALDOSTERONISM.
- CUSHING'S SYNDROME.
- RENAL PARENCHYMAL DISEASE.
- COARCTATION OF AORTA.
- HYPERTHYROIDISM.
- HYPERPARATHYROIDISM.
- OBESITY.



- 1 TO 25% PHEOCHROMOCYTOMAS ORIGINATE OUTSIDE THE ADRENAL GLAND. THESE EXTRA ADRENAL PHEOCHROMOCYTOMAS ARE KNOWN AS PARAGANGLIOMAS, BECAUSE THEY ARISE FROM THE PARAGANGLIA.

- CHROMAFFIN BODIES THAT LIE BETWEEN THE AORTIC BIFURCATION AND THE ROOT OF THE INFERIOR MESENTERIC ARTERY ARE KNOWN AS ORGAN OF ZUCKERANDL ARE COMMON SITE OF PARAGANGLIOMAS.

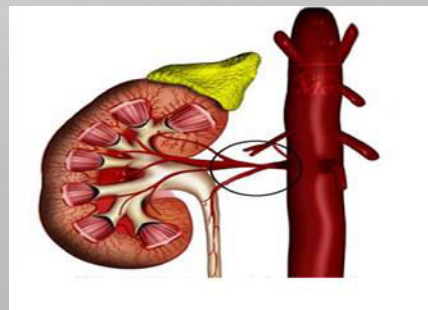


CLINICAL & RADIOLOGICAL FEATURES

- THE CLASSICAL PRESENTATION OF PHEOCHROMOCYTOMA - PAROXYSMAL HYPERTENSION, HEADACHES, SWEATING, AND PALPITATION.

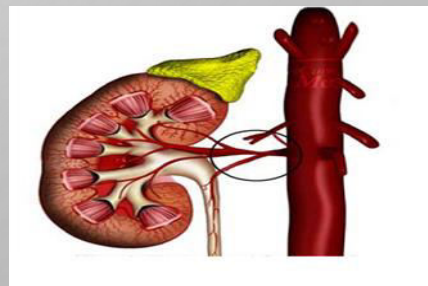
- IMAGING FEATURES – ADRENAL PHEOCHROMOCYTOMAS APPEAR AS WELL – CIRCUMSCRIBED LESIONS. GIVEN THEIR RICH VASCULARITY & LOW LIPID CONTENT, PHEOCHROMOCYTOMAS MEASURE AN ATTENUATION OF GREATER THAN 10 HU ON UNENHANCED CT (CLASSICALLY BRIGHT SIGNAL INTENSITY ON T2 – WEIGHTED IMAGING – FAT SUPPRESSION SEQUENCE – LIGHT BULB SIGN). THIS PROPERTY AFFORDS THE ABILITY TO DIFFERENTIATE THEM FROM LIPID RICH ADENOMAS.

- PRE OPERATIVE OPTIMIZATION IS A NECESSARY PART IN THE MANAGEMENT OF PHEOCHROMOCYTOMA.



WHAT WAS UNUSUAL IN OUR CASE

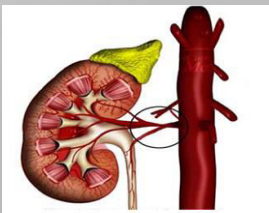
- ATYPICAL PRESENTATION –HYPERTENSION, BACKACHE, WEAKNESS.
- KNOWN CASE OF HYPERTENSION SINCE 10 YEARS & ON MEDICATION.
- CONTRAST ENHANCED CT SCAN OF ABDOMEN & PELVIS WAS SUGGESTIVE OF SOFT TISSUE SARCOMA.
- SERUM METANEPHRINES & VANILLYL MANDELLIC ACID LEVELS WERE NORMAL.
- INTRA – OPERATIVELY THE TUMOR WAS ARISING FROM THE LOWER POLE ADRENAL GLAND & RETROCAVAL.
- THERE WAS AN ANOMALOUS LUMBAR VEIN DRAINING THE TUMOR,



TAKE HOME MESSAGE

- SURGICALLY CORRECTABLE HYPERTENSION OR SECONDARY HYPERTENSION CONSTITUTE 5 – 10 % OF OTHER CASES OF HYPERTENSION THAT CAN BE CURABLE SURGICALLY.
- DIAGNOSIS (CLINICAL & BIOCHEMICAL EVALUATION) & LOCALIZATION OF TUMOR IS A MUST.
- PRE – OPERATIVE OPTIMIZATION OF PATIENT IS NECESSARY IN THE FORM OF ALPHA & BETA - BLOCKERS.
- INTRA – OPERATIVE MANAGEMNT IS THICK OF THE TRADE – LIGATE ADRENAL VEIN THE EARLIEST BEFORE HANDLING THE TUMOR.
- FLUID MANAGEMENT IN THE POST – OPERATIVE CARE IS THE MOST CRUCIAL STEP AS THESE PATIENTS MAY OR MAY NOT REQUIRE DRUGS FOR THE MANAGEMENT OF ESSENTIAL HYPERTENSION.
- LAPAROSCOPIC MANAGEMENT IN OUR PATIENT WAS NOT APPROPIATE DUE TO THE POSITION OF THE TUMOR.

"IF YOU FAIL TO PLAN, **YOU ARE PLANNING TO FAIL!**"



THANK YOU

SPECIAL THANKS TO DEPARTMENT OF ANAESTHESIOLOGY, DR D. Y. PATIL MEDICAL COLLEGE, HOSPITAL, PIMPRI, PUNE.