
بسم الله الرحمن الرحيم

Ladies & Gentlemen Please Rise for “The National Anthem”

Bones,Stones And A Swelling Unknown; A tale of two necks

Department of Otorhinolaryngology,

Rawalpindi Teaching Hospital, RMU

OVERVIEW

- CASE DESCRIPTION
- WORKUP AND INVESTIGATIONS
- TREATMENT PLAN
- POSTOPERATIVE ASSESSMENT AND REVIEW
- LITERATURE REVIEW

CASE NO 1

CASE PRESENTATION

Patient Name : Noor Beghum

Age/Gender: 50Y/ Female

Resident of : Attock

MOA : OPD

DOA : 29/04/25

HISTORY

Presenting Complaint:

- Right sided facial swelling for 5 months

History of presenting illness:

- My patient Noor Beghum, normotensive, normoglycemic, was in USOH 5 months back when she started having the complaint of right sided facial swelling , slow in onset , gradually progressive in size, not associated with pain, fever, nasal blockage or epistaxis. There were no aggravating or relieving factors associated with the swelling. No treatment was taken.

PAST MEDICAL /SURGICAL HISTORY : Insignificant

PERSONAL HISTORY : Patient has no history of smoking or any substance abuse

FAMILY HISTORY: No Hx of DM, IHD, Asthma, TB, Hep B & C, familial disease or head and neck malignancy.

ALLERGY AND TRANSFUSION HISTORY : Insignificant

SOCIOECONOMIC HISTORY: Middle class

EXAMINATION

Patient of average height and lean built, sitting comfortably on bed, well oriented in time, place, and person

Vitally stable

BP: 120/85 mmHg

Pulse: 80 per minute, regular rate and rhythm with good volume

Resp. Rate: 16 per minute

Temp: 97.5 F

EXAMINATION

NAILS:

No pallor, koilonychia, staining, brittleness.

HANDS:

No Pallor, Palmar erythema, Fine tremors, palmar sweating, wasting of thenar or hypothenar muscles.

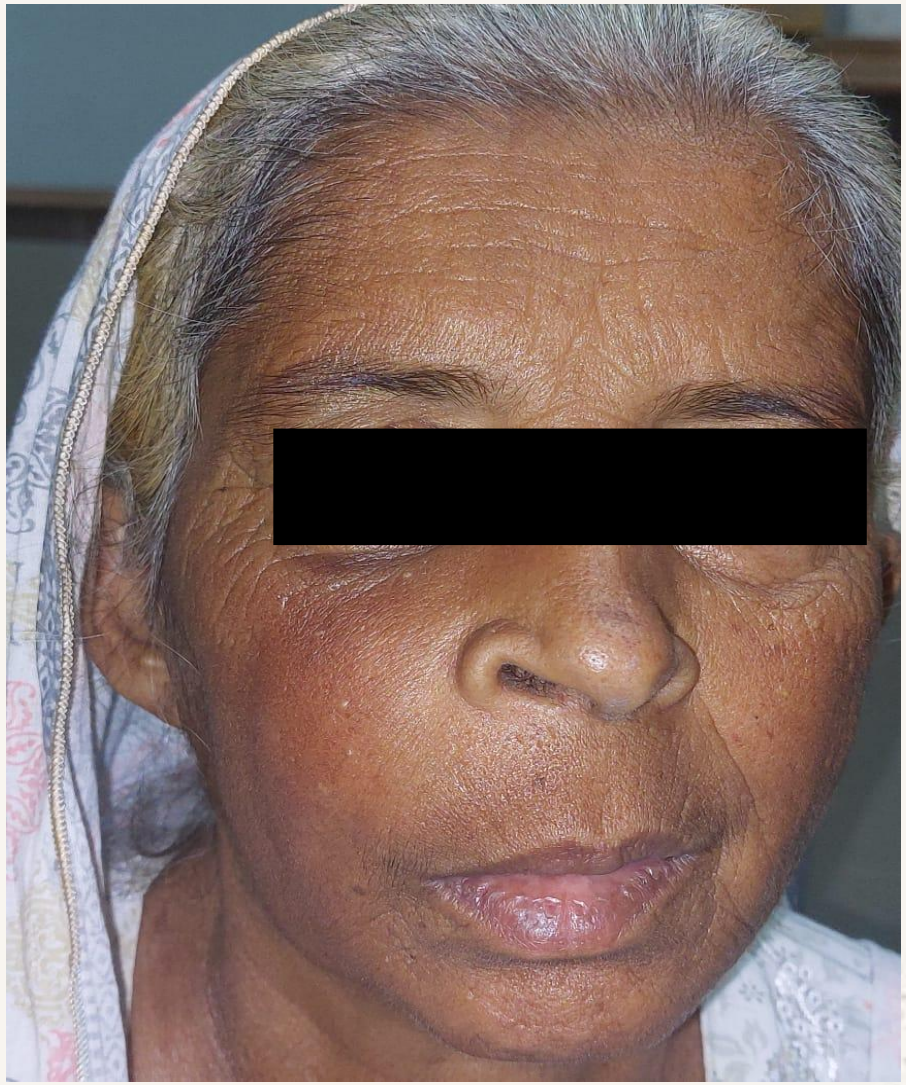
EYES:

no pallor, jaundice, ptosis, protrusion, stye

EXAMINATION OF THE SWELLING

INSPECTION

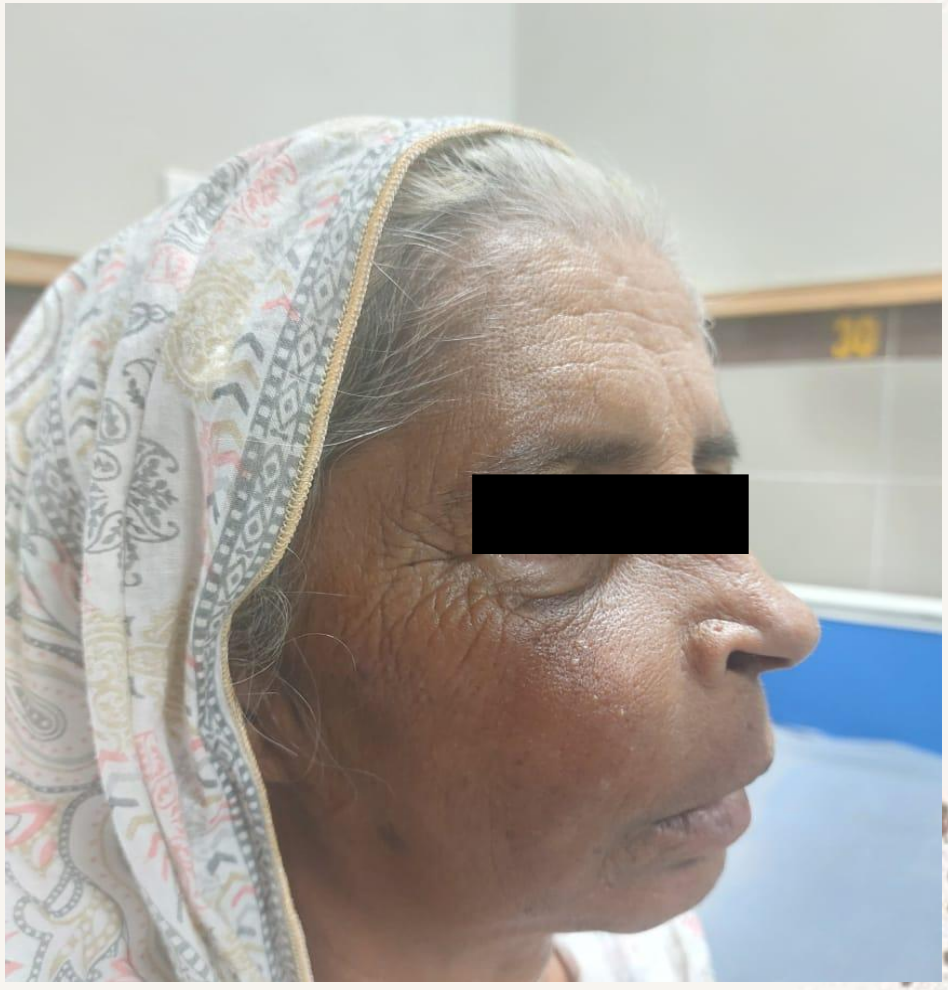
- Diffuse swelling on Right side of face, about 5x4cm
- extending from right side of nose to middle of the cheek, superiorly upto orbit , inferiorly upto angle of mouth
- No surface discoloration, scar marks, or visible veins



EXAMINATION OF THE SWELLING

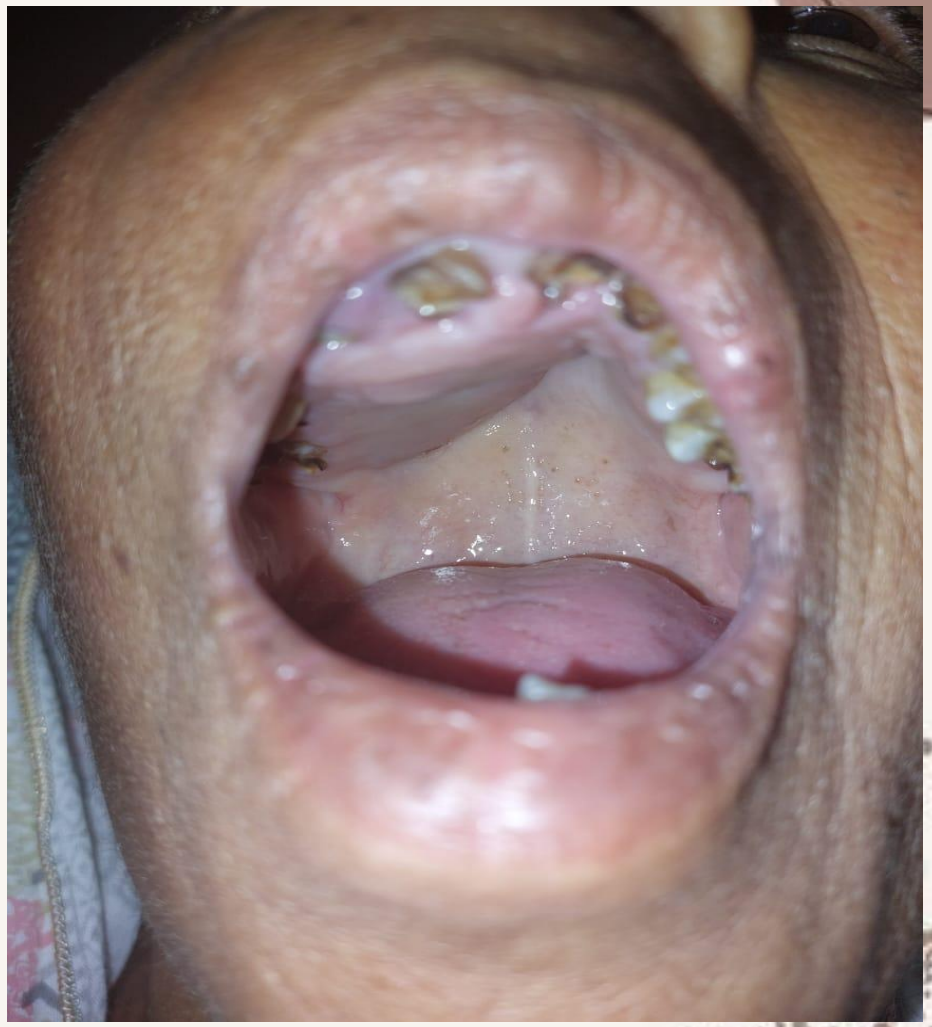
PALPATION

- Non-tender, soft to firm swelling, on Right side of face
- Non-fluctuant
- Non-Mobile
- Overlying skin pinchable, with no visible veins, scar marks or discoloration
- No cervical LAD



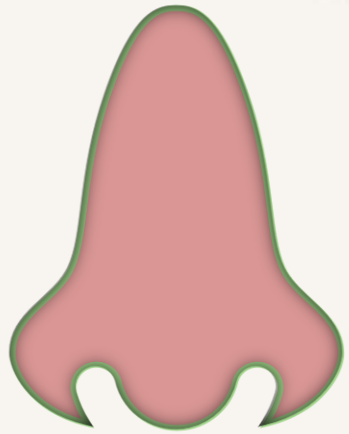
EXAMINATION OF THE ORAL CAVITY

- Poor orodental hygiene with loss of multiple teeth
- Bulge on Right side of hard palate extending up to soft palate –non-tender, firm, no mucosal changes or hyperemia
- tongue movements and gag intact
- no trismus



EXAMINATION OF THE NOSE

- Raised floor of the nose on the right side
- Rest of the examination was unremarkable



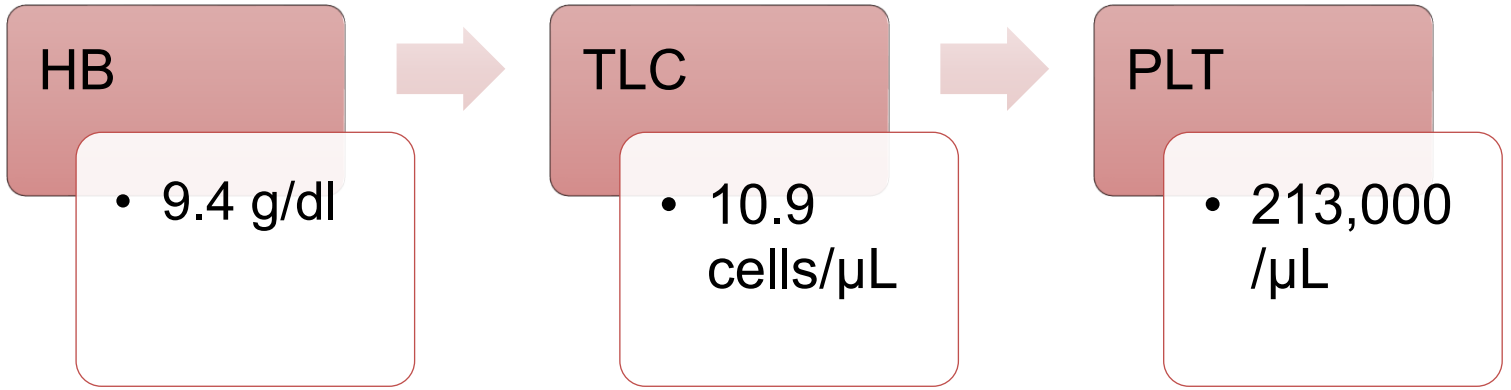
EXAMINATION OF THE EAR

- Bilateral ear canals clear and Tympanic membranes intact

INVESTIGATIONS

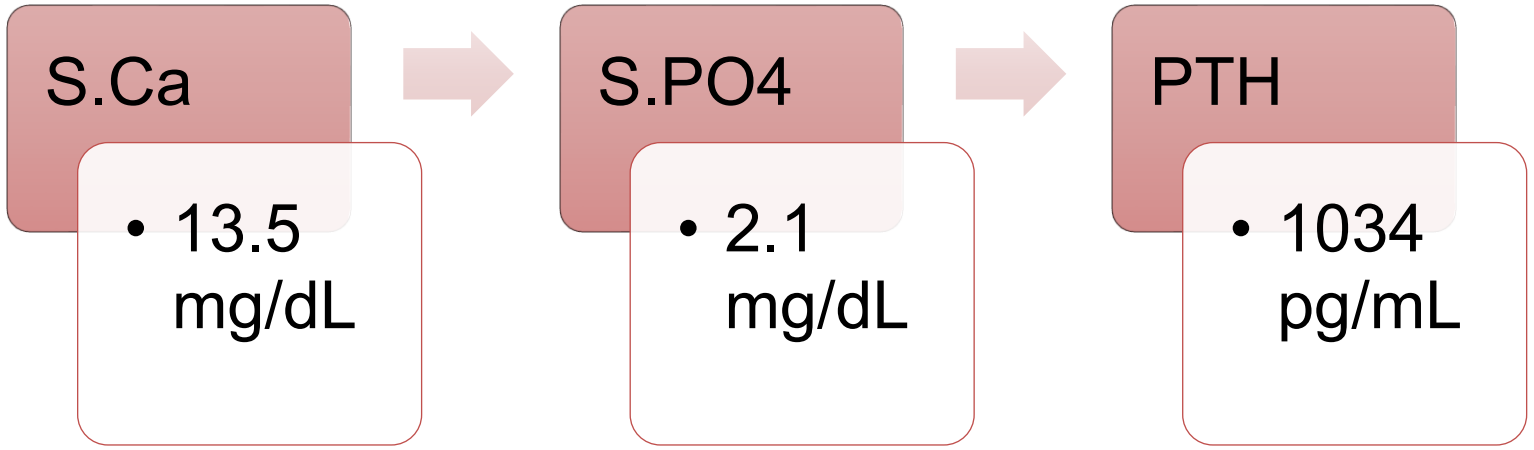
LAB WORKUP AND INVESTIGATIONS

PRE-OP



LAB WORKUP AND INVESTIGATIONS

PRE-OP



LAB WORKUP AND INVESTIGATIONS

LFTs

- BIL
  - **0.5mg/dl**
- ALT
  - **16 U/L**
- ALP
  - **126 U/L**

RFTs

- CREATININE
  - **0.9mg/dl**
- UREA
  - **48mg/dl**
- BUN
  - **22.9mg/dl**

S/E

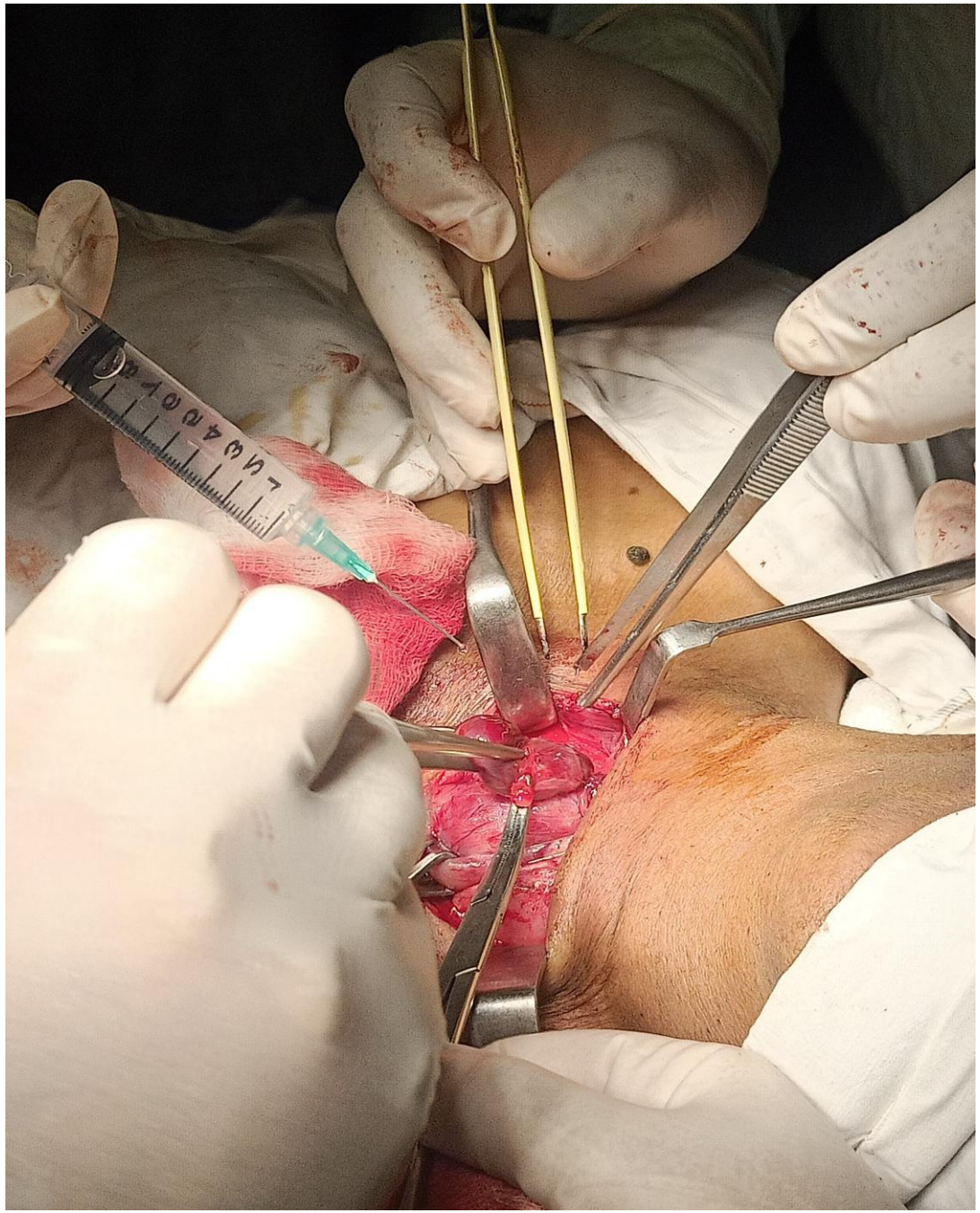
- Na+
  - 138mEq/L
- K+
  - 3.8mEq/L
- Cl-
  - 100mEq/L

USG NECK	• Enlarged thyroid gland with isthmus • Right lobe - TIRADS 4 • Left Lobe - TIRADS 3
CT NECK AND FACE	• Suspicion of Hemangioma
PARATHYROID SCAN	• Parathyroid Adenoma

MANAGEMENT PLAN

- Preoperative Anesthesia Fitness
- Consent for Surgery
- parathyroidectomy under LA
- Histopathological Diagnosis

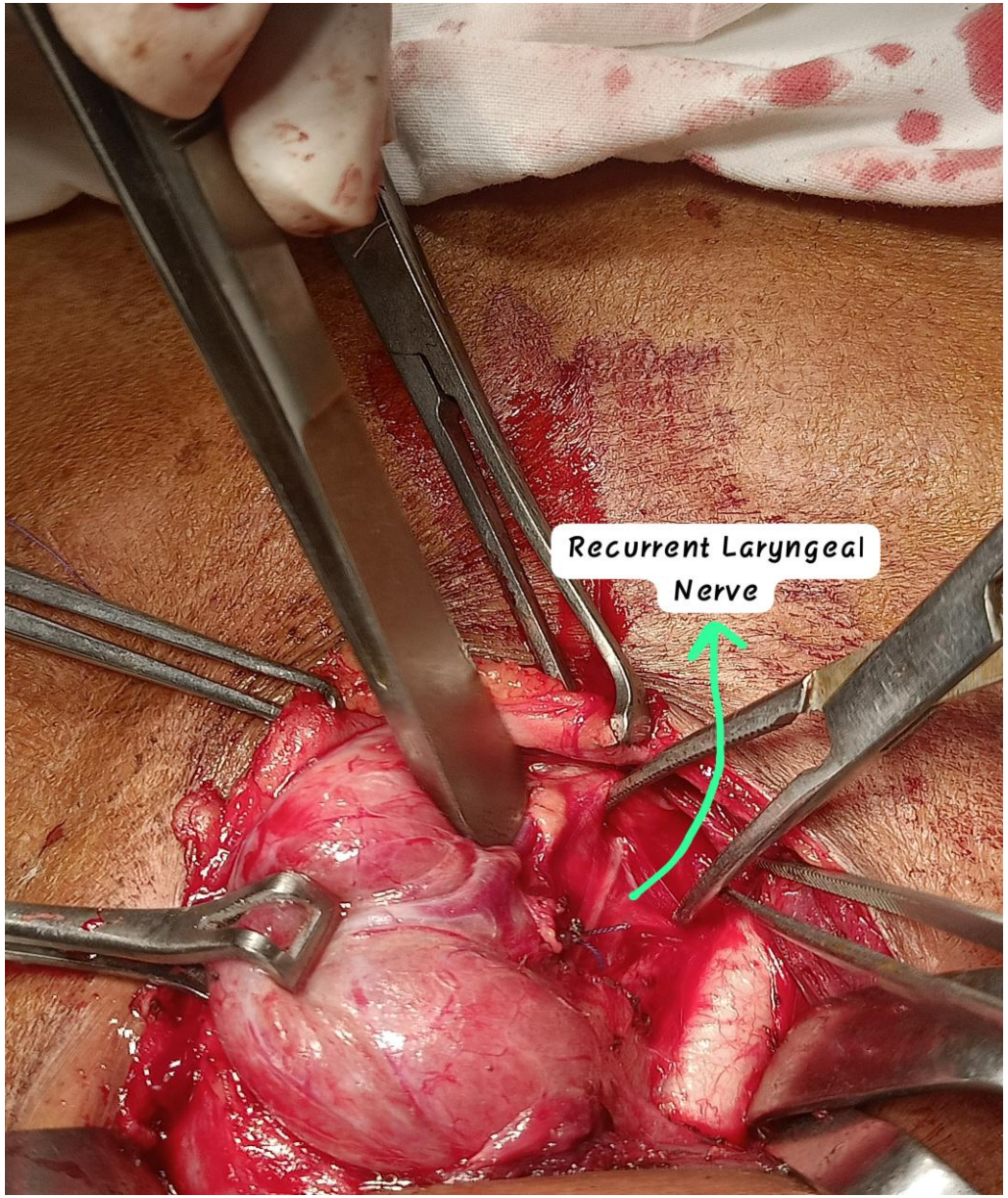
STEPS OF THE PROCEDURE

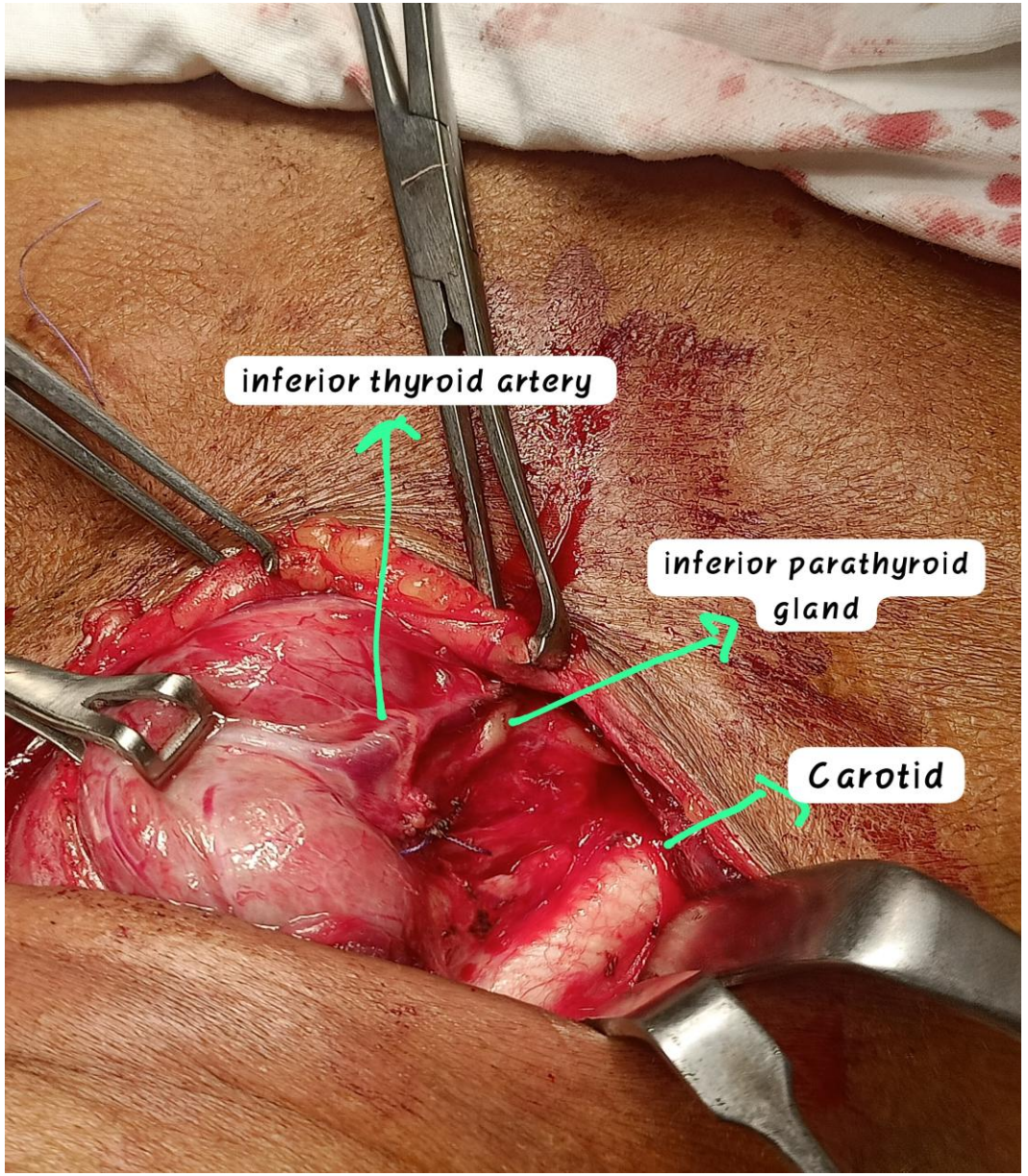


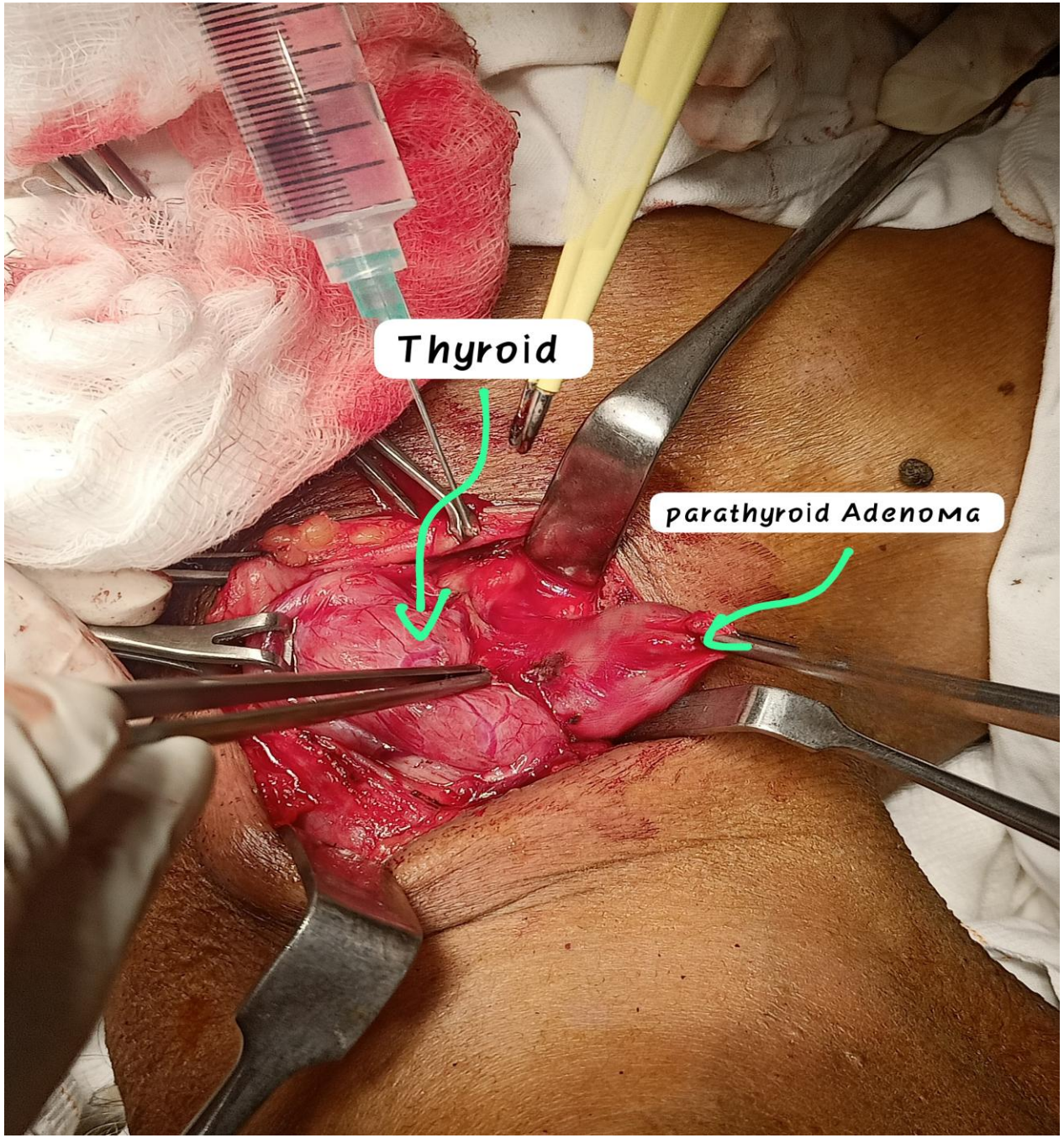
TRADITIONAL BILATERAL NECK EXPLORATION (BNE)

(RIGHT HEMI-THYROIDECTOMY AND PARATHYROIDECTOMY)

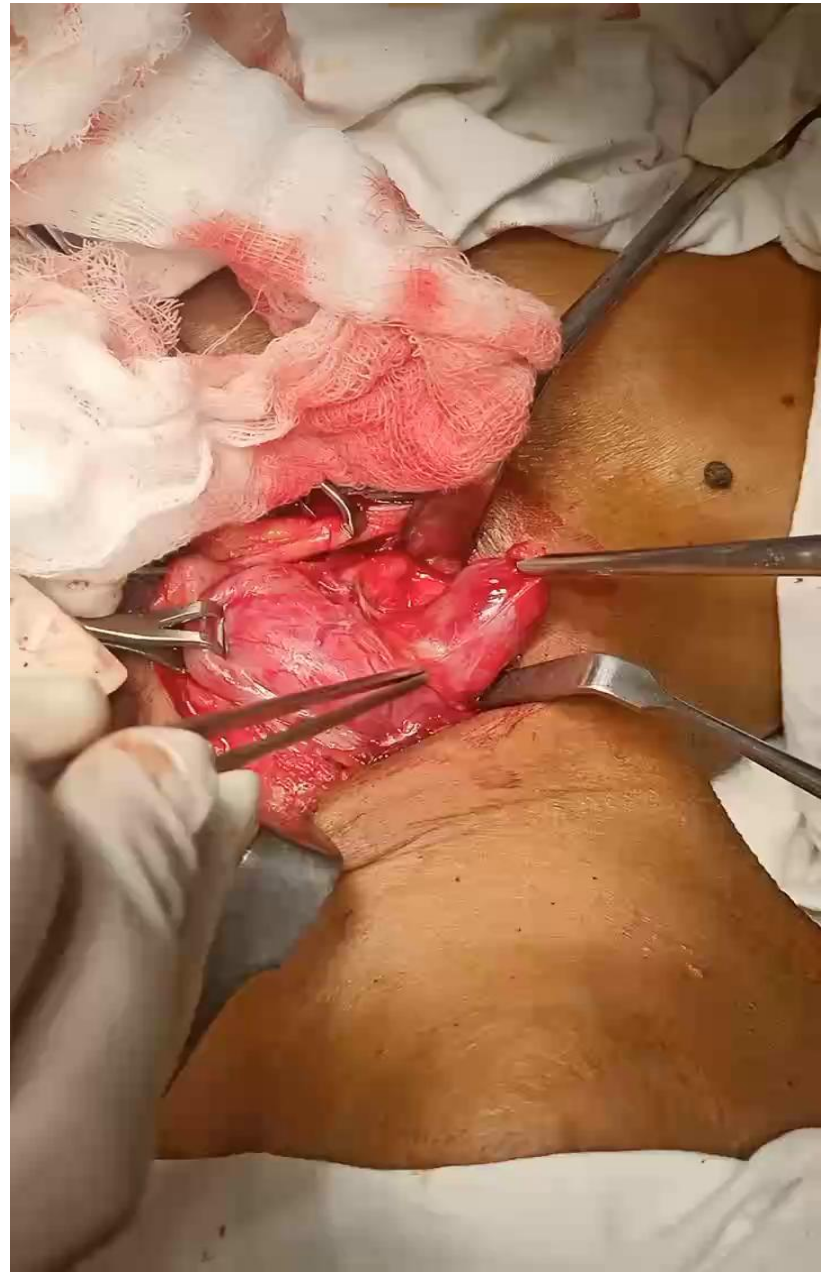
DISSECTION AND IDENTIFICATION OF STRUCTURES







IDENTIFICATION OF THE PARATHYROID ADENOMA FOLLOWED BY EXCISION



POSTOPERATIVE CARE

- Keep NPO for 06 hours
- I/V fluids over the NPO period
- I/V antibiotics
- I/V painkillers
- Vitals monitoring
- Observed for wound dehiscence
- Sample sent for H/P

WORK UP AND INVESTIGATIONS

POST-OP

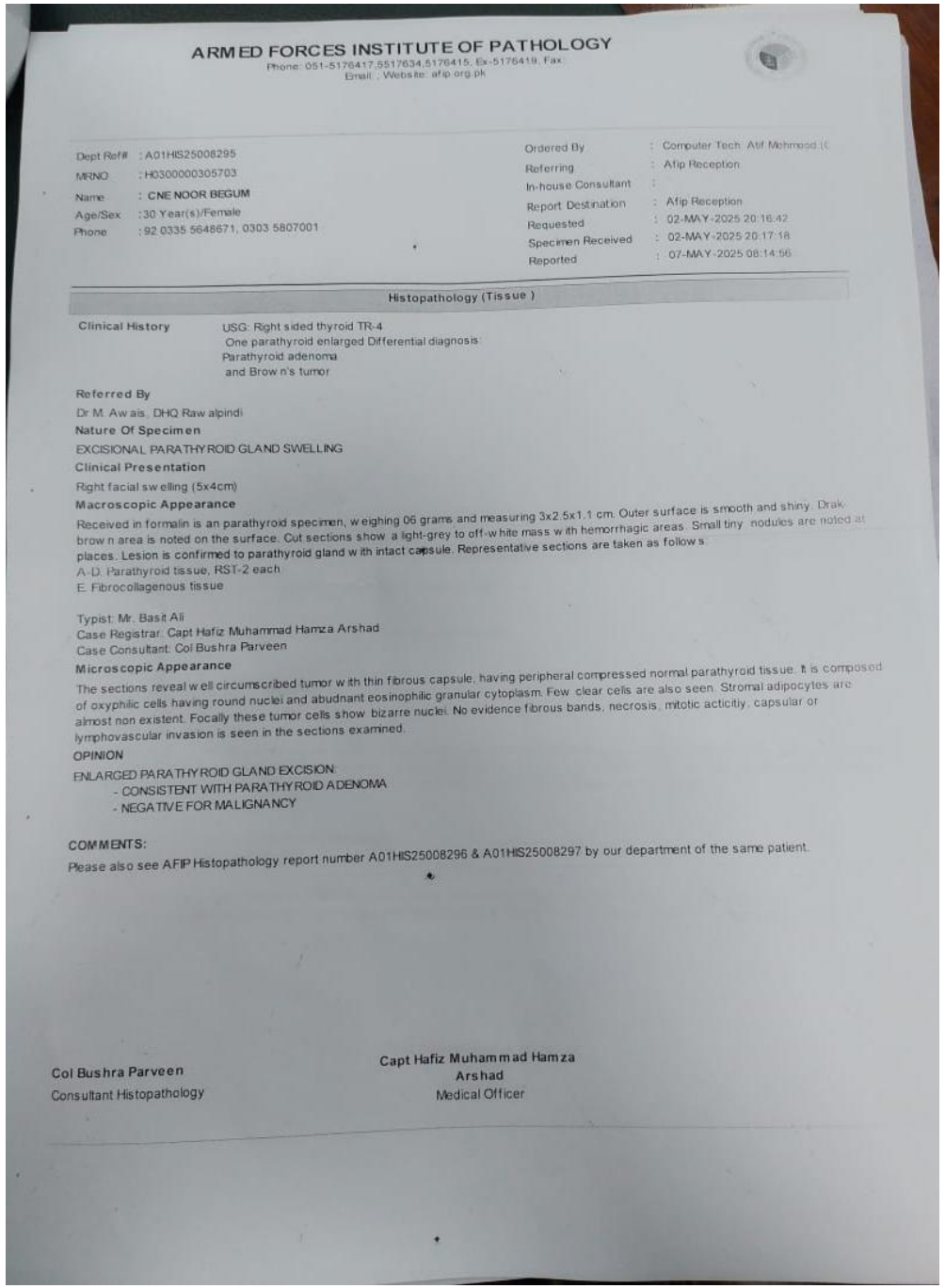
- S.Ca
  - 8.6mg/dl
- S.PO4
  - 1.8mg/dl
- PTH
  - 7pg/ml

HISTOPATHOLOGY FINDINGS

SPECIMEN ;
ENLARGED PARATHYROID GLAND

FINDINGS;

- PARATHYROID ADENOMA
- NEGATIVE FOR MALIGNANCY



ARMED FORCES INSTITUTE OF PATHOLOGY
Phone: 051-5176417,5517634,5176415, Ex-5176419, Fax:
Email: , Website: afip.org.pk

Dept Ref# : A01HIS25008295
MRNO : H0300000305703
Name : CNE NOOR BEGUM
Age/Sex : 30 Year(s)/Female
Phone : 92 0335 5648671, 0303 5807001

Ordered By : Computer Tech. Atif Mehmood (I
Referring : Afip Reception
In-house Consultant :
Report Destination : Afip Reception
Requested : 02-MAY-2025 20:16:42
Specimen Received : 02-MAY-2025 20:17:18
Reported : 07-MAY-2025 08:14:56

Histopathology (Tissue)

Clinical History USG: Right sided thyroid TR-4.
One parathyroid enlarged Differential diagnosis
Parathyroid adenoma
and Brow n's tumor

Referred By
Dr M. Aw ais, DHQ Raw alpindi
Nature Of Specimen
EXCISIONAL PARATHYROID GLAND SWELLING
Clinical Presentation
Right facial sw elling (5x4cm)
Macroscopic Appearance
Received in formalin is an parathyroid specimen, w eighing 06 grams and measuring 3x2.5x1.1 cm. Outer surface is smooth and shiny. Drak brow n area is noted on the surface. Cut sections show a light-grey to off-w hite mass w ith hemorrhagic areas. Small tiny nodules are noted at places. Lesion is confirmed to parathyroid gland w ith intact capsule. Representative sections are taken as follow s:
A-D. Parathyroid tissue, RST-2 each
E. Fibrocollagenous tissue

Typist: Mr. Basit Ali
Case Registrar: Capt Hafiz Muhammad Hamza Arshad
Case Consultant: Col Bushra Parveen
Microscopic Appearance
The sections reveal w ell circumscribed tumor w ith thin fibrous capsule, having peripheral compressed normal parathyroid tissue. It is composed of oxyphilic cells having round nuclei and abudnant eosinophilic granular cytoplasm. Few clear cells are also seen. Stromal adipocytes are almost non existent. Focally these tumor cells show bizarre nuclei. No evidence fibrous bands, necrosis, mitotic acticitiy, capsular or lymphovascular invasion is seen in the sections examined.
OPINION
ENLARGED PARATHYROID GLAND EXCISION:
- CONSISTENT WITH PARATHYROID ADENOMA
- NEGATIVE FOR MALIGNANCY

COMMENTS:
Please also see AFIP Histopathology report number A01HIS25008296 & A01HIS25008297 by our department of the same patient.

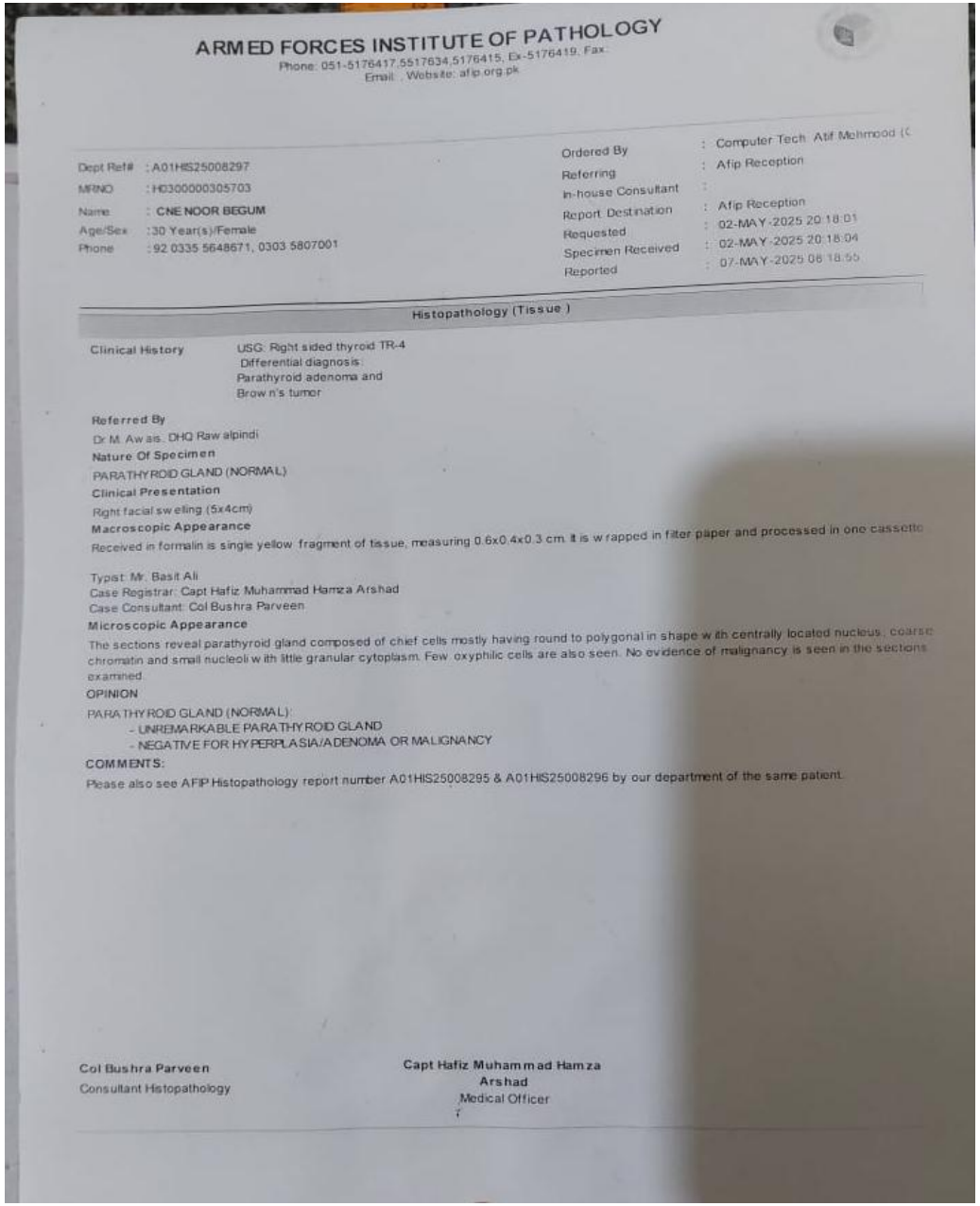
Col Bushra Parveen
Consultant Histopathology

Capt Hafiz Muhammad Hamza Arshad
Medical Officer

SPECIMEN;
NORMAL PARATHYROID GLAND

FINDINGS;

- UNREMARKABLE PARATHYROID GLAND
- NEGATIVE FOR HYPERPLASIA/ADENOMA OR MALIGNANCY



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Email: , Website: afip.org.pk

Dept Ref# : A01HIS25008297
MRNO : H0300000305703
Name : CNE NOOR BEGUM
Age/Sex : 30 Year(s)/Female
Phone : 92 0335 5648671, 0303 5807001

Ordered By : Computer Tech Atif Mehmood (C
Referring : Afip Reception
In-house Consultant :
Report Destination : Afip Reception
Requested : 02-MAY-2025 20:18:01
Specimen Received : 02-MAY-2025 20:18:04
Reported : 07-MAY-2025 08:18:55

Histopathology (Tissue)

Clinical History USG: Right sided thyroid TR-4
Differential diagnosis:
Parathyroid adenoma and
Brow n's tumor

Referred By
Dr M. Awais. DHQ Raw alpindi
Nature Of Specimen
PARATHYROID GLAND (NORMAL)
Clinical Presentation
Right facial sw elling (5x4cm)
Macroscopic Appearance
Received in formalin is single yellow fragment of tissue, measuring 0.6x0.4x0.3 cm. It is w rapped in filter paper and processed in one cassette

Typist: Mr. Basit Ali
Case Registrar: Capt Hafiz Muhammad Hamza Arshad
Case Consultant: Col Bushra Parveen
Microscopic Appearance
The sections reveal parathyroid gland composed of chief cells mostly having round to polygonal in shape w ith centrally located nucleus, coarse chromatin and small nucleoli w ith little granular cytoplasm. Few oxyphilic cells are also seen. No evidence of malignancy is seen in the sections examined.
OPINION
PARATHYROID GLAND (NORMAL):
- UNREMARKABLE PARATHYROID GLAND
- NEGATIVE FOR HYPERPLASIA/ADENOMA OR MALIGNANCY

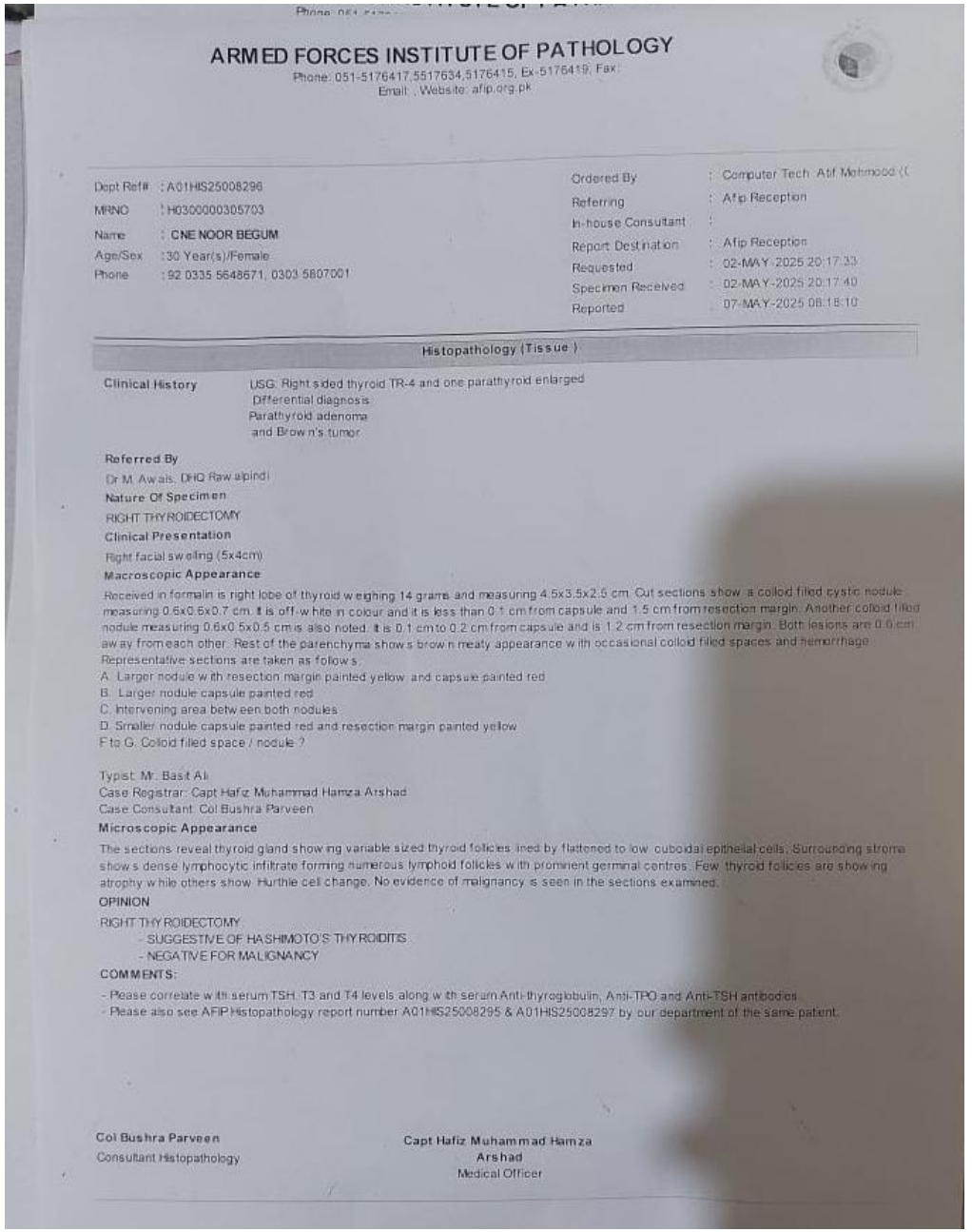
COMMENTS:
Please also see AFIP Histopathology report number A01HIS25008295 & A01HIS25008296 by our department of the same patient.

Col Bushra Parveen
Consultant Histopathology

Capt Hafiz Muhammad Hamza Arshad
Medical Officer

SPECIMEN ;
RIGHT HEMITHYROID

FINDINGS;
- SUGGESTIVE OF HASHIMOTOS THYROIDITIS
- NEGATIVE FOR MALIGNANCY



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MRNO : H0300000305703
Name : CNE NOOR BEGUM
Age/Sex : 30 Year(s)/Female
Phone : 92 0335 5648671, 0303 5807001

Ordered By : Computer Tech Atif Mehmood (
Referring : Afip Reception
In-house Consultant :
Report Destination : Afip Reception
Requested : 02-MAY-2025 20:17:33
Specimen Received : 02-MAY-2025 20:17:40
Reported : 07-MAY-2025 08:18:10

Histopathology (Tissue)

Clinical History USG: Right sided thyroid TR-4 and one parathyroid enlarged
Differential diagnosis
Parathyroid adenoma
and Brown's tumor

Referred By
Dr M. Awais, DHQ Rawalpindi
Nature Of Specimen
RIGHT THYROIDECTOMY
Clinical Presentation
Right facial swelling (5x4cm)
Macroscopic Appearance
Received in formalin is right lobe of thyroid weighing 14 grams and measuring 4.5x3.5x2.5 cm. Cut sections show a colloid filled cystic nodule measuring 0.6x0.6x0.7 cm. It is off-white in colour and it is less than 0.1 cm from capsule and 1.5 cm from resection margin. Another colloid filled nodule measuring 0.6x0.5x0.5 cm is also noted. It is 0.1 cm to 0.2 cm from capsule and is 1.2 cm from resection margin. Both lesions are 0.6 cm away from each other. Rest of the parenchyma shows brown meaty appearance with occasional colloid filled spaces and hemorrhage.
Representative sections are taken as follows:
A: Larger nodule with resection margin painted yellow and capsule painted red
B: Larger nodule capsule painted red
C: Intervening area between both nodules
D: Smaller nodule capsule painted red and resection margin painted yellow
F to G: Colloid filled space / nodule ?

Typist: Mr. Basit Ali
Case Registrar: Capt Hafiz Muhammad Hamza Arshad
Case Consultant: Col Bushra Parveen
Microscopic Appearance
The sections reveal thyroid gland showing variable sized thyroid follicles lined by flattened to low cuboidal epithelial cells. Surrounding stroma shows dense lymphocytic infiltrate forming numerous lymphoid follicles with prominent germinal centres. Few thyroid follicles are showing atrophy while others show Hurthle cell change. No evidence of malignancy is seen in the sections examined.
OPINION
RIGHT THYROIDECTOMY
- SUGGESTIVE OF HASHIMOTO'S THYROIDITIS
- NEGATIVE FOR MALIGNANCY

COMMENTS:
- Please correlate with serum TSH, T3 and T4 levels along with serum Anti-thyroglobulin, Anti-TPO and Anti-TSH antibodies
- Please also see AFIP Histopathology report number A01HIS25008295 & A01HIS25008297 by our department of the same patient.

Col Bushra Parveen
Consultant Histopathology

Capt Hafiz Muhammad Hamza Arshad
Medical Officer

CASE NO 2

CASE PRESENTATION

Patient Name: M. Saleem

Age/gender: 37/Male

Resident of: Bakhar

MOA: OPD

DOA: 04/07/2025

HISTORY

PRESENTING COMPLAINT:

- A swelling infront of neck for 4 years

HISTORY OF PRESENTING ILLNESS:

- The patient, M.Saleem, known hypertensive, was in USOH 4 years ago when he first developed the swelling in front of his neck that was slow in onset, gradually progressive in size. It was not associated with any fever, pain, dysphagia, or breathing difficulty. There were no aggravating or relieving factors, and no treatment was taken for the swelling before.

HISTORY

He also had indigestion, bloating, and chronic constipation for which he was using GP medication, and severe mood changes

He also has a history of primary infertility for the last 6 years.

He was diagnosed with B/L nephrolithiasis on a routine USG one year ago, but no intervention was done at that time.

HISTORY

The patient also had a history of neck swelling for the last four years, which was not causing any discomfort for the patient.

He also had indigestion, bloating, and chronic constipation, for which he was using GP medication, and severe mood changes

He also has a history of primary infertility for the last 6 years.

HISTORY

Last month, he developed B/L flank pain for which USG and CT KUB were done, which showed B/L nephrolithiasis and a stone in the left ureter, for which URS was done with no complications

On further workup, low phosphate levels and elevated Serum calcium and PTH levels were found, raising a strong suspicion of primary hyperparathyroidism. A parathyroid scan was subsequently advised, which confirmed the presence of parathyroid adenoma.

PAST MEDICAL/ SURGICAL HISTORY

- He has been a known case of HTN for the past 1 year and had been prescribed Tab Losartan 50 mg with which he is non-compliant.

- He had L4-L5 vertebral laminectomy about 5 years ago due to repeated complaints of lower back pain and was diagnosed with herniated intervertebral disc, with uneventful perioperative and postoperative period

HISTORY

PERSONAL HX: patient has no history of smoking or any substance abuse

FAMILY HX: Mother and Father are alive and healthy. Total four siblings with one brother and three sisters.

No Hx of DM, IHD, Asthma, TB, Hep B & C, familial disease or head and neck malignancy.

ALLERGY AND TRANSFUSION HX: Insignificant

SOCIOECONOMIC HX: Belongs to Upper Middle Class

EXAMINATION

Patient of average build and height as per his age, sitting comfortably on bed, well oriented in time, place, and person

Vitally stable

BP: 140/95 mmHg

Pulse: 76 per minute, regular rate and rhythm with good volume

Resp. Rate: 18 per minute

Temp: 97.5 F

GENERAL PHYSICAL EXAMINATION

NAILS:

No pallor, koilonychia, staining, brittleness.

HANDS:

No Pallor, Palmar erythema, Fine tremors, palmar sweating, wasting of thenar or hypothenar muscles.

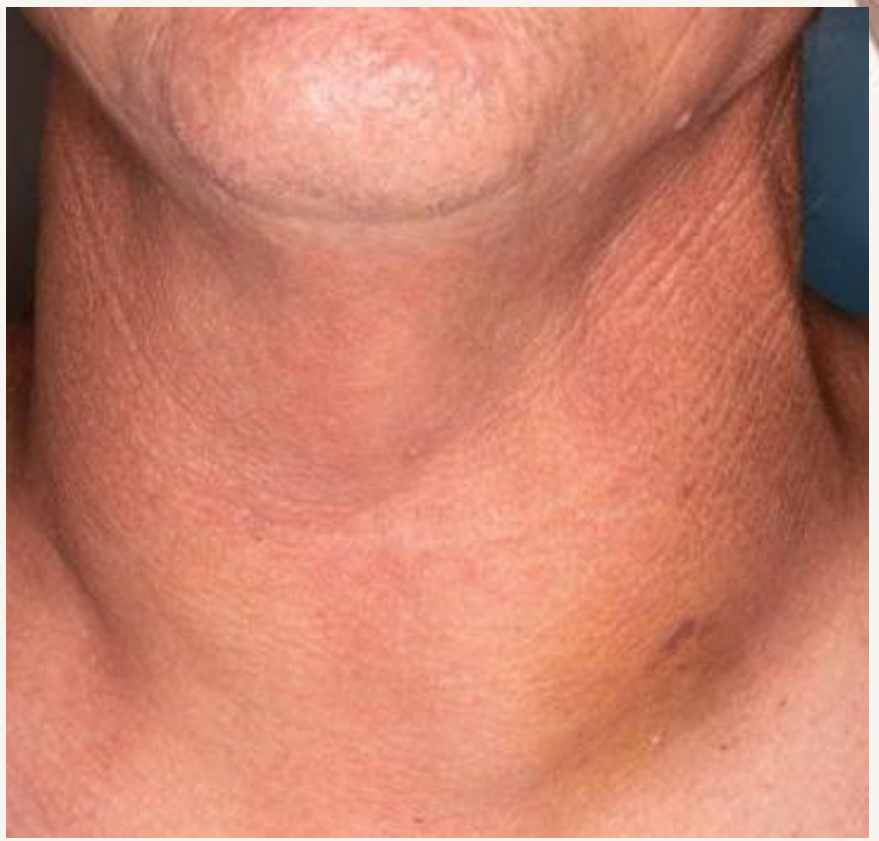
EYES:

no pallor, jaundice, ptosis, protrusion, stye

NECK EXAMINATION

INSPECTION

- Diffuse swelling on the Left side of the neck
- Superiorly extending up to the hyoid bone, inferiorly to the lower border of the thyroid cartilage, laterally up to the anterior border of the Sternocleidomastoid muscle, extending up to the midline
- About 4x3cm - Moves with deglutition, not with tongue protrusion
- No surface discoloration, scar marks, or visible veins



PALPATION:

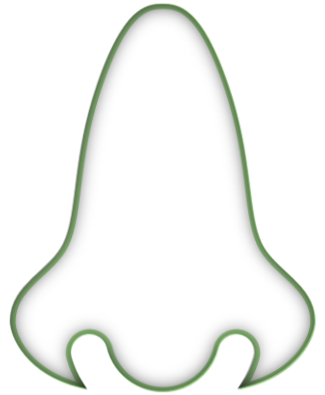
- Non-tender, firm, diffuse swelling, left side of neck
- Non-fluctuant
- In midline , more towards left side
- Mobile, with smooth surface
- Overlying skin pinchable, with no visible veins, scar marks or discoloration
- No cervical LAD

EXAMINATION OF THE ORAL CAVITY / THROAT

- Good oral hygiene with no abnormal findings in the oral cavity

EXAMINATION OF THE NOSE

- No external nasal deformity
- No septal deviation or turbinate hypertrophy
- Olfactory sensation intact



EXAMINATION OF THE EARS

- Bilateral ear canals clear and Tympanic membranes intact

INVESTIGATIONS

LAB WORKUP AND INVESTIGATIONS

- **COMPLETE BLOOD COUNT**

HB	TLC	PLT
• 11.5g/dl	• 8,600 cells//µL	• 279,000 /µL

- **PT/APTT**

PT	APTT
• 10.6 sec	• 27 sec

- **LFT**

BIL	ALT	ALK.P
• **0.38mg/dl**	• **35U/L**	• **183U/L**

LAB WORKUP AND INVESTIGATIONS

- **RENAL FUNCTION TEST**

CREATININE	UREA	BUN
• **1.6mg/dl**	• **48mg/dl**	• **22mg/dl**

eGFR	URIC ACID
• **49ml/min/1.73^2**	• **7mg/dl**

- **SERUM ELECTROLYTES**

Na+	K+	Cl-
• 138mEq/L	• 4.0mEq/L	• 104mEq/L

LAB WORKUP AND INVESTIGATIONS

PRE-OP

S.PO4

- 2.1mg/dl

S.Ca

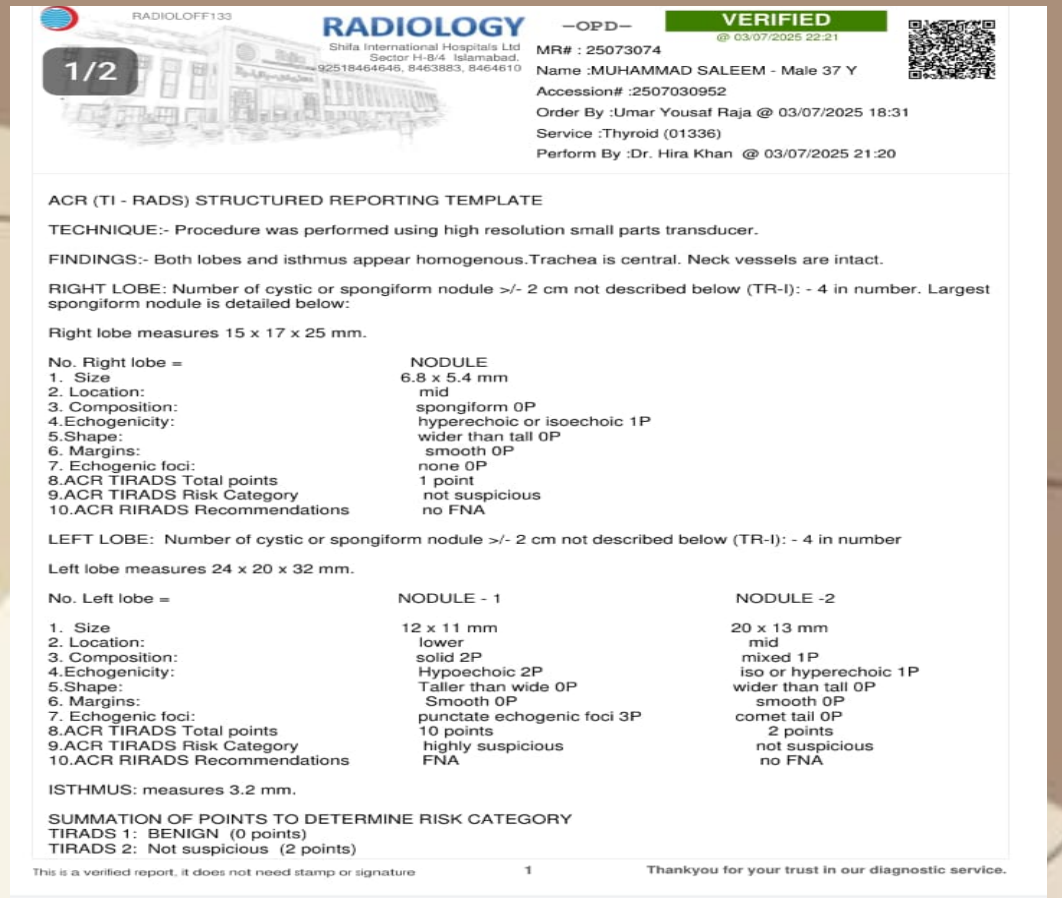
- 14.6mg/dl

PTH

- 469.7pg/ml

USG NECK

- Enlarged left lobe of thyroid showing a highly suspicous (TIRADS-V) nodule
- Few benign spongiform and cystic nodules are also seen in both lobes



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1/2

RADIOLOGY

Shifa International Hospitals Ltd
Sector H-8/4 Islamabad.
+92518464646, 8463883, 8464610

–OPD–

VERIFIED
@ 03/07/2025 22:21

MR# : 25073074
Name :MUHAMMAD SALEEM - Male 37 Y
Accession# :2507030952
Order By :Umar Yousaf Raja @ 03/07/2025 18:31
Service :Thyroid (01336)
Perform By :Dr. Hira Khan @ 03/07/2025 21:20

ACR (TI - RADS) STRUCTURED REPORTING TEMPLATE

TECHNIQUE:- Procedure was performed using high resolution small parts transducer.

FINDINGS:- Both lobes and isthmus appear homogenous.Trachea is central. Neck vessels are intact.

RIGHT LOBE: Number of cystic or spongiform nodule >/- 2 cm not described below (TR-I): - 4 in number. Largest spongiform nodule is detailed below:

Right lobe measures 15 x 17 x 25 mm.

No. Right lobe =	NODULE
1. Size	6.8 x 5.4 mm
2. Location:	mid
3. Composition:	spongiform 0P
4.Echogenicity:	hyperechoic or isoechoic 1P
5.Shape:	wider than tall 0P
6. Margins:	smooth 0P
7. Echogenic foci:	none 0P
8.ACR TIRADS Total points	1 point
9.ACR TIRADS Risk Category	not suspicious
10.ACR RIRADS Recommendations	no FNA

LEFT LOBE: Number of cystic or spongiform nodule >/- 2 cm not described below (TR-I): - 4 in number

Left lobe measures 24 x 20 x 32 mm.

No. Left lobe =	NODULE - 1	NODULE -2
1. Size	12 x 11 mm	20 x 13 mm
2. Location:	lower	mid
3. Composition:	solid 2P	mixed 1P
4.Echogenicity:	Hypoechoic 2P	iso or hyperechoic 1P
5.Shape:	Taller than wide 0P	wider than tall 0P
6. Margins:	Smooth 0P	smooth 0P
7. Echogenic foci:	punctate echogenic foci 3P	comet tail 0P
8.ACR TIRADS Total points	10 points	2 points
9.ACR TIRADS Risk Category	highly suspicious	not suspicious
10.ACR RIRADS Recommendations	FNA	no FNA

ISTHMUS: measures 3.2 mm.

SUMMATION OF POINTS TO DETERMINE RISK CATEGORY
TIRADS 1: BENIGN (0 points)
TIRADS 2: Not suspicious (2 points)

This is a verified report, it does not need stamp or signature 1 Thankyou for your trust in our diagnostic service.

TIRADS 3: Mildly suspicious (3 points)
TIRADS 4: Moderately suspicious (4-6 points)
TIRADS 5: Highly suspicious (more than or equal to 7 points)

TIRADS 1. No FNA
TIRADS 2. No FNA
TIRADS 3. >/- 1.5 cm follow up, >/- 2.5 cm FNA (1.3 and 5 years follow up)
TIRADS 4. >/- 1.0 cm follow up, >/-1.5 cm FNA (1.2.3 and 5 years follow up)
TIRADS 5. >/-0.5 cm follow up, >/-1.0 cm FNA (Annual follow up for upto 5 years

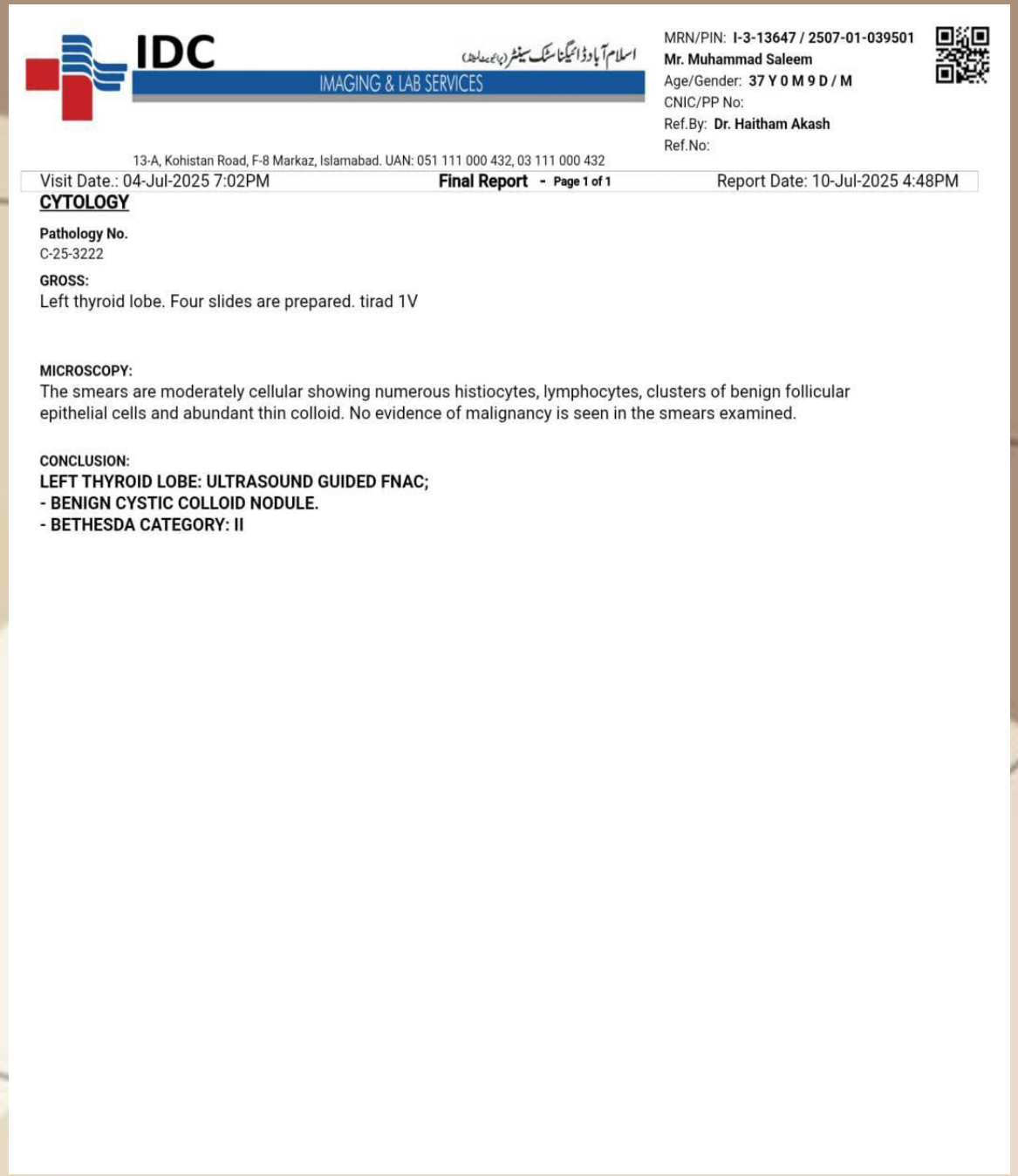
CONCLUSION:

-- Enlarged left lobe of thyroid showing a highly suspicious (TIRADS - V) nodule. FNAC correlation is suggested.
-- Few benign spongiform and cystic nodules are are also seen in both lobes as detailed above.

Perform & Reported By
Dr. Hira Khan

FNAC

- Benign cystic colloid nodule
- bethesda category: II



IDC
اسلام آباد ڈائیگناسٹک سینٹر (پرائیویٹ) لمیٹڈ
IMAGING & LAB SERVICES

MRN/PIN: I-3-13647 / 2507-01-039501
Mr. Muhammad Saleem
Age/Gender: 37 Y 0 M 9 D / M
CNIC/PP No:
Ref.By: Dr. Haitham Akash
Ref.No:

13-A, Kohistan Road, F-8 Markaz, Islamabad. UAN: 051 111 000 432, 03 111 000 432

Visit Date.: 04-Jul-2025 7:02PM | Final Report - Page 1 of 1 | Report Date: 10-Jul-2025 4:48PM

CYTOLOGY

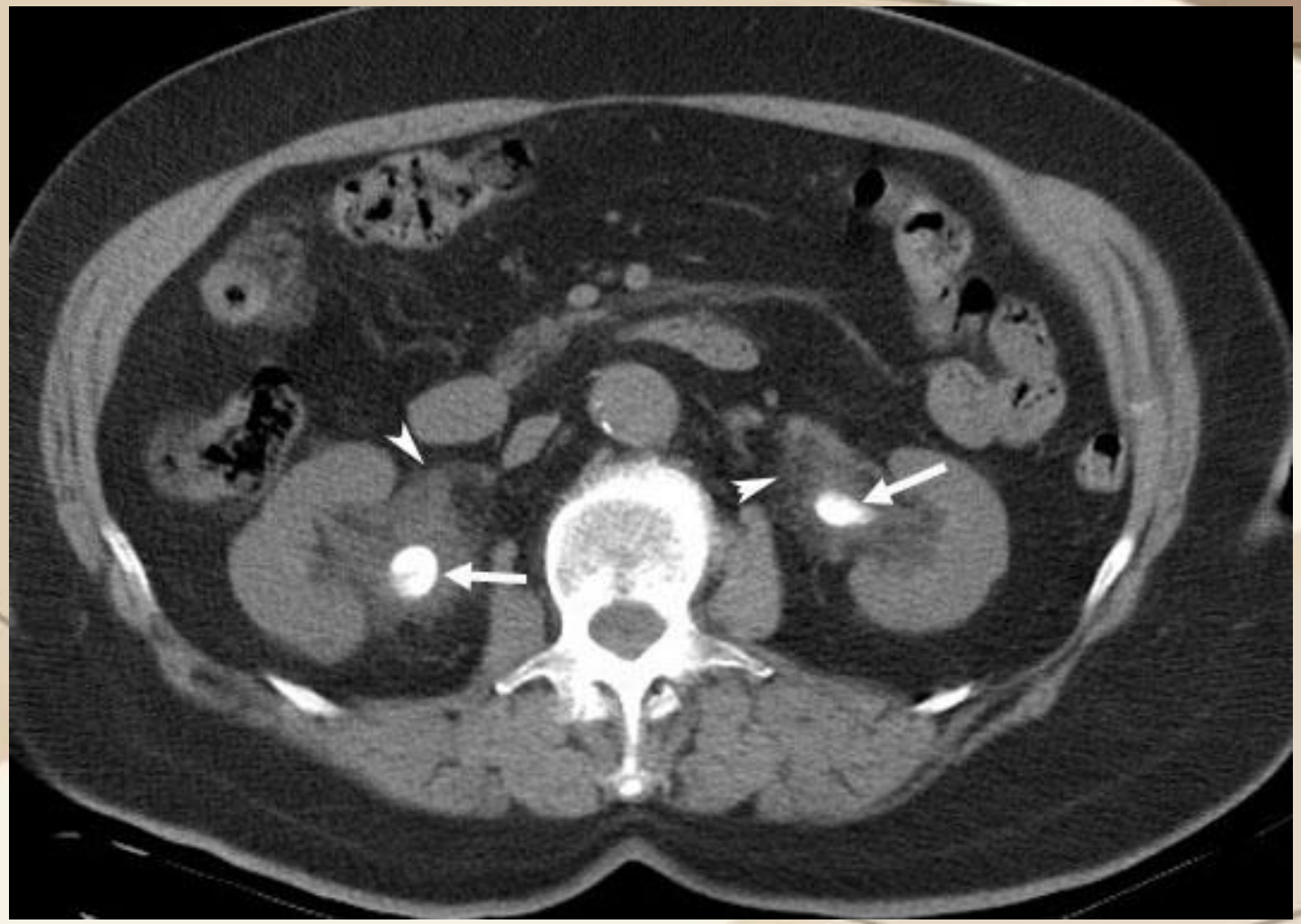
Pathology No.
C-25-3222

GROSS:
Left thyroid lobe. Four slides are prepared. tirad 1V

MICROSCOPY:
The smears are moderately cellular showing numerous histiocytes, lymphocytes, clusters of benign follicular epithelial cells and abundant thin colloid. No evidence of malignancy is seen in the smears examined.

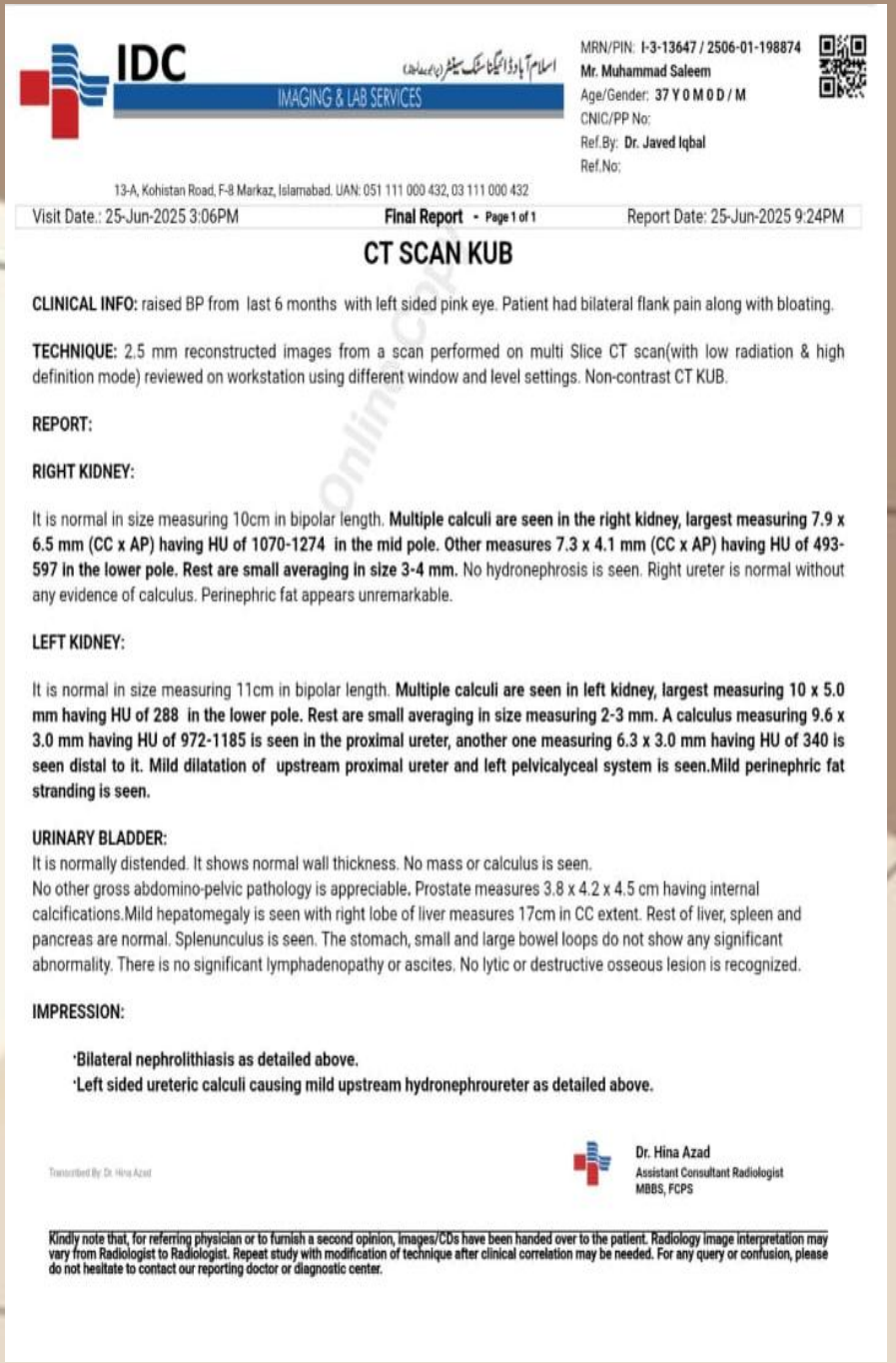
CONCLUSION:
LEFT THYROID LOBE: ULTRASOUND GUIDED FNAC;
- BENIGN CYSTIC COLLOID NODULE.
- BETHESDA CATEGORY: II

CT KUB



CT KUB

- Bilateral nephrolithiasis
- left sided ureteric calculi causing mild upstream hydronephroureter



IDC
IMAGING & LAB SERVICES
اسلام آباد ڈائیگناسٹک سینٹر (پرائیویٹ) لمیٹڈ

MRN/PIN: I-3-13647 / 2506-01-198874
Mr. Muhammad Saleem
Age/Gender: 37 Y 0 M 0 D / M
CNIC/PP No:
Ref.By: Dr. Javed Iqbal
Ref.No:

13-A, Kohistan Road, F-8 Markaz, Islamabad. UAN: 051 111 000 432, 03 111 000 432

Visit Date.: 25-Jun-2025 3:06PM | Final Report - Page 1 of 1 | Report Date: 25-Jun-2025 9:24PM

CT SCAN KUB

CLINICAL INFO: raised BP from last 6 months with left sided pink eye. Patient had bilateral flank pain along with bloating.

TECHNIQUE: 2.5 mm reconstructed images from a scan performed on multi Slice CT scan(with low radiation & high definition mode) reviewed on workstation using different window and level settings. Non-contrast CT KUB.

REPORT:

RIGHT KIDNEY:

It is normal in size measuring 10cm in bipolar length. **Multiple calculi are seen in the right kidney, largest measuring 7.9 x 6.5 mm (CC x AP) having HU of 1070-1274 in the mid pole. Other measures 7.3 x 4.1 mm (CC x AP) having HU of 493-597 in the lower pole. Rest are small averaging in size 3-4 mm.** No hydronephrosis is seen. Right ureter is normal without any evidence of calculus. Perinephric fat appears unremarkable.

LEFT KIDNEY:

It is normal in size measuring 11cm in bipolar length. **Multiple calculi are seen in left kidney, largest measuring 10 x 5.0 mm having HU of 288 in the lower pole. Rest are small averaging in size measuring 2-3 mm. A calculus measuring 9.6 x 3.0 mm having HU of 972-1185 is seen in the proximal ureter, another one measuring 6.3 x 3.0 mm having HU of 340 is seen distal to it. Mild dilatation of upstream proximal ureter and left pelvicalyceal system is seen.Mild perinephric fat stranding is seen.**

URINARY BLADDER:
It is normally distended. It shows normal wall thickness. No mass or calculus is seen.
No other gross abdomino-pelvic pathology is appreciable. Prostate measures 3.8 x 4.2 x 4.5 cm having internal calcifications.Mild hepatomegaly is seen with right lobe of liver measures 17cm in CC extent. Rest of liver, spleen and pancreas are normal. Splenunculus is seen. The stomach, small and large bowel loops do not show any significant abnormality. There is no significant lymphadenopathy or ascites. No lytic or destructive osseous lesion is recognized.

IMPRESSION:

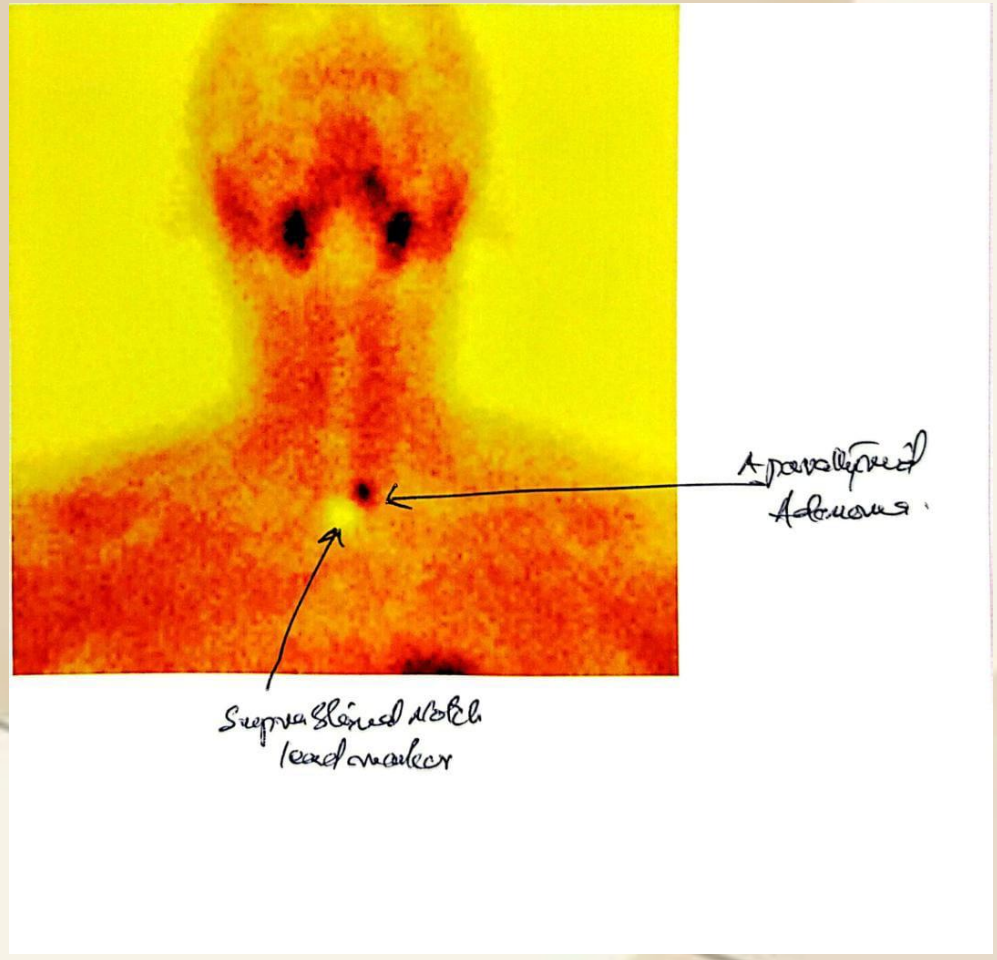
- **Bilateral nephrolithiasis as detailed above.**
- **Left sided ureteric calculi causing mild upstream hydronephroureter as detailed above.**

Transcribed By: Dr. Hina Azad

Dr. Hina Azad
Assistant Consultant Radiologist
MBBS, FCPS

Kindly note that, for referring physician or to furnish a second opinion, images/CDs have been handed over to the patient. Radiology image interpretation may vary from Radiologist to Radiologist. Repeat study with modification of technique after clinical correlation may be needed. For any query or confusion, please do not hesitate to contact our reporting doctor or diagnostic center.

PARATHYROID SCAN



A SINGLE PARATHYROID ADENOMA , CLOSE TO THE LOWER POLE OF THE LEFT LOBE ADJACENT TO LEFT STERNOCLAVICULAR JOINT.

Nuclear Imaging Center

Tc99m-MIBI Parathyroid Scan

Name : M Saleem
Age : 37 yrs /male

Date: 02-07-2025
MR no: T464639

Adv by: Dr Zahid Nabbi

Indication:

To assess for abnormal parathyroid.

Procedure:

Tc-99m Sestamibi 20mCi was injected IV. Early static imaging was done for 05, 10 and 20 minutes. Later, delayed static imaging was done after 01 hrs.

Findings:

Parathyroid Scan (dual phase).

Anterior and oblique images of the neck and upper chest show normal tracer uptake in the thyroid gland and tracer washout. A small focal area od tracer activity is seen close to the lower pole of the left lobe, adjacent to left sternoclavicular joint, through out the study and on 01 hour delayed image.

Opinion

A single parathyroid adenoma, close to the lower pole of the left lobe, adjacent to left sternoclavicular joint.

supervised and Reported by:
Col (R) Mohsin Saeed Shaikh
Consultant Nuclear Cardiology/
Nuclear Medicine.
Quaid-e-Azam International Hospital (QIH), Peshawar Road, Islamabad.
For Appointment: Mob # 03175083194 & , Ext: 4481, 4482, (9:00 am to 5:00 pm)

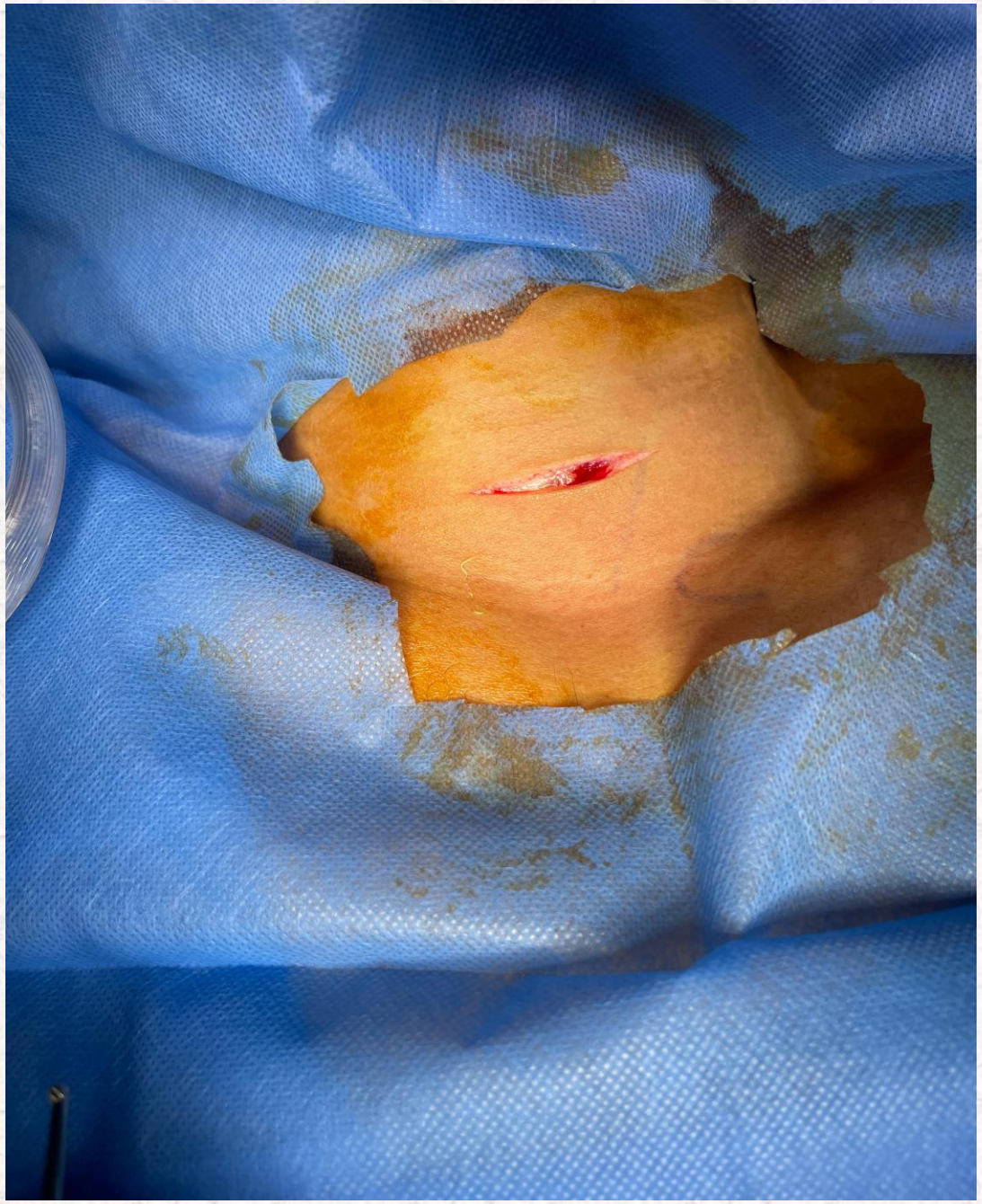
Caution: Please carry this report with you when travelling abroad as the radiation from injected radioisotope in the body may trigger sensitive radiation alarms at the International Airports.

MANAGEMENT PLAN

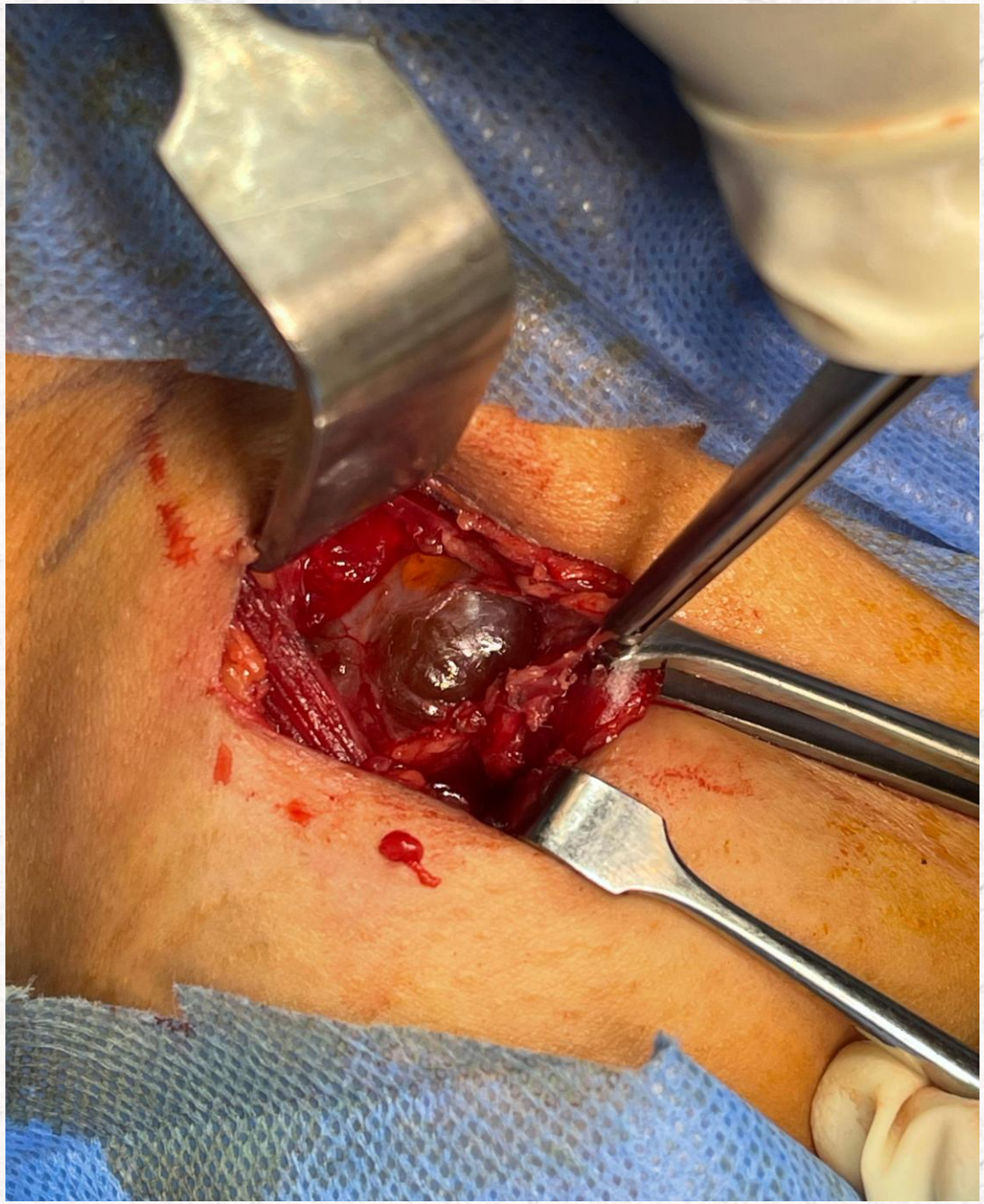
- Preoperative Anesthesia Fitness
- Consent for Surgery
- Parathyroidectomy under LA
- Histopathological Diagnosis

STEPS OF THE PROCEDURE

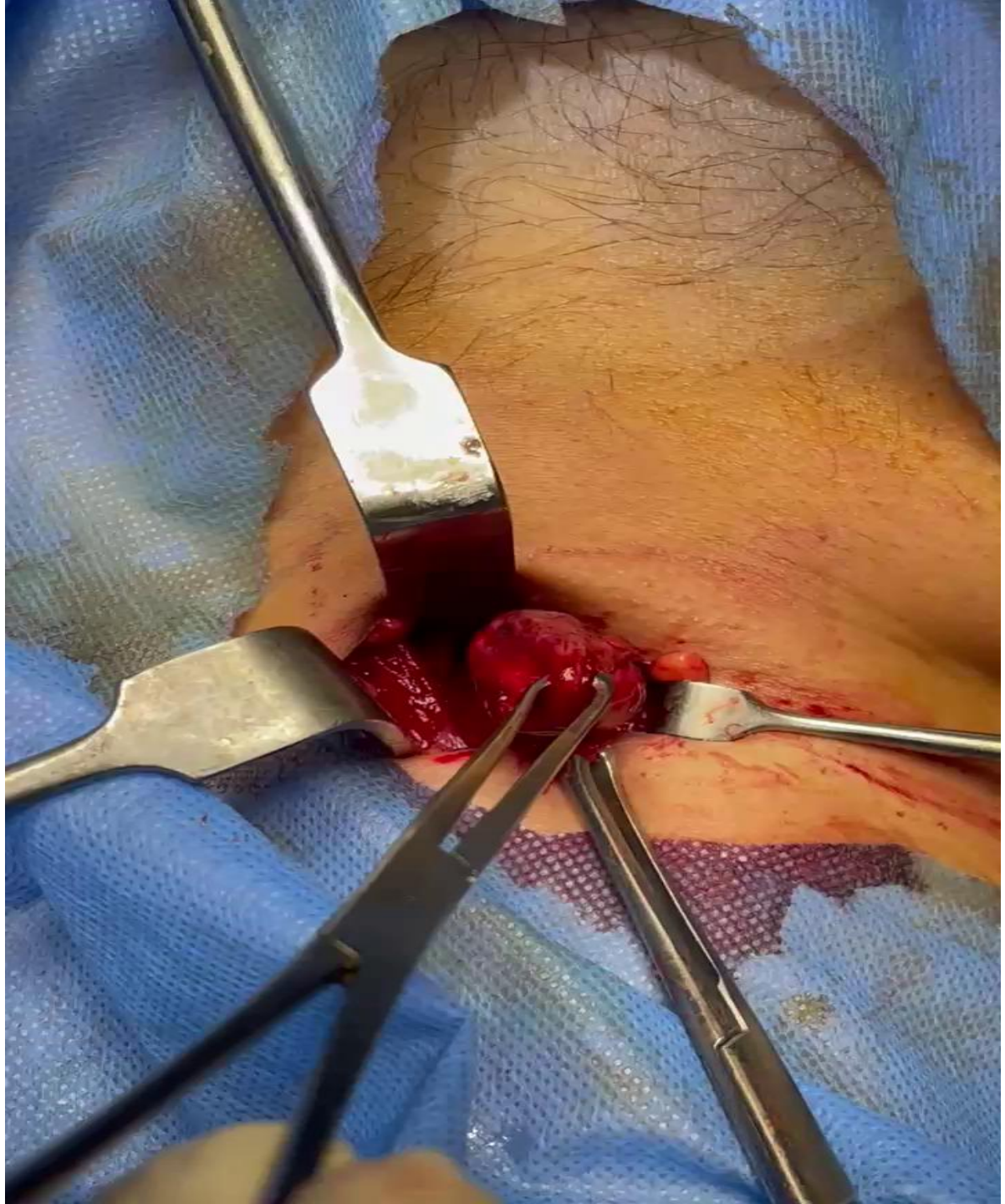
MINIMALLY INVASIVE LEFT LOWER PARATHYROIDECTOMY FOR PARATHYROID ADENOMA UNDER SEDATION



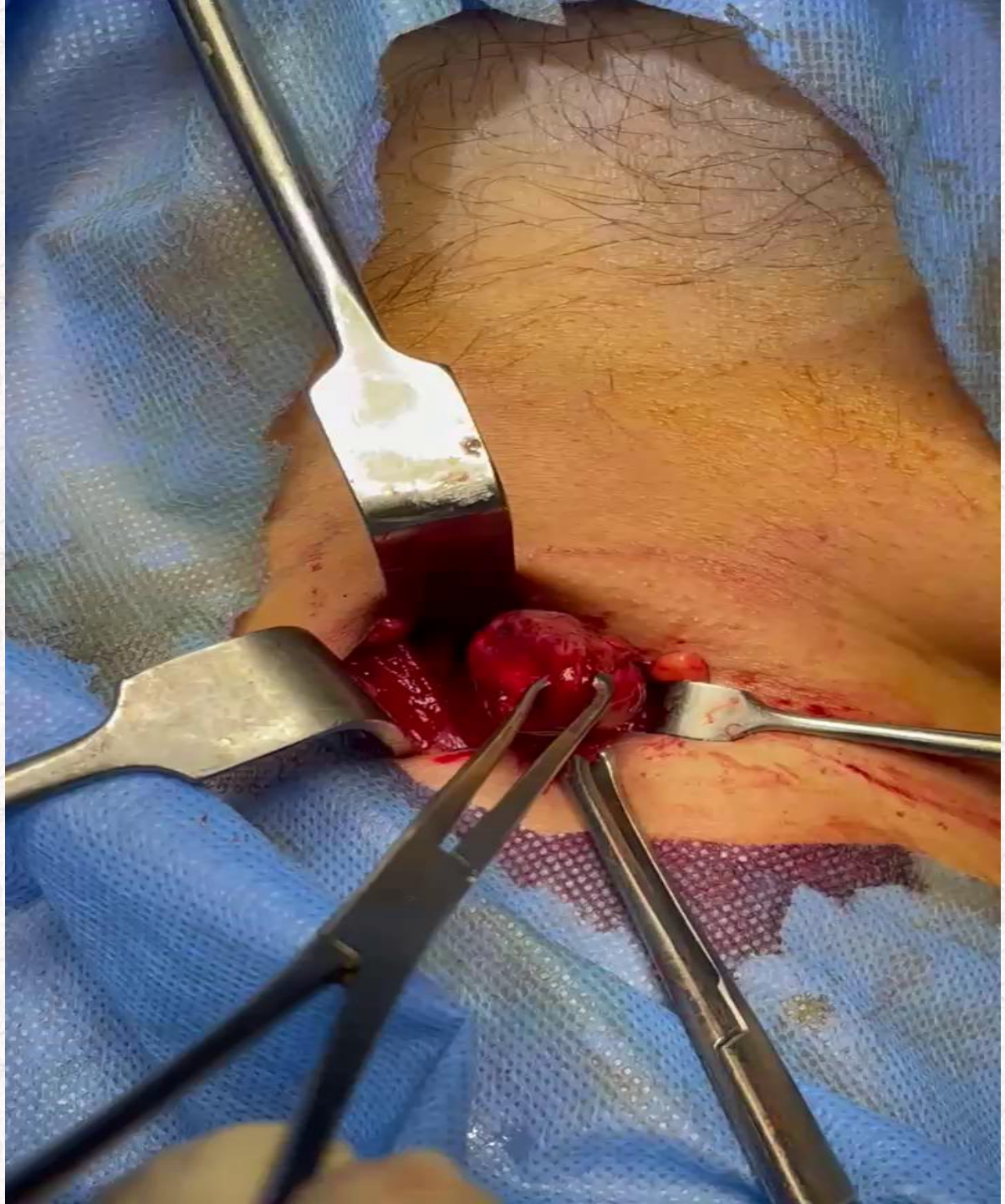
POSITIONING, DRAPING AND INCISION

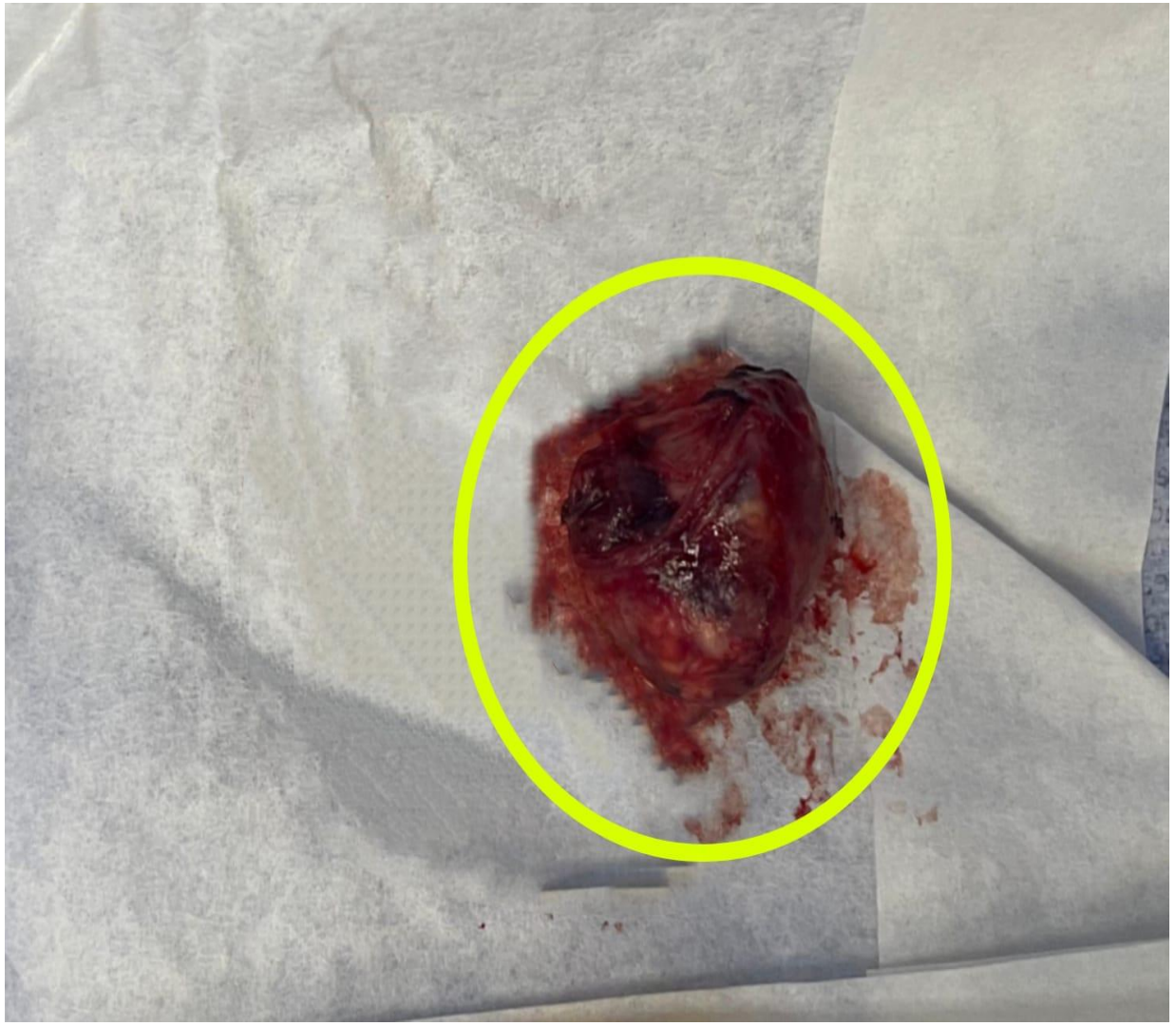


DISSECTION AND IDENTIFICATION OF THE TISSUE



EXCISION OF THE TUMOR





PER-OP FINDINGS

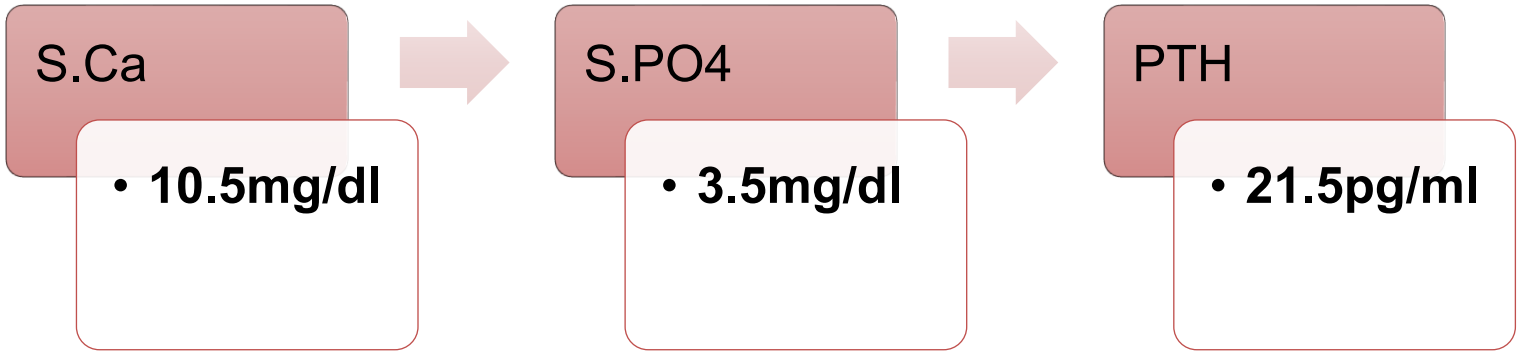
- **Large parathyroid gland with cystic components**
- **located at sternal notch, adjacent to the left thyroid lower pole**

POSTOPERATIVE CARE

- Keep NPO for 02 hours
- I/V fluids over the NPO period
- I/V antibiotics
- I/V painkillers
- Vitals monitoring
- Observed for wound dehiscence
- Sample sent for H/P

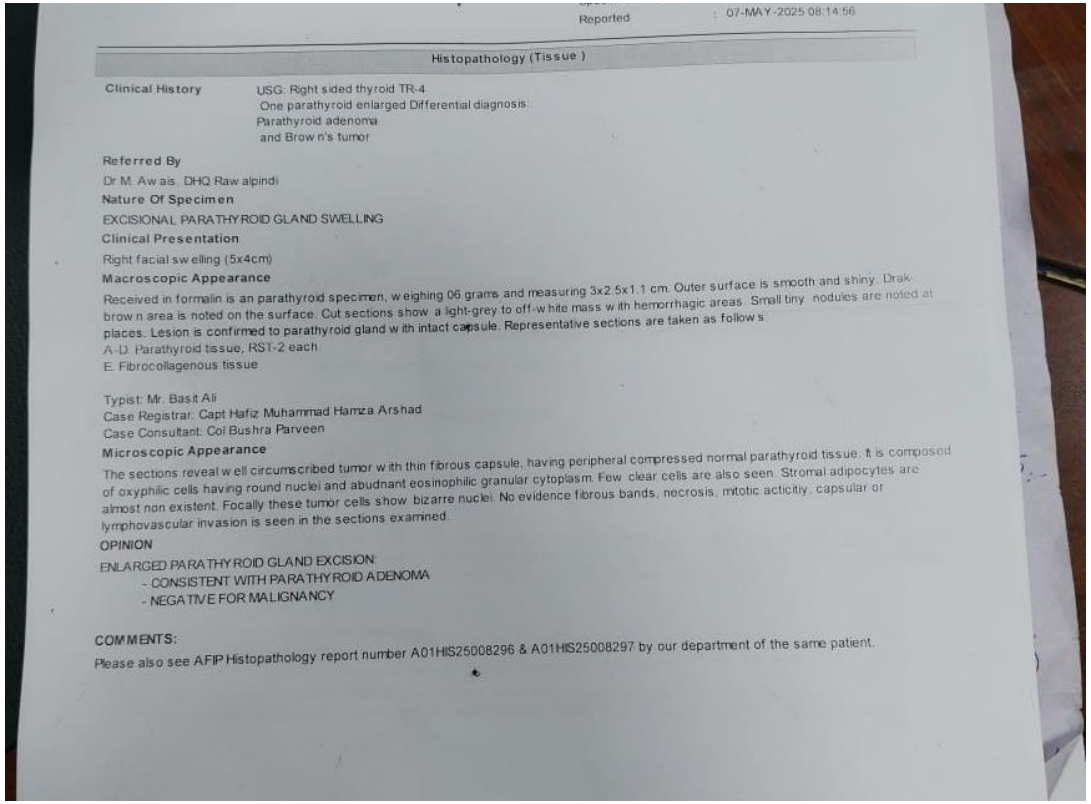
WORKUP AND INVESTIGATIONS

POST-OP



HISTOPATHOLOGY REPORT

- Findings are consistent with parathyroid adenoma
- Negative for malignancy



Reported : 07-MAY-2025 08:14:56

Histopathology (Tissue)

Clinical History USG: Right sided thyroid TR-4
One parathyroid enlarged Differential diagnosis
Parathyroid adenoma
and Brown's tumor

Referred By
Dr M. Awais. DHQ Rawalpindi

Nature Of Specimen
EXCISIONAL PARATHYROID GLAND SWELLING

Clinical Presentation
Right facial swelling (5x4cm)

Macroscopic Appearance
Received in formalin is an parathyroid specimen, weighing 06 grams and measuring 3x2.5x1.1 cm. Outer surface is smooth and shiny. Drak brown area is noted on the surface. Cut sections show a light-grey to off-white mass with hemorrhagic areas. Small tiny nodules are noted at places. Lesion is confirmed to parathyroid gland with intact capsule. Representative sections are taken as follows
A-D. Parathyroid tissue, RST-2 each
E. Fibrocollagenous tissue

Typist: Mr. Basit Ali
Case Registrar: Capt Hafiz Muhammad Hamza Arshad
Case Consultant: Col Bushra Parveen

Microscopic Appearance
The sections reveal well circumscribed tumor with thin fibrous capsule, having peripheral compressed normal parathyroid tissue. It is composed of oxyphilic cells having round nuclei and abudnant eosinophilic granular cytoplasm. Few clear cells are also seen. Stromal adipocytes are almost non existent. Focally these tumor cells show bizarre nuclei. No evidence fibrous bands, necrosis, mitotic acticitiy, capsular or lymphovascular invasion is seen in the sections examined.

OPINION
ENLARGED PARATHYROID GLAND EXCISION:
- CONSISTENT WITH PARATHYROID ADENOMA
- NEGATIVE FOR MALIGNANCY

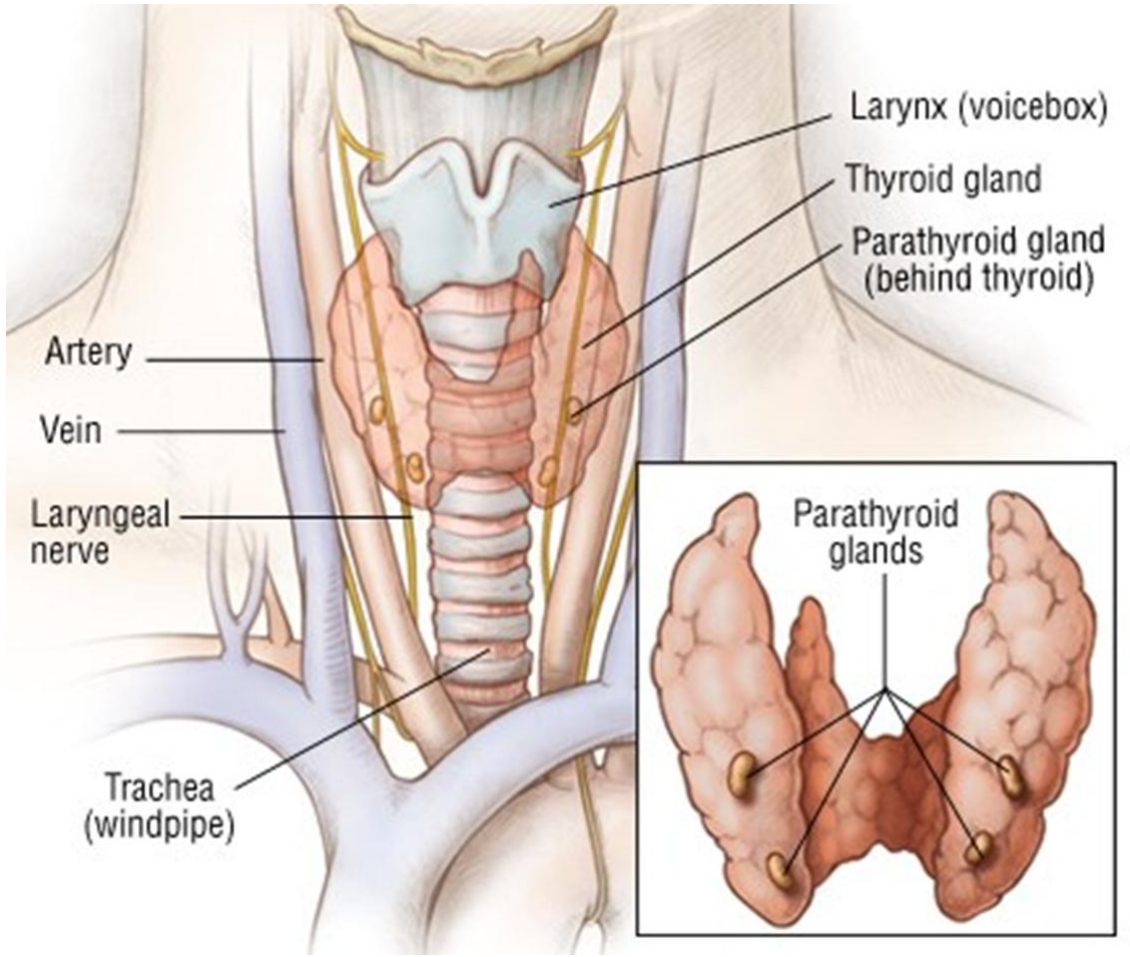
COMMENTS:
Please also see AFIP Histopathology report number A01HIS25008296 & A01HIS25008297 by our department of the same patient.

Literature review

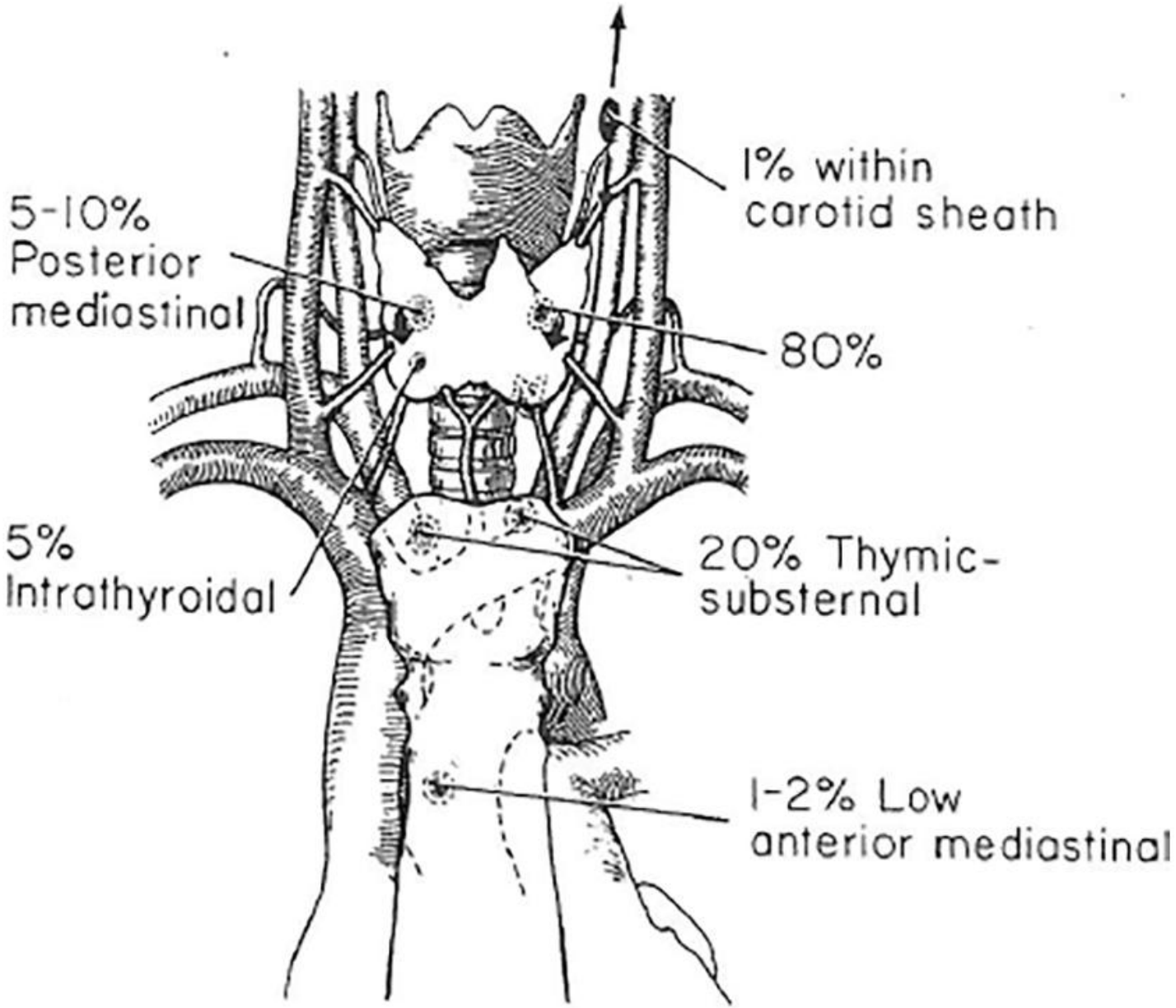
Parathyroid glands

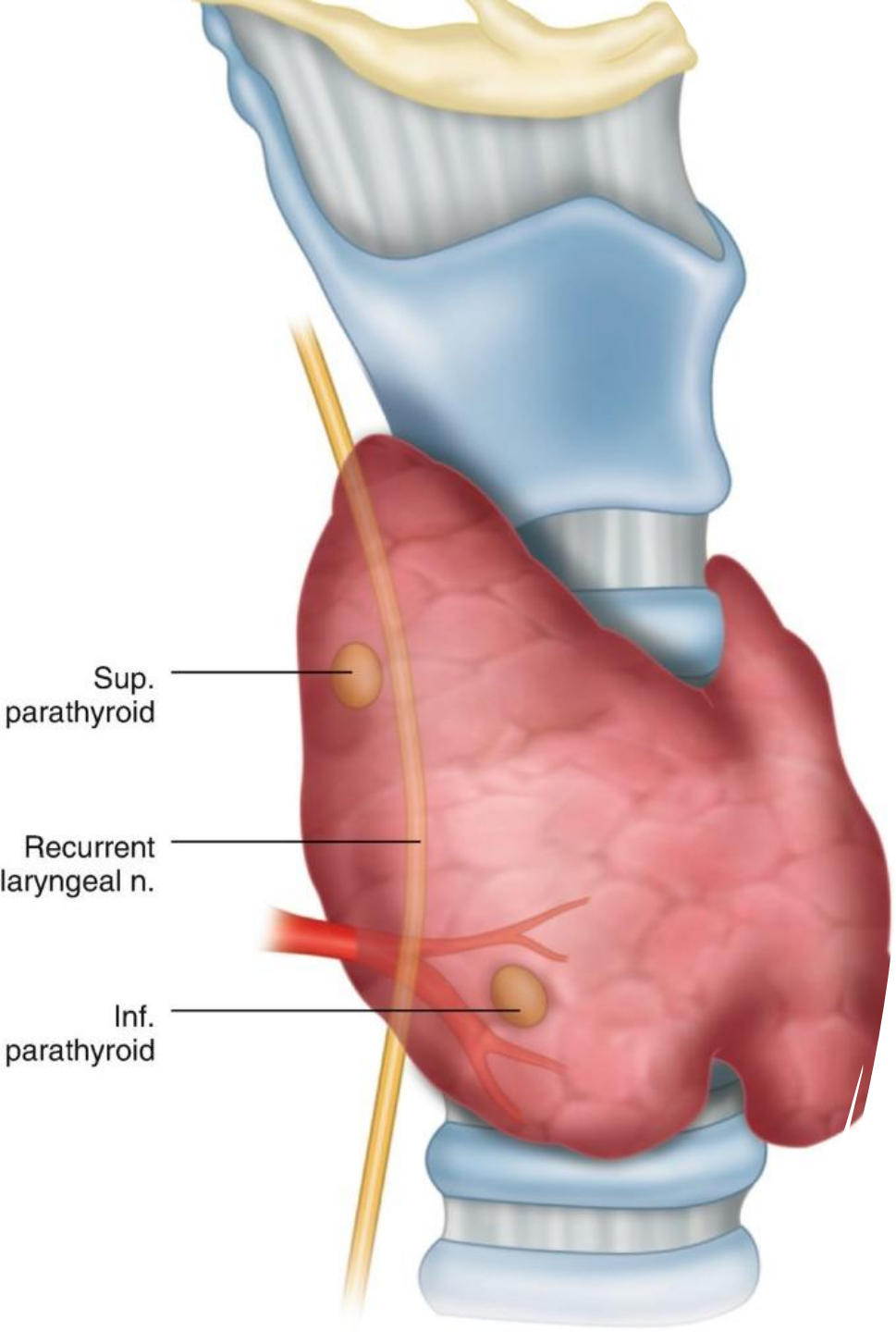
- The Parathyroid glands are usually **four** in number, **two superior and two inferior**, embedded within the posterior aspect of the thyroid gland.

- Made up of
  -**Chief cells** = secrete **PTH**
  -**Oxyphil cells** (degenerated chief cells, function unknown)



Ectopic sites of Parathyroid gland



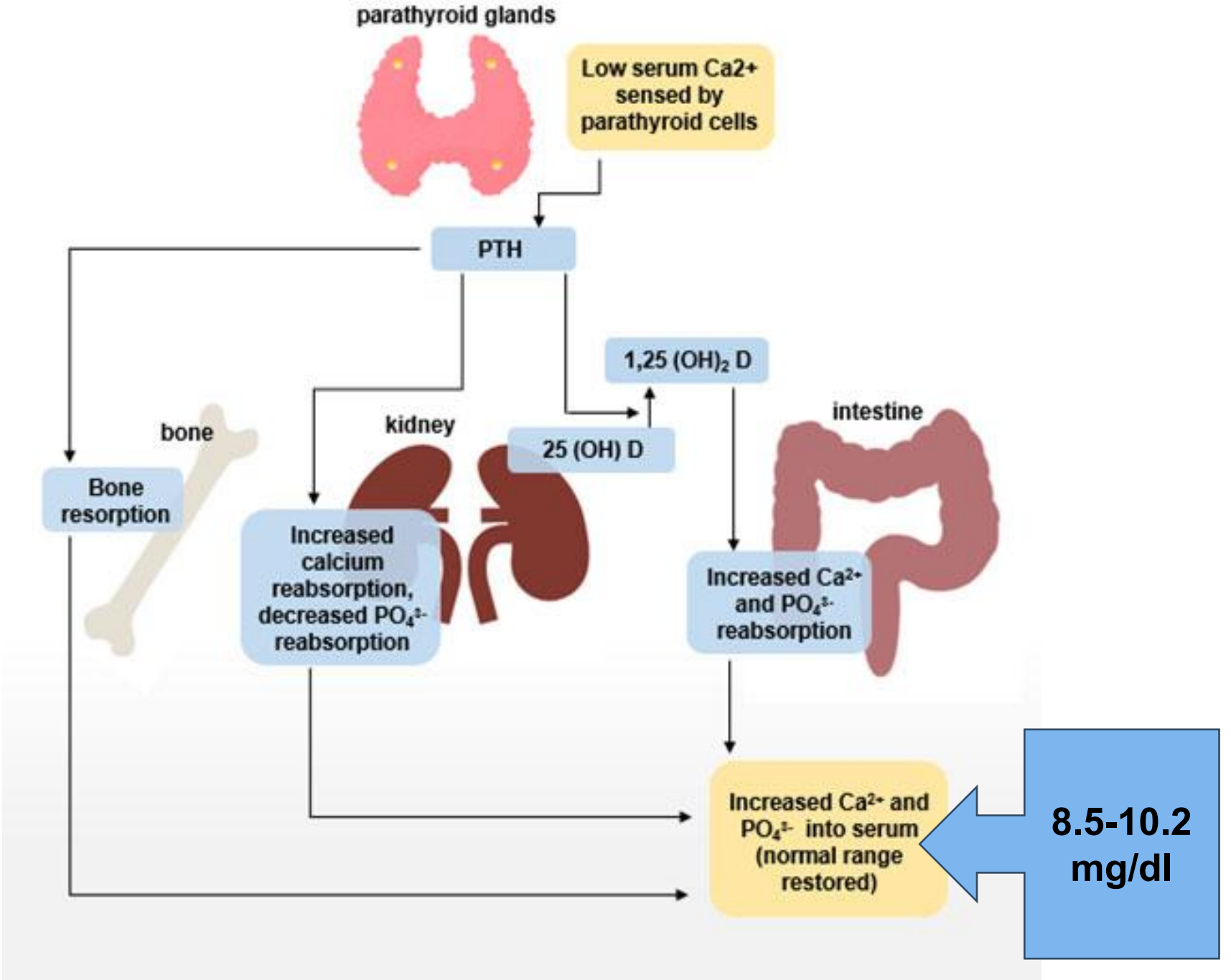


Surgical Anatomy

- **Superior Parathyroid gland** – located at the level of the cricothyroid, approx. 1 cm above the intersection of the Recurrent laryngeal nerve (RLN) and the Inferior Thyroid artery(ITA), behind the RLN

- **Inferior Parathyroid gland** – located below the ITA and in front of the RLN, lying between the Inferior thyroid pole and the thymus.

Function of Parathyroid gland



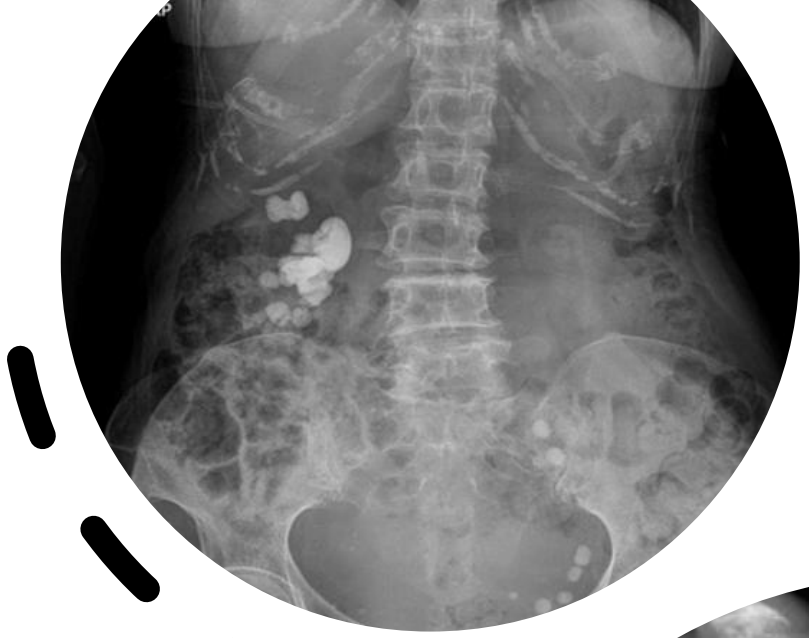
Types of Hyperparathyroidism

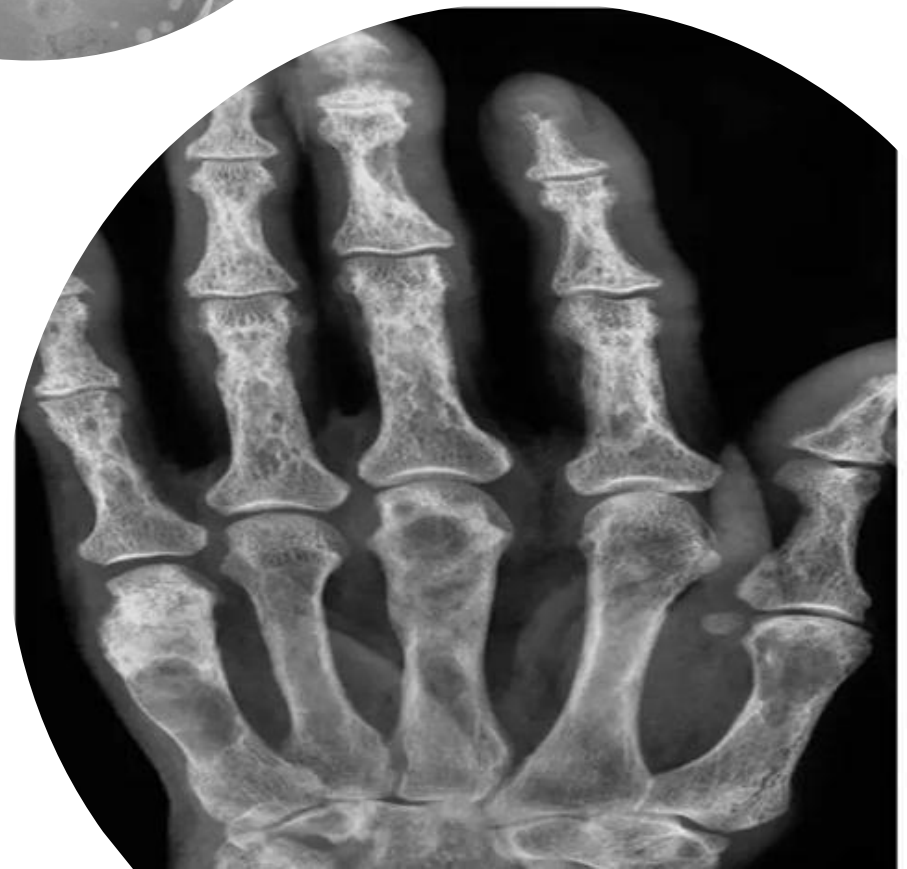
PRIMARY	SECONDARY	TERTIARY
• Parathyroid adenoma (70%), Hyperplasia, Carcinoma • MEN 1 or MEN 2A • Familial Hypocalciuric hypercalcemia • Hyperparathyroid-jaw tumor (HPT-JT) syndrome • Familial isolated hyperparathyroidism (FIHPT)	• Renal failure - Impaired calcitriol production - Hyperphosphatemia • Decreased Calcium - Low oral intake - Vit D deficiency - Malabsorption - Renal calcium loss-Lasix • Inhibition of bone resorption - Bisphosphonates - Hungry bone syndrome	• Autonomous hypersecretion of parathyroid adenoma - chronic secondary hyperparathyroidism - after renal transplantation

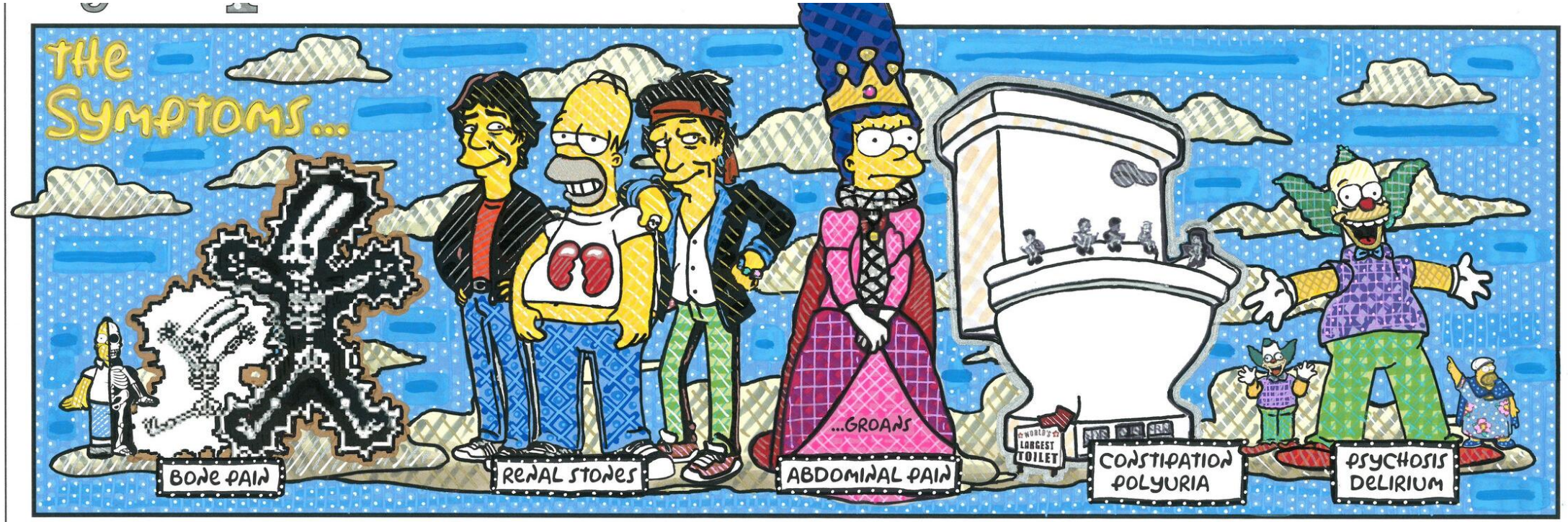
Symptoms of Hyperparathyroidism

- ~ 80% asymptomatic

- **Stones (Kidneys)**
  - Calcium deposition and nephrolithiasis
  - Urinary tract obstruction
- **Bones (Osteitis Fibrosa Cystica)**
  - Increased osteoclasts
  - Increased bone turnover
  -Reduced cortical bone density
- **Moans**
  - Fatigue, Depression, Confusion, Mood changes





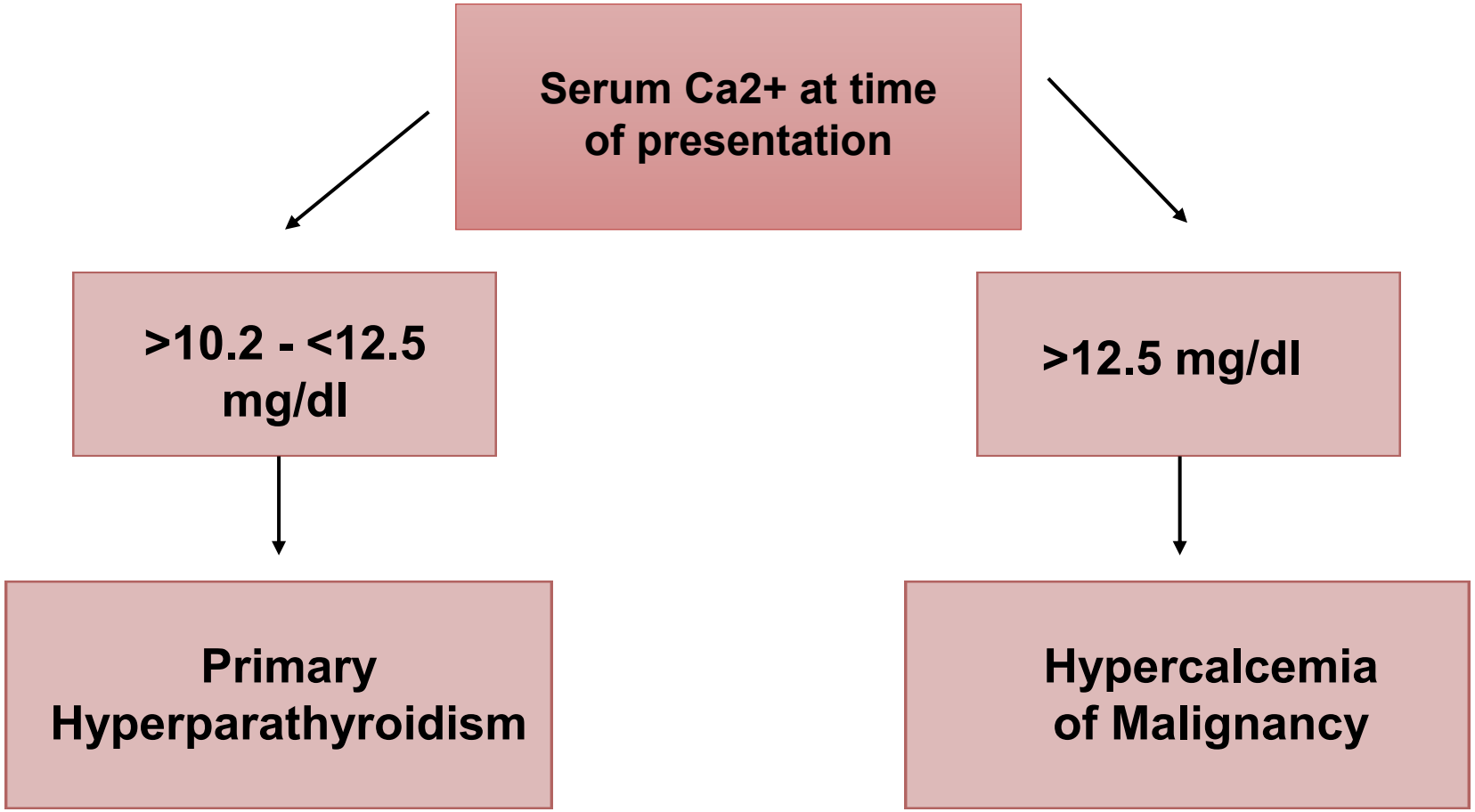


bones, stones, groans, thrones, psychiatric overtones

	Primary hyperparathyroidism	Secondary hyperparathyroidism	Tertiary hyperparathyroidism
PTH	↑	↑	↑↑↑
Ca2+	↑ *	↓/N	↑
P04+	↓	↑/N	↑

LAB WORKUP

Important Consideration:
When is S. Ca^{2+} too high?



What to do in case of Hypercalcemia?

Hypercalcemia Management

Infusion of 0.9% saline should be initiated at twice the maintenance rate

Patients with heart failure or renal insufficiency should receive hemodialysis

Furosemide is given to increase calcium excretion

Malignancy related hypercalcemia is treated with bisphosphonates, such as etidronate, pamidronate, and alendronate.

Excess vitamin D-related hypercalcemia is treated with corticosteroids or the antifungal ketoconazole.

Calcitonin is used in emergencies related to hypercalcemia

RADIOLOGICAL INVESTIGATIONS

Preoperative imaging of Primary Hyperparathyroidism

First-line imaging

^{99m}Tc-sestamibi / ^{123}I subtraction

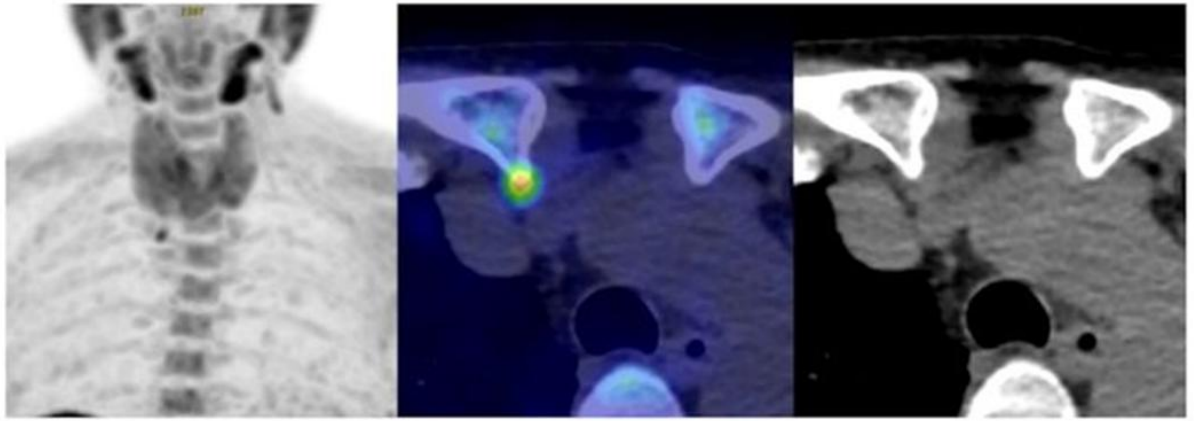
+ Neck US → **Targeted surgery**

Concordant

If 1st-line negative or discordant

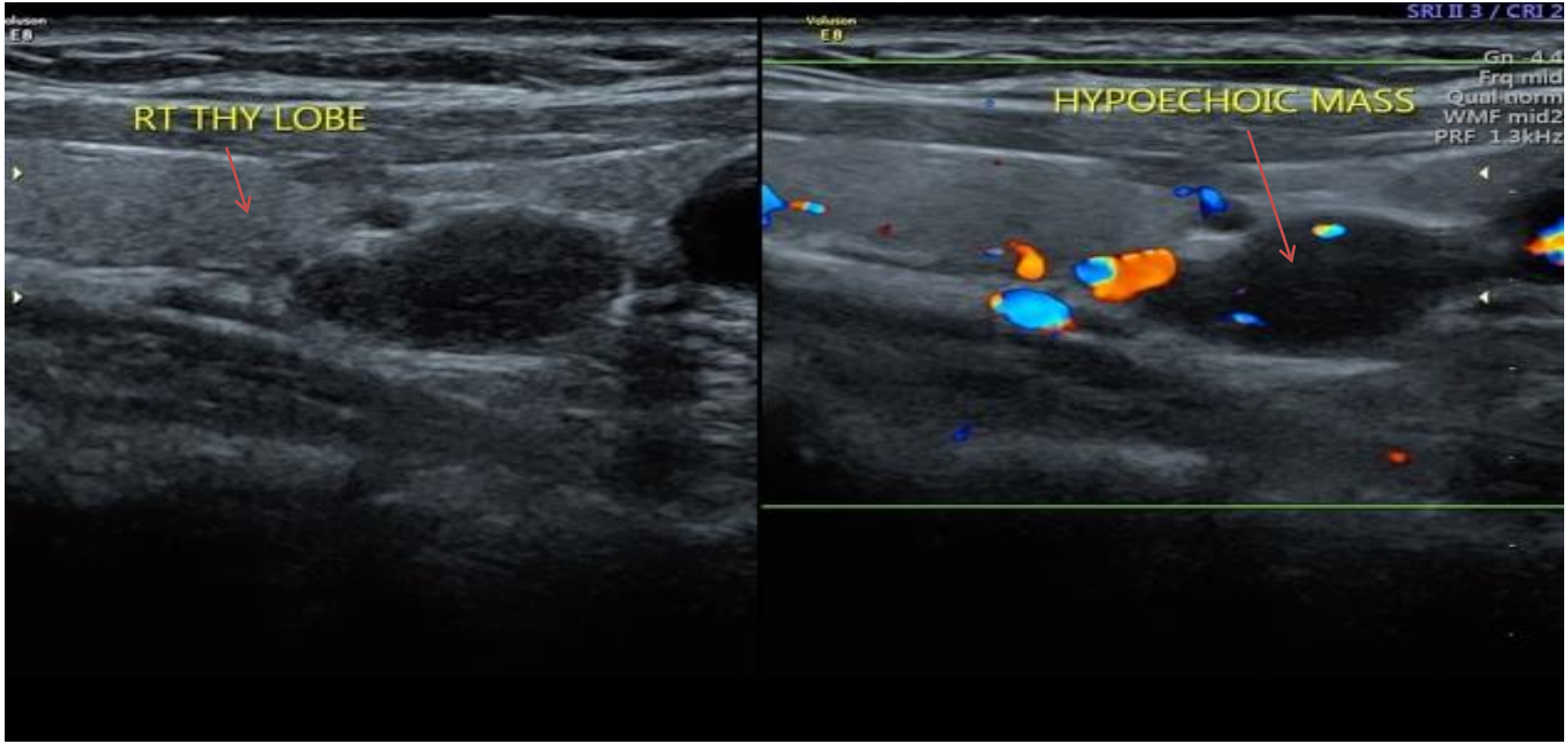
↓

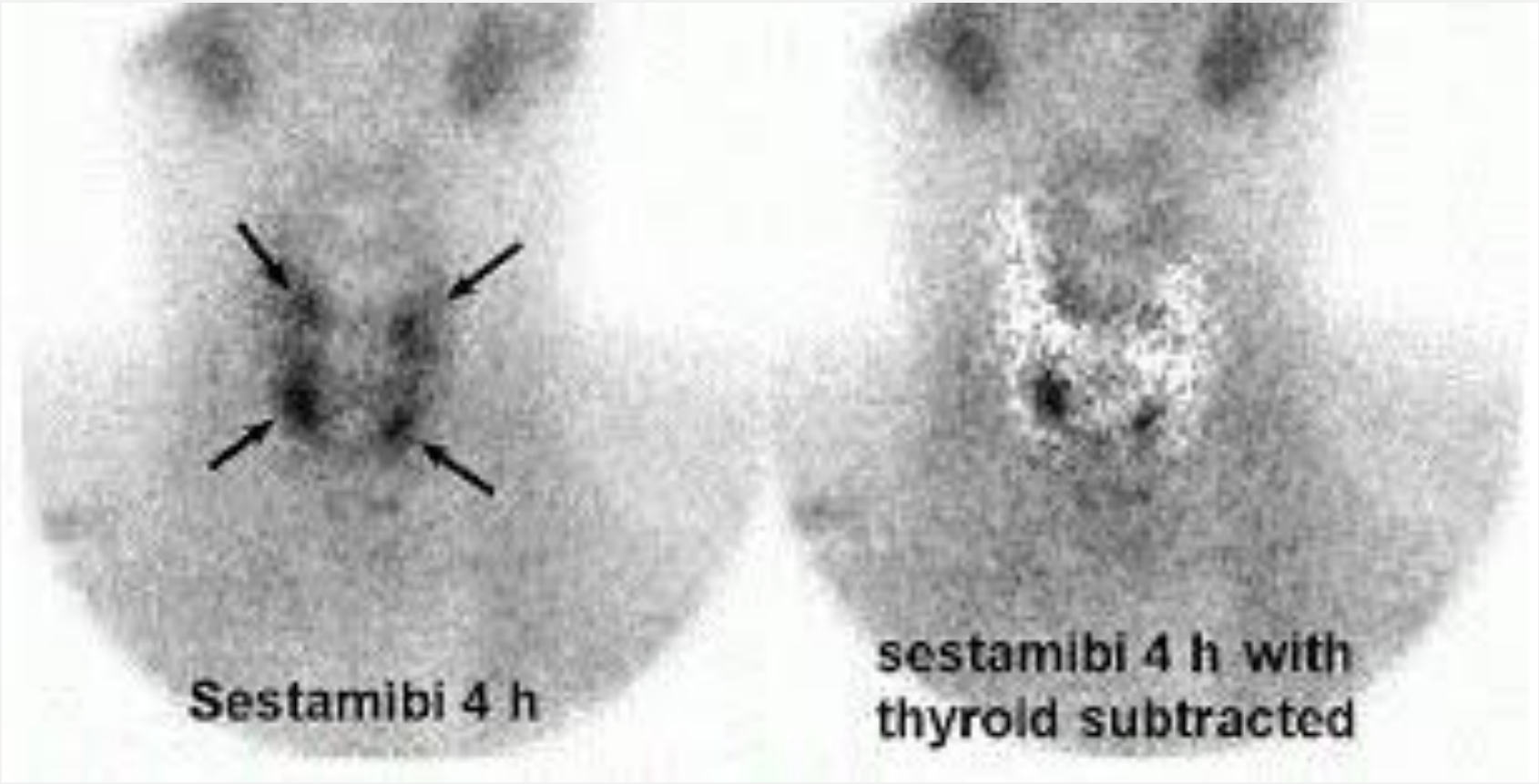
Second-line imaging



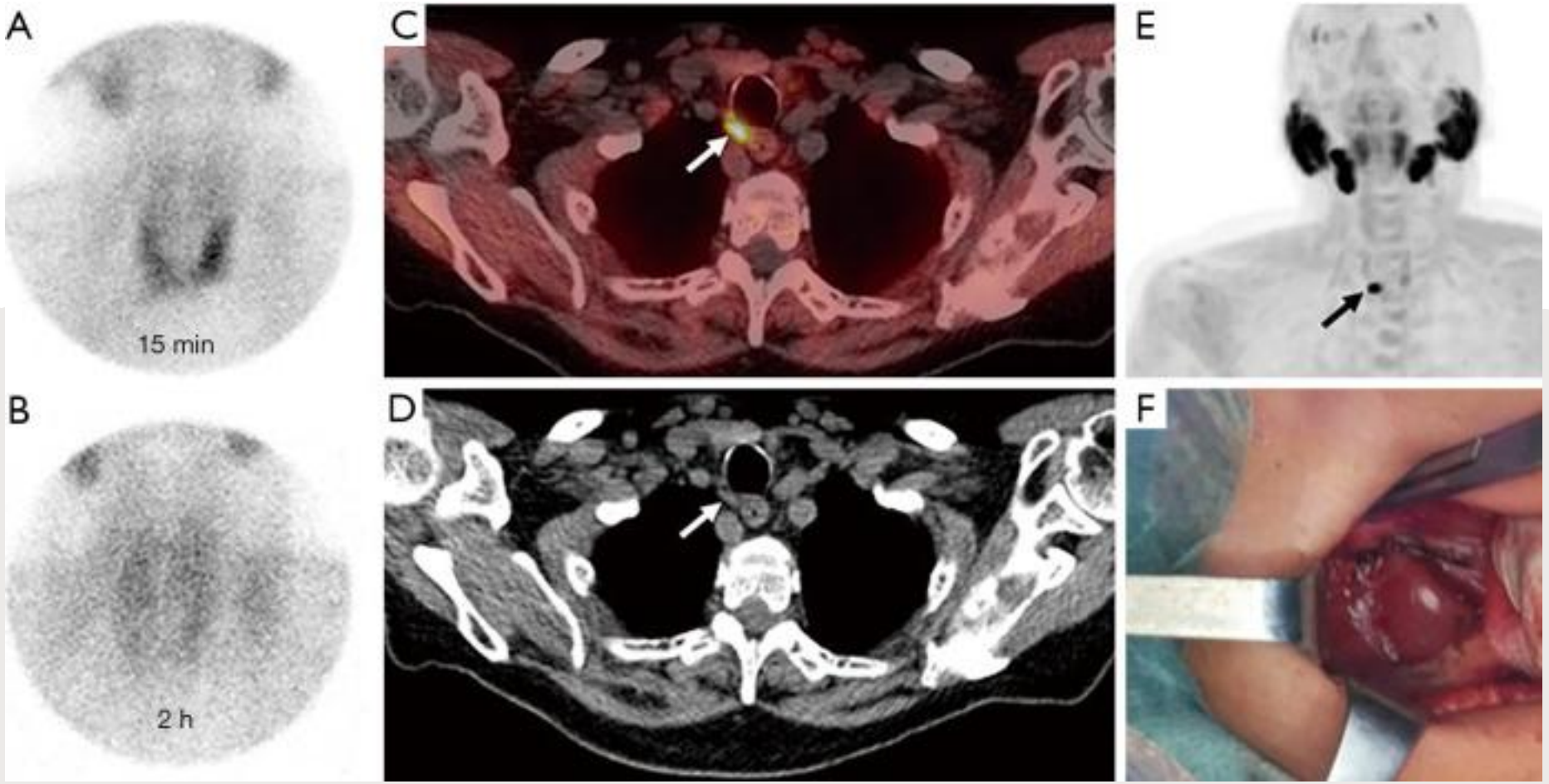
^{18}F-fluorocholine PET/CT

Neck USG showing Parathyroid Adenoma





^{99m}Tc-Sestamibi/^{123}I subtraction

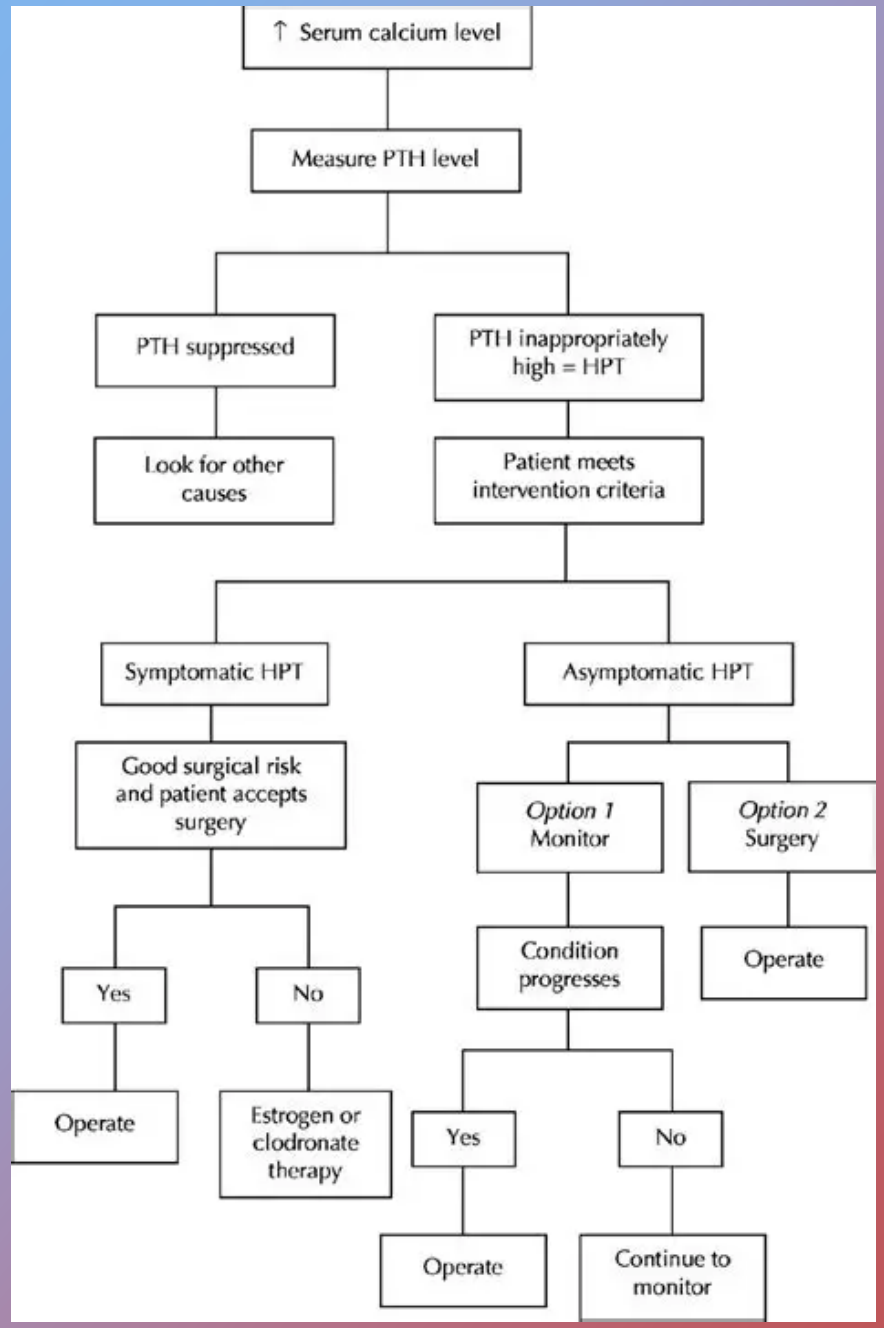


18F-fluorocholine PET/CT vs ^{99m}Tc Sestamibi

MANAGEMENT

- **Surgical**
  - Parathyroidectomy – Treatment of choice
- **Medical**
  - Bisphosphonates (Alendronate)
  - Cinacalcet
  - Estrogen therapy in postmenopausal women
  - Vitamin D optimization – Maintain 25(OH)D levels at _> 30 ng/ml
  - Hydration

*** Avoid **Thiazide diuretics, Lithium**



TREATMENT ALGORITHM

Who is a candidate for surgery?

According to the 2016 American Association of Endocrine Surgeons Guidelines:

Calcium	**>1.0 mg/dl** above upper limit of normal
Bone	• Bone density by DXA scan: **T-score <-2.5** • Vertebral fracture by imaging
Kidney	• Kidney stones • Creatinine clearance < 60 ml/min • 24-hour urine for Calcium > 400 mg/day
Age	**< 50 years**
Other	Neurocognitive, neuropsychiatric symptoms

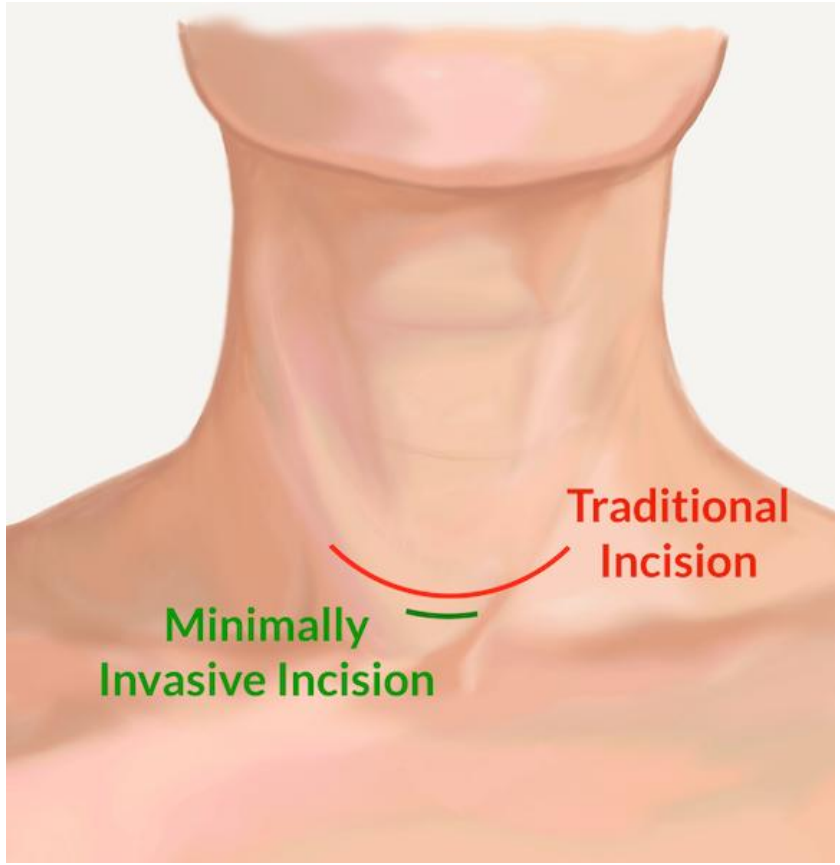
Approaches of Parathyroidectomy

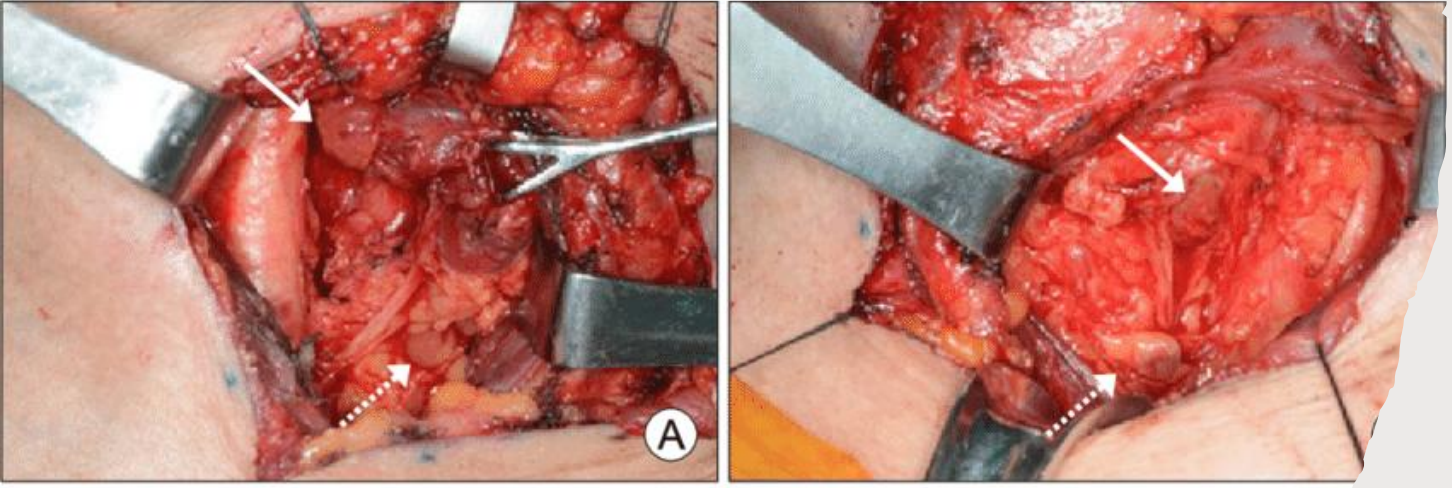
Bilateral exploration (Traditional approach)

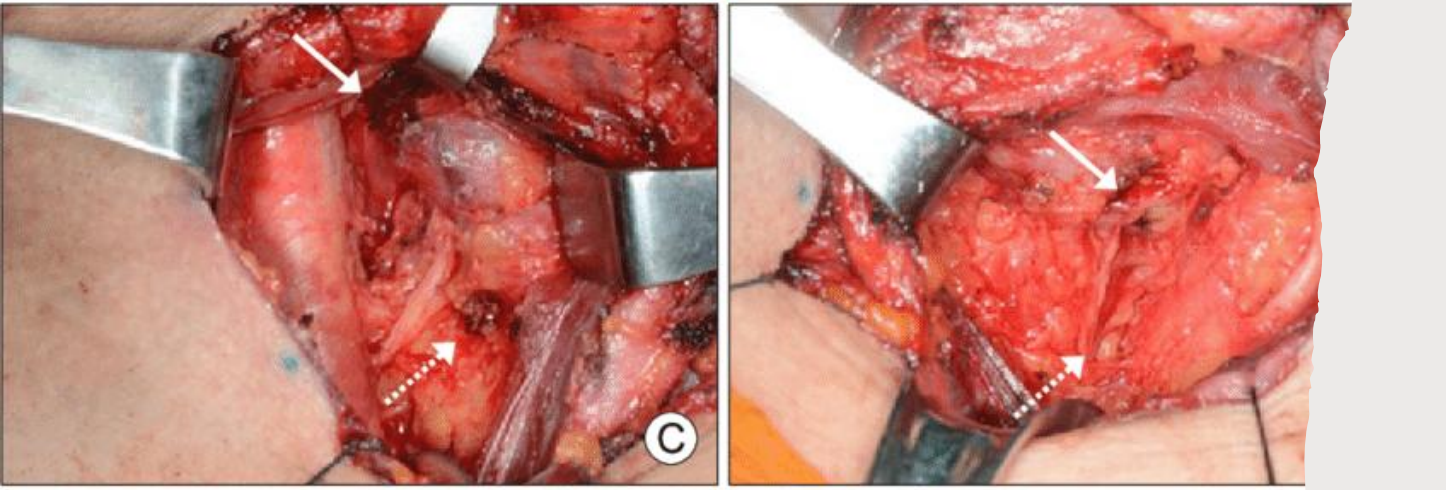
- A transverse low collar incision is made about one finger wide above the clavicular head in an existing skin crease

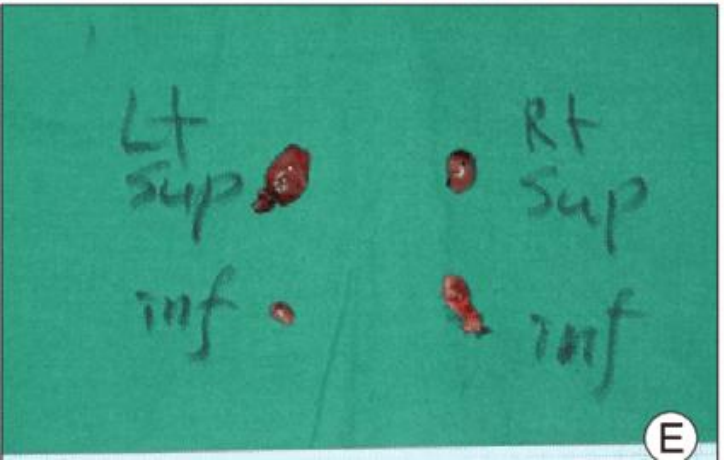
Minimally Invasive Parathyroidectomy

- With preoperative localization of the abnormal parathyroid gland, focused parathyroidectomy can be performed only in the imaging-identified area.
- The incision size, the extent of dissection, and the duration of surgery are limited.









BILATERAL EXPLORATION

Bilateral exploration is defined by a standard technique in which **all parathyroid glands are identified** with exploration of expected and, if necessary, **ectopic cervical locations**

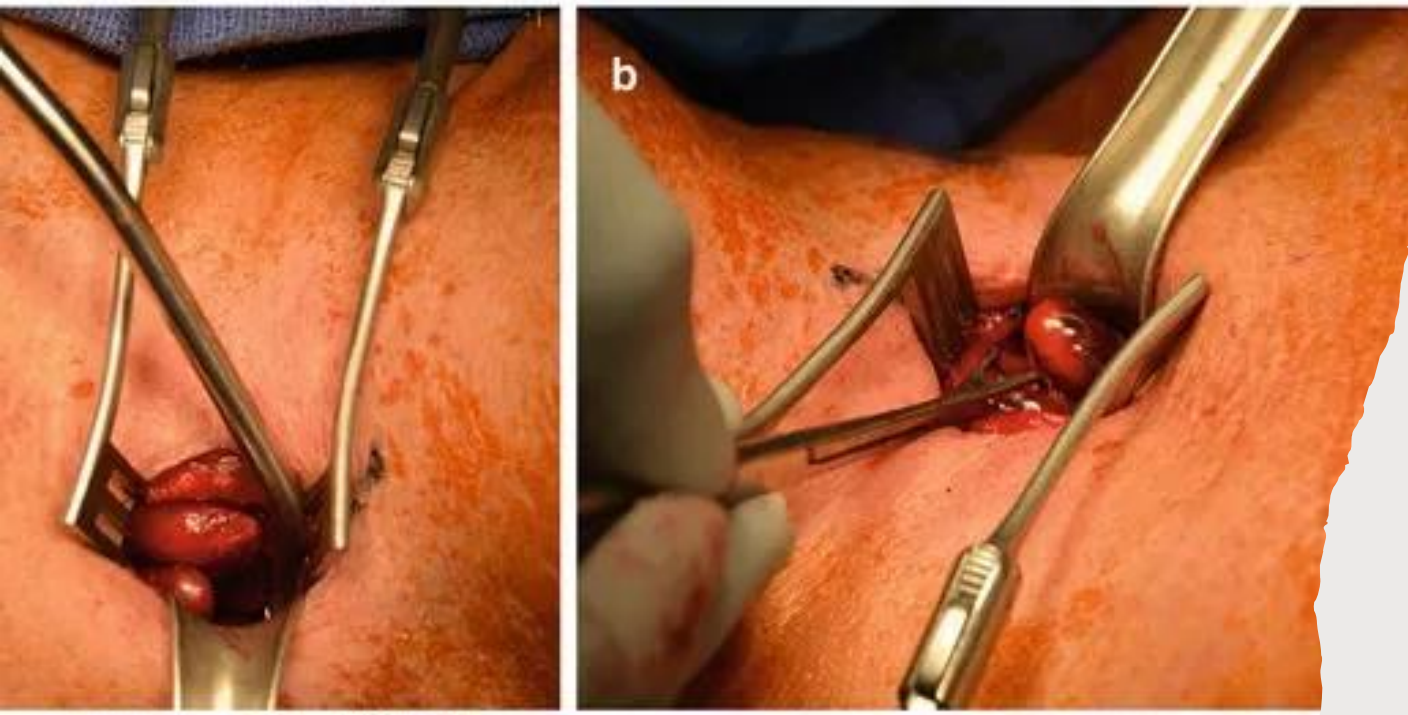
When to choose Bilateral Exploration?

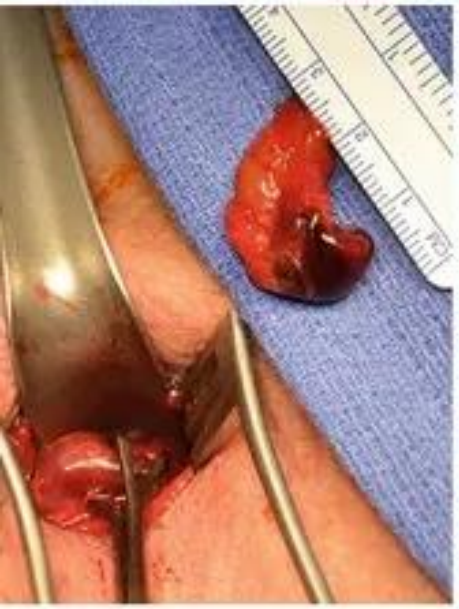
Planned Bilateral exploration is the preferred operative strategy in:

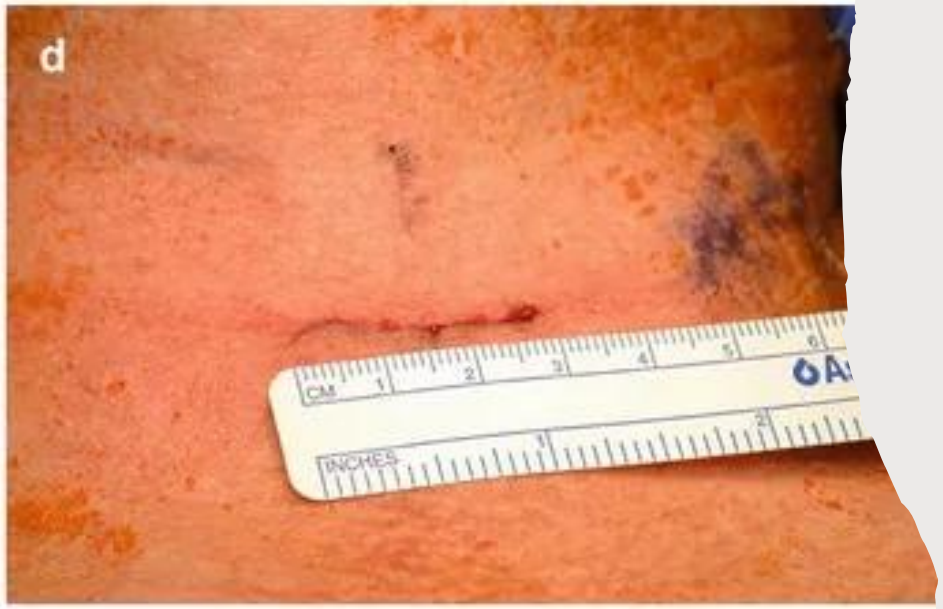
- Situations of discordant or nonlocalizing preoperative imaging
- High suspicion of multi-gland disease
- When Intraoperative PTH monitoring is not available
- In Lithium-induced pHPT
- Or at the discretion of the surgeon

Different scenarios

Scenario	Extent of Parathyroidectomy
• Single Parathyroid gland adenoma	**Removal of single gland**
• 4 gland hyperplasia • MEN 1 associated pHPT	**Removal of 3 ½ glands** Remnant half gland can be left in situ or implanted into the sternocleidomastoid muscle
• MEN 2A associated recurrent HPT	**Complete Parathyroidectomy + Forearm autotransplantation**
• Parathyroid Carcinoma	**En-bloc resection of Parathyroid lesion + resecting all adherent tissues with grossly clear margins**







MINIMALLY INVASIVE PARATHYROIDECTOMY

Defined as a <u>focused dissection</u>, MIP is ideally used in patients who appear clinically and by imaging to have a **single parathyroid adenoma.**

Advantages

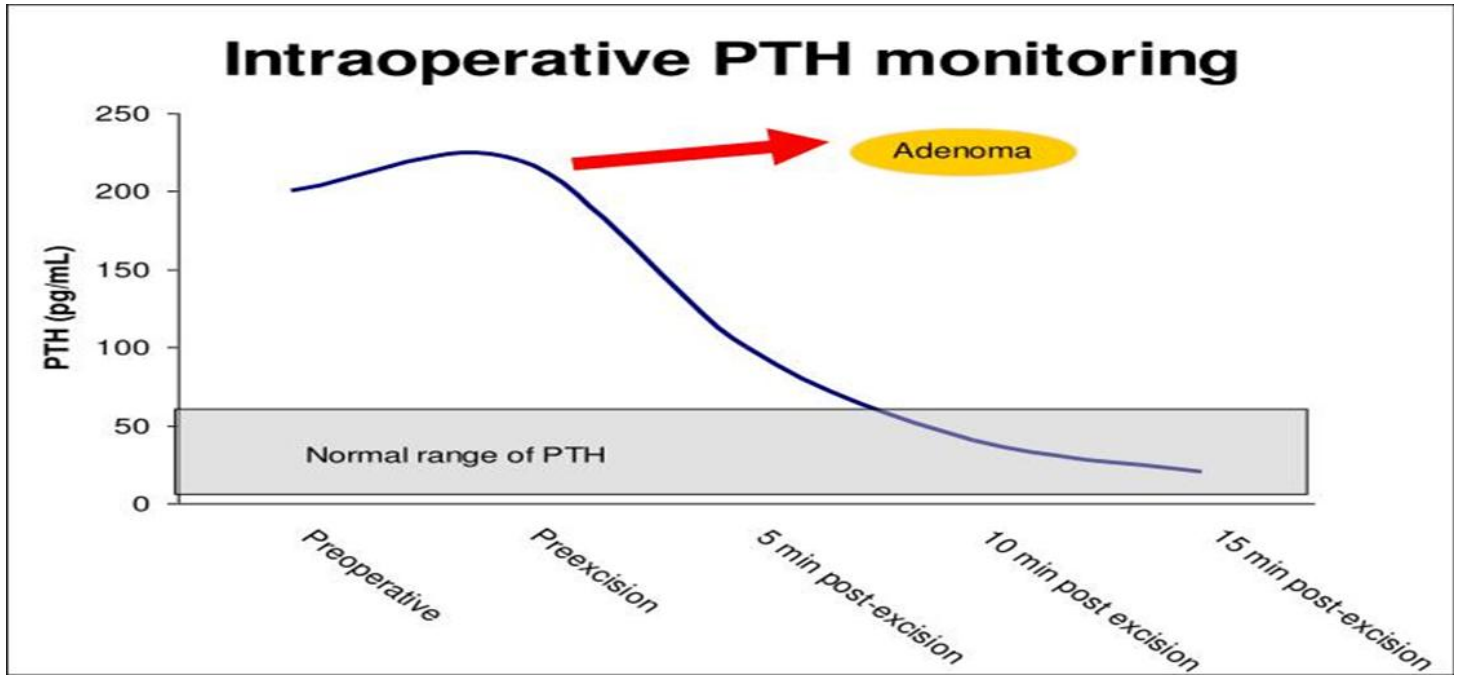
All minimally invasive parathyroidectomy techniques are designed to

- limit dissection,
- hasten recovery,
- reduce postoperative discomfort,
- and reduce incision length.

When to convert to Bilateral exploration?

- The discovery of Multi-gland disease,
- the inability to identify an abnormal gland,
- or the failure to achieve an appropriate decrease in Intraoperative PTH monitoring

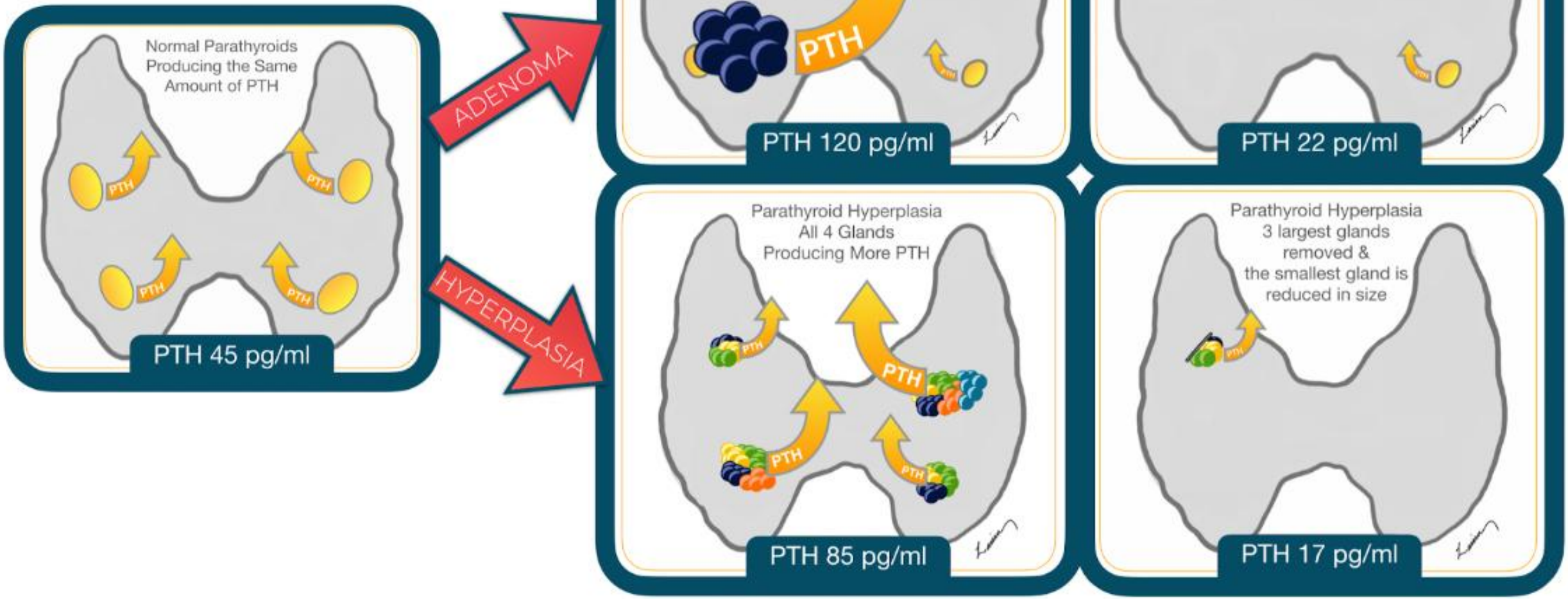
Role of intraoperative PTH monitoring



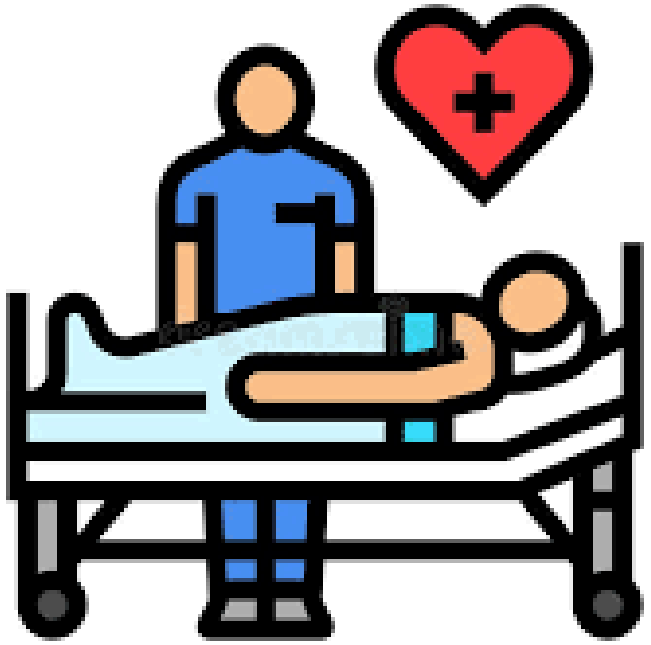
MIAMI protocol

Describes biochemical cure as a 50% decrease in PTH levels from baseline, 10-15 minutes after resection of the targeted parathyroid gland

PARATHYROID ADENOMA vs. HYPERPLASIA



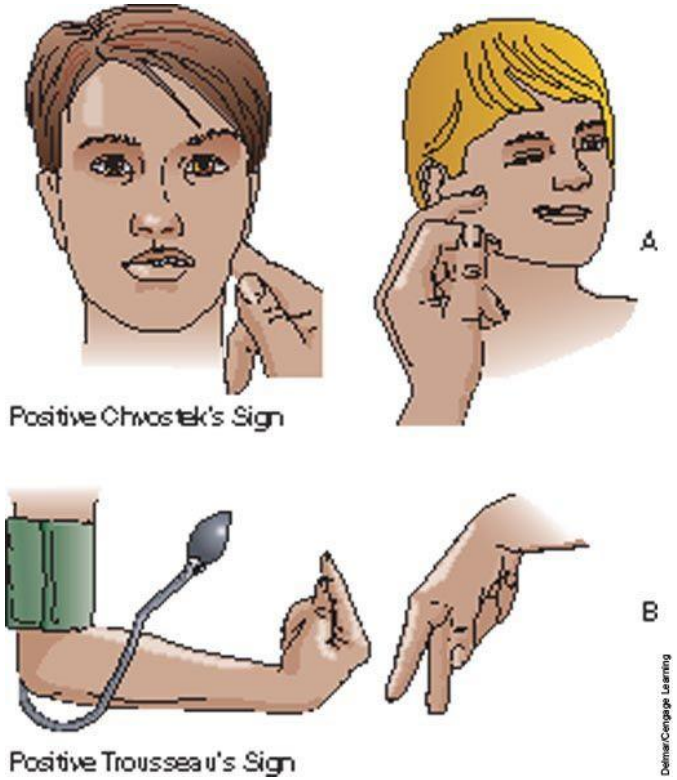
Post-operative Complications



- Bleeding <1%
- Infection <1%
- Transient Hypocalcemia
  - Mx: Supplemental Calcium + Vit D
  - Calcitriol or IV Calcium for severe symptoms
- Permanent Hypoparathyroidism <1%
- Recurrent Laryngeal Nerve Paralysis
- Failure/Recurrence
  - - Persistent Hyperparathyroidism -3%
  - -Recurrent Hyperparathyroidism -2%

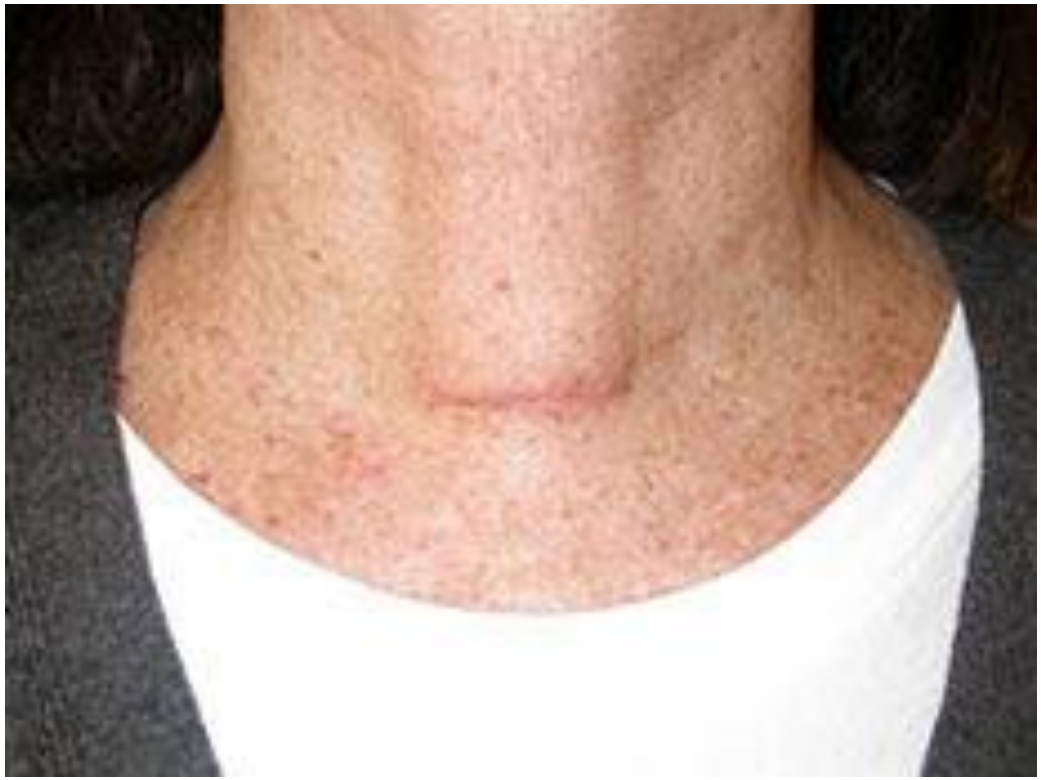
Surgery isn't the End: The Art of Postoperative Care

Immediate Post-operative plan (0-72 hrs)



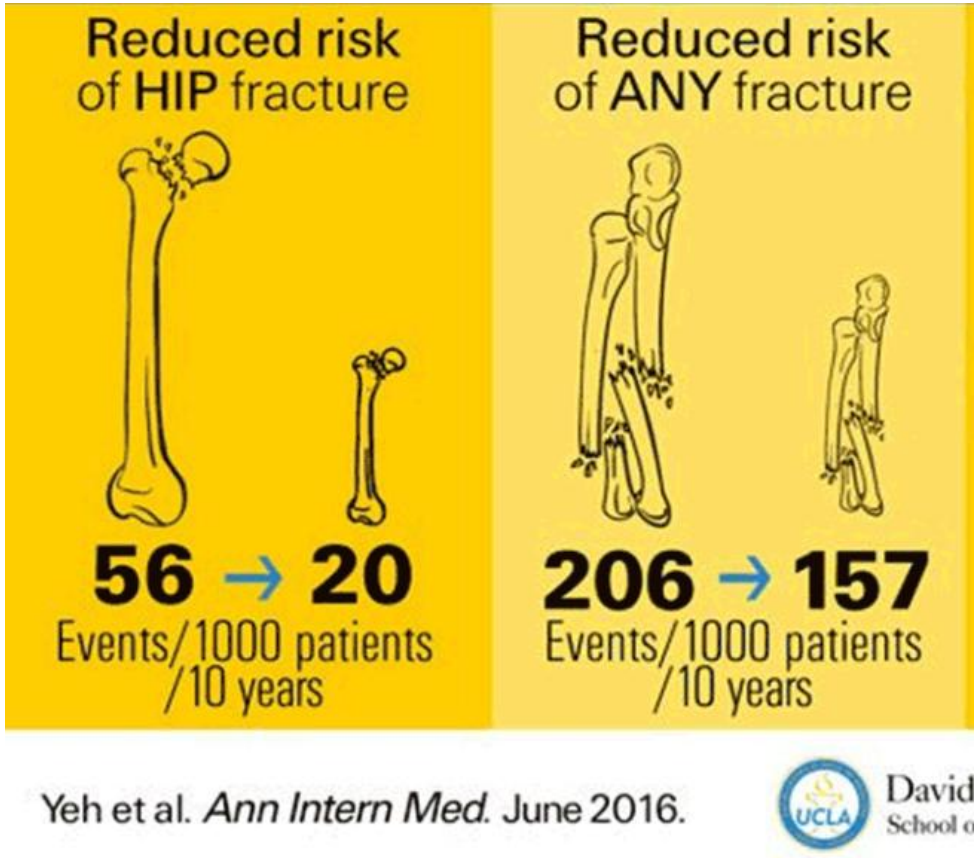
Parameter	Purpose	Timing
Serum Calcium	Detect Hypocalcemia or '**Hungry bone syndrome**'	6-12 hrs postop, then daily for 2-3 days
Serum PTH	Assess completeness of resection	Within 6-24 hrs postop
Serum Phosphate	Monitor electrolyte shifts	Daily

Early follow-up (1-2 weeks post-op):



Parameter	Purpose
Serum Calcium, PTH	Confirm Normalization (Low Ca, Low PTH)
Wound check	Assess healing
Medication review	Adjust Ca and Vit D supplementation if started

Late follow-up (3-6 months post-op):



Parameter	Purpose
Calcium, PTH, Creatinine, Phosphate	Ensure stability Exclude persistent disease
Bone Mineral Density (DEXA scan)	Check for return to baseline + exclude osteopenia/osteoporosis if present previously

CONCLUSION

High index of suspicion for symptoms of Hyperparathyroidism

Use of Preoperative localization investigations to confirm location

Choosing candidates who will benefit from surgery

Timely execution of surgery

Use of IOPTH monitoring to confirm completeness of resection

Postoperative care and regular follow-up

THANK YOU