

Stones, Moans and Groans in Pregnancy

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Case Report

A 30-year-old primiparous woman with BMI 15 (38 kg) was found to have hypercalcaemia at 7 weeks gestation, with adjusted calcium 2.94mmol/L. Pre-conception symptoms included irregular periods, fatigue, nausea and abdominal pain.

Adjusted calcium	3.22 mmol/L	↑
Phosphate	0.50 mmol/L	↓
Parathyroid hormone	49.5 pmol/L	↑
Vitamin D3	<13 nmol/L	↓
Urinary calcium	10.2 mmol/24hr	↑

Investigations:

- Blood tests revealed the above results
- Ultrasound neck and parathyroid MIBI scan showed right-sided solitary parathyroid adenoma
- CT scan revealed bilateral ureterorenal stones with moderate-to-severe hydronephrosis

Treatment:

- Insertion of bilateral JJ stents, IV fluids and IV pamidronate
- Laser treatment to the ureterorenal stones
- Despite initial plans for parathyroidectomy, she became pregnant and surgery was postponed.

Throughout the first trimester, she was reviewed in joint obstetrics-endocrinology clinic.

- Adjusted calcium 2.94mmol/L
- Parathyroid hormone 77.8pmol/L

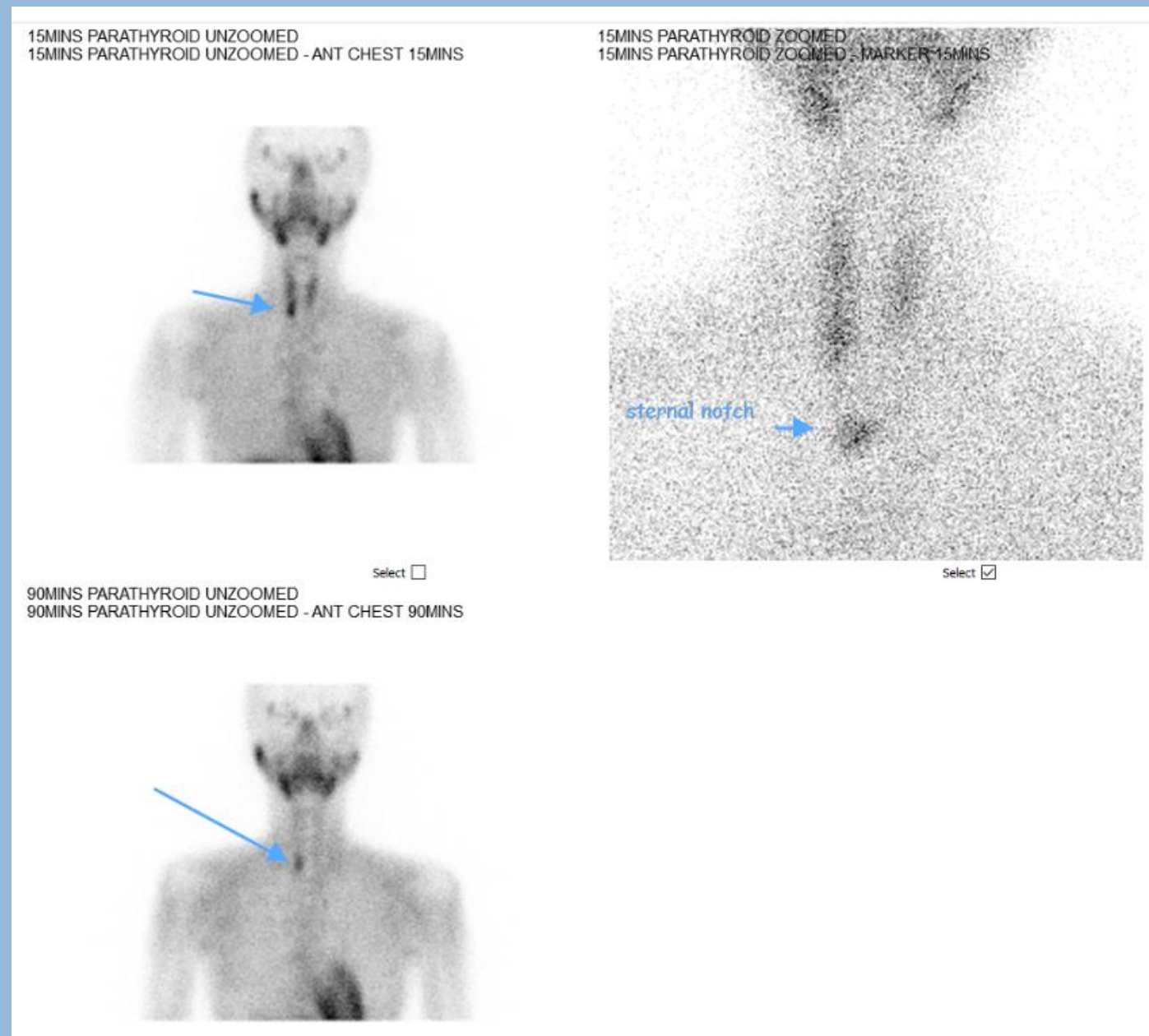
Despite drinking 2 litres of fluid a day, adjusted calcium remained high. At 15 weeks gestation, she successfully underwent right minimal access parathyroidectomy.

Adjusted calcium dropped to 2.15 mmol/L, which was corrected with oral calcium and vitamin D3.

Serial growth scans showed estimated fetal weight <10th centile with normal growth velocity, amniotic fluid and dopplers. She underwent induction of labour for reduced fetal movements and delivered vaginally at 38 +6 weeks. The baby weighed 2585g. Both mother and baby are well with normocalcaemia.

Objective

Primary hyperparathyroidism in pregnancy poses a diagnostic challenge. This case demonstrates the feasibility, effectiveness and safety of parathyroidectomy in pregnancy.

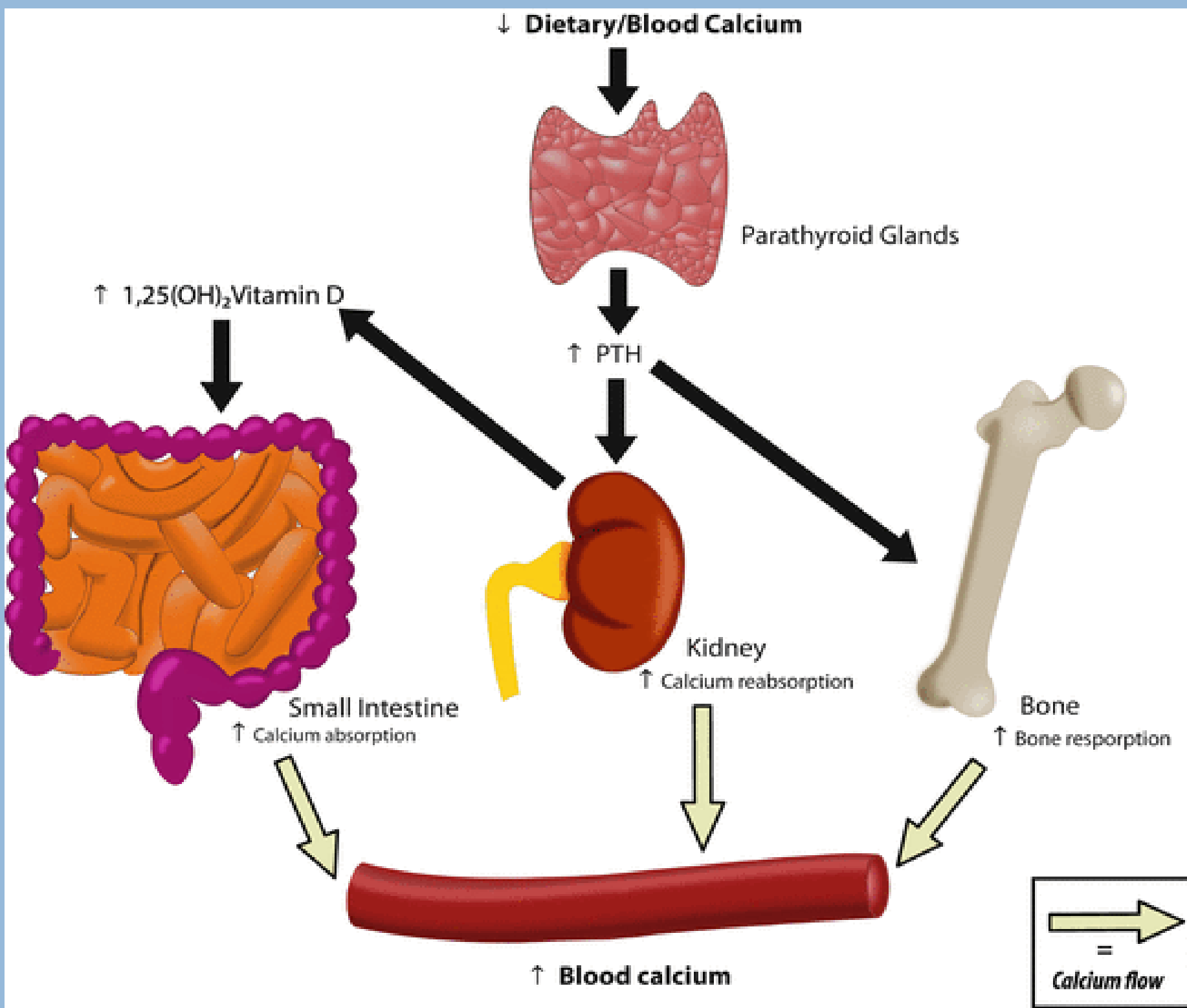


Hypercalcaemia in Pregnancy

Hypercalcaemia is a rare complication in pregnancy, affecting 0.03% of women of reproductive age.

The most common symptoms are non-specific and can mimic pregnancy: fatigue, nausea, polyuria.

Often patients are asymptomatic; serum calcium is not routinely requested. Therefore, hypercalcaemia in pregnancy is likely underdiagnosed.



Physiology in Pregnancy

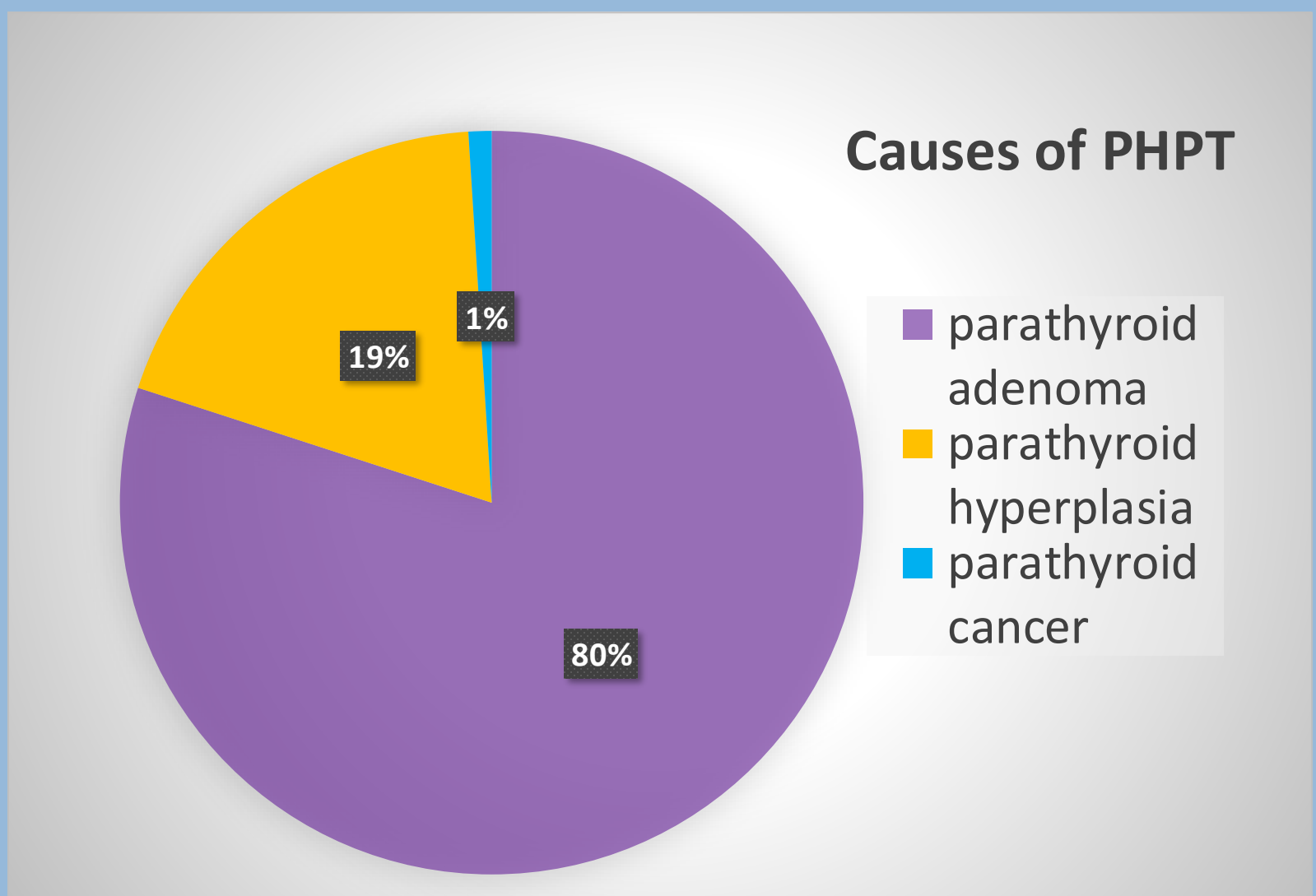
Increased mobility of calcium in the mother occurs to meet the calcium requirements of the fetus, which is namely skeletal development.

This is achieved by increased maternal intestinal absorption of calcium through increasing 1,25 Vitamin D production and parathyroid-related peptide. The latter is released from placenta and breasts in response to estradiol, placental lactogen and prolactin.¹

After delivery, there is an increased risk of severe hypercalcaemia in women with primary hyperparathyroidism who are lactating, as PTH related peptide rises.

Primary Hyperparathyroidism

Primary hyperparathyroidism (PHPT) is the most common cause of hypercalcaemia in pregnancy.



Maternal Complications

- Kidney stones
- Osteopenia & osteoporosis leading to fractures
- Pancreatitis, peptic ulcers, constipation, nausea & vomiting
- Depression, fatigue, confusion, hallucinations
- Thirst and polyuria
- Cardiac arrhythmias, hypertension and pre-eclampsia

Fetal Complications

- Miscarriage
- Preterm delivery
- Fetal growth restriction
- Intrauterine death
- Neonatal hypocalcaemia and tetany
- Neonatal hypoparathyroidism (transient or permanent)

There is a strong positive correlation between adjusted calcium concentrations and pregnancy complications, particularly if >2.85mmol/L.

Medical Management of PHPT in Pregnancy

- Oral or intravenous rehydration is the mainstay of treatment.
- Cinacalcet binds to and activates the calcium sensing receptor, leading to a decrease in PTH. However, it can lead to fetal hypocalcaemia.²
- Furosemide, calcitonin, glucocorticoids, bisphosphonates and denosumab should be avoided in pregnancy.

Surgical Management of PHPT in Pregnancy

If surgery during pregnancy is being considered, imaging via an ultrasound thyroid and parathyroid should be undertaken. This is safe but may not always give definitive diagnosis. Nuclear medicine scans should be avoided due to fetal radiation.

Indications for parathyroidectomy:

- complications from hypercalcaemia
- hypercalcaemia >2.85mmol/L despite medical management

Minimally invasive parathyroidectomy in second trimester is preferred, though it is safe in all three trimesters.³

Four gland neck exploration may be required if imaging fails to localise the adenoma.

Learning Points & Recommendations

PHPT in pregnancy can be successfully managed medically and surgically in a local unit by an experienced team.

Serum calcium should be tested for women with a history of renal stones and essential hypertension.

Aspirin should be considered from 12 weeks if there is a delay in surgery.

References

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