

*Endocrinal
influence
On
Periodontal
tissue*

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Female Sex Steroid Hormones

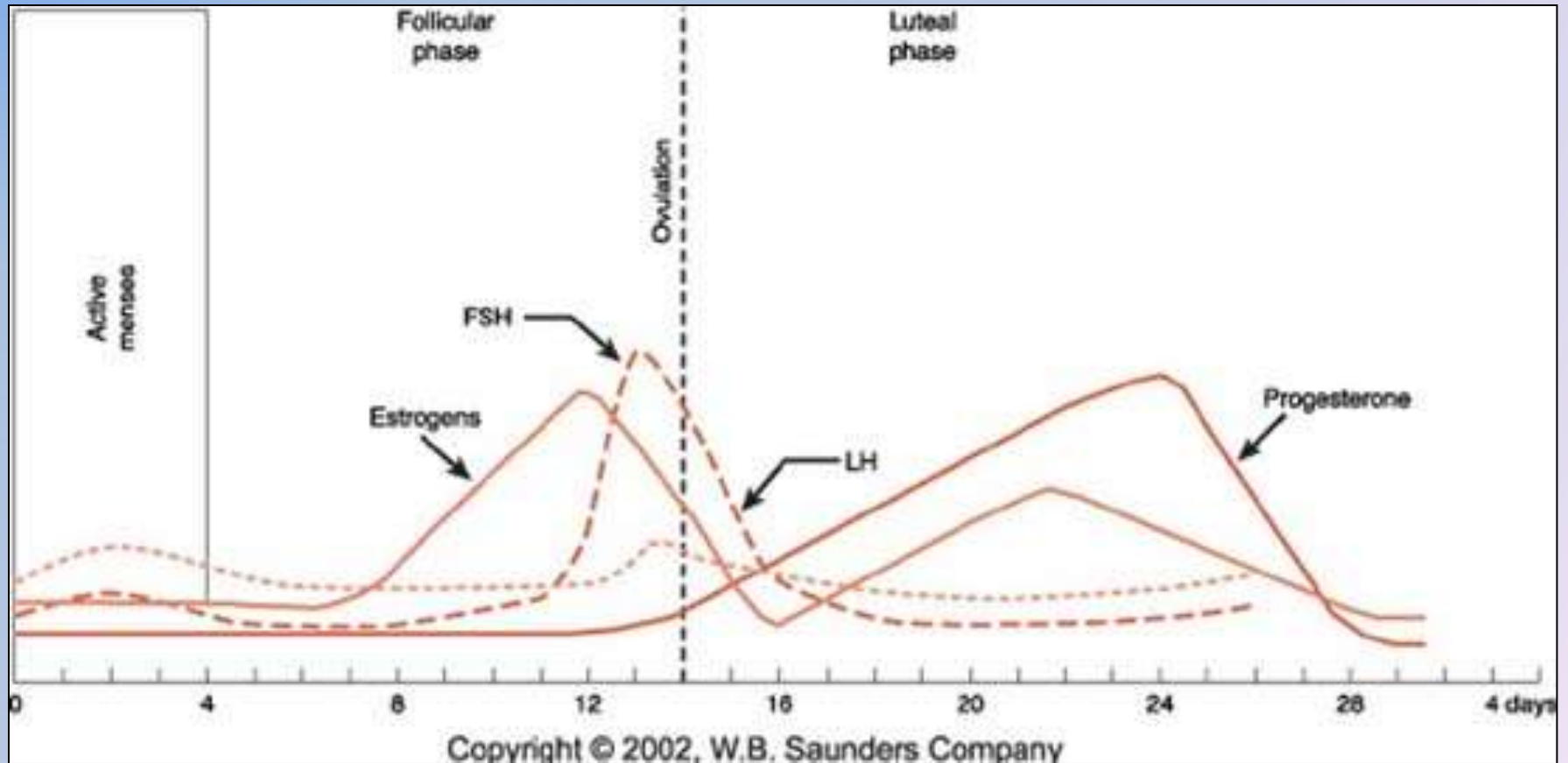
- ✿ Puberty
- ✿ Menses
- ✿ Pregnancy
- ✿ Oral contraceptives
- ✿ Menopause

Puberty

- Exaggerated response of the gingiva to plaque
- Pronounced inflammation, edema and gingival enlargement to even minimum local factors
- Increase in *P. intermedia* and *P. nigrescens*
- Not universal to all adolescents
- Good oral hygiene



Menstruation



Amplify gingival
inflammation

Affects and
modifies cells of
immune system

Exaggerate
response to local
irritants

Ovarian hormones

- C/F – bleeding gums, bloated tense feeling just before menstrual flow
- Salivary bacterial count is increased during menstruation and at ovulation

Pregnancy



- Hormonal changes accentuate the gingival response to local factors
- Tooth mobility, pocket depths and gingival fluid are increased
- Pronounced **ease of bleeding** – most striking feature
- Severity of gingivitis increased during the **second or third month** of pregnancy
- **Raspberry** like appearance



PATHOPHYSIOLOGY

Increased levels of estradiol and progesterone



Increased dilation, tortuosity,
circulatory stasis



Increased susceptibility to
mechanical irritation



Destruction of gingival mast cells

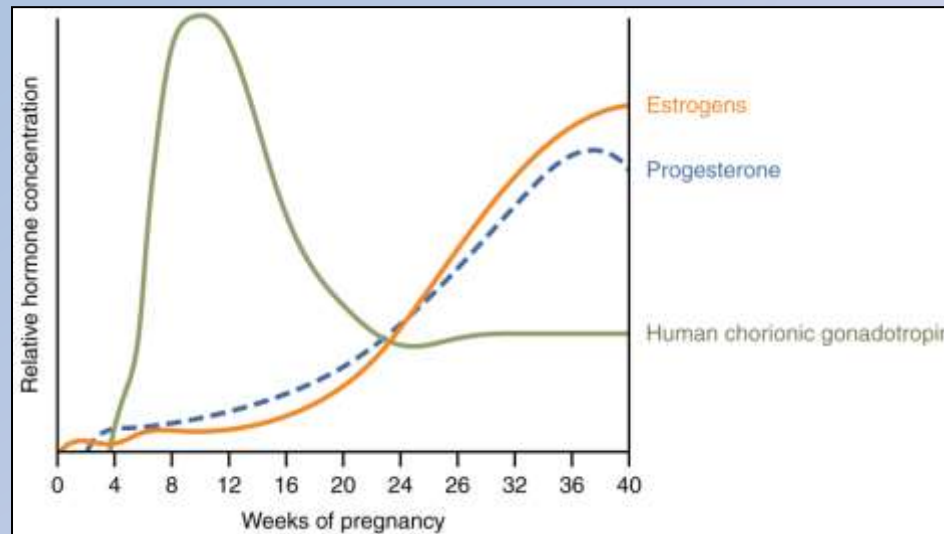


Release of histamine and
proteolytic enzymes



Increased inflammatory
response to local factors

- **P. intermedia** increases
- Depression of **maternal t-lymphocyte** response
- 2 peaks – 1st – First Trimester – overproduction of the **gonadotropins**
2nd- Third Trimester - overproduction of **estrogen and progesterone**



- Severity of gingivitis reduces after **2 months** postpartum

Pyogenic granulomas

(pregnancy tumors, pregnancy epulides)

- Occur in **0.2% to 9.6%** of pregnancies.
- During the **second or third month** of pregnancy.
- classically occurs in an area of gingivitis and is associated with **poor oral hygiene and calculus.**



C/F

- bleed easily and become **hyperplastic and nodular.**
- **sessile** or **pedunculated** and ulcerated
- **purplish red to deep blue** in colour



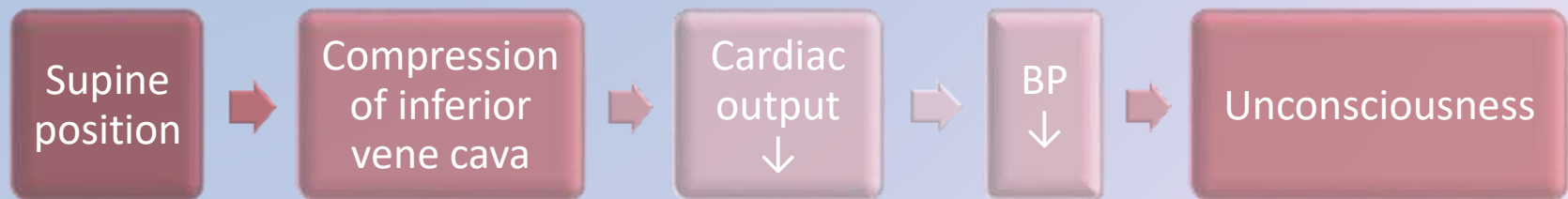
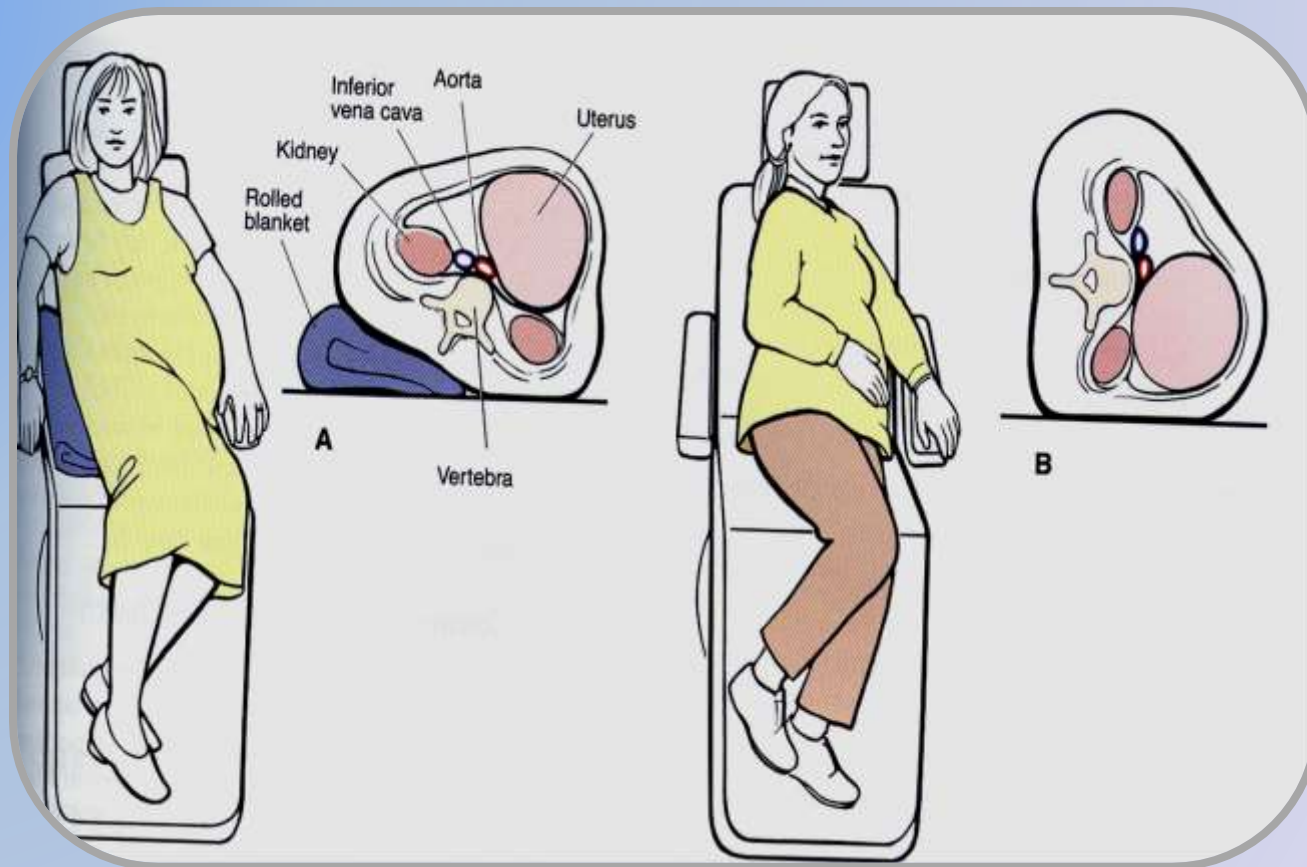
Clinical Management

- **Scaling, polishing, and root planing** may be performed whenever necessary during pregnancy.
- **Elective Dental Treatment** : avoid during the first trimester and the last half of the third trimester.

Dental radiographs - most desirable not to have *any* irradiation during pregnancy, especially during the first trimester.

– High-speed films, filtration, collimation, and lead aprons are used.

- **Emergency care** should be delivered. Eg – periodontal abscess
 - Preterm labour or PROM



Oral contraceptives



- Gingival responses is similar to those seen in pregnant patients.
- contain estrogen and progesterone.
- based on the fact that estrogen and progesterone can inhibit pituitary gonadotropin hormone release, thereby preventing ovulation / implantation.
- Usually seen when the drugs are taken for **more than 1.5 yrs**

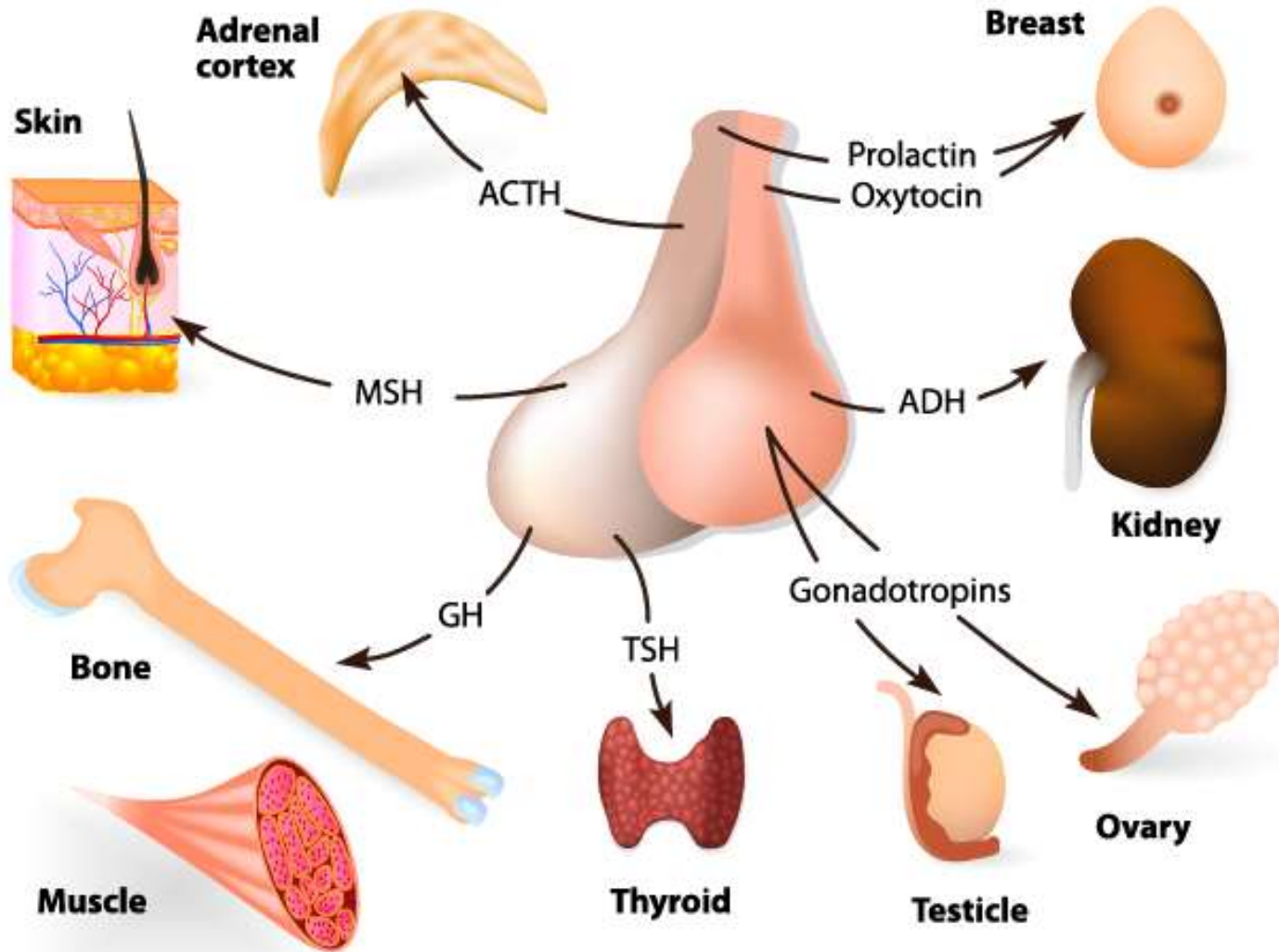


Menopausal gingivostomatitis

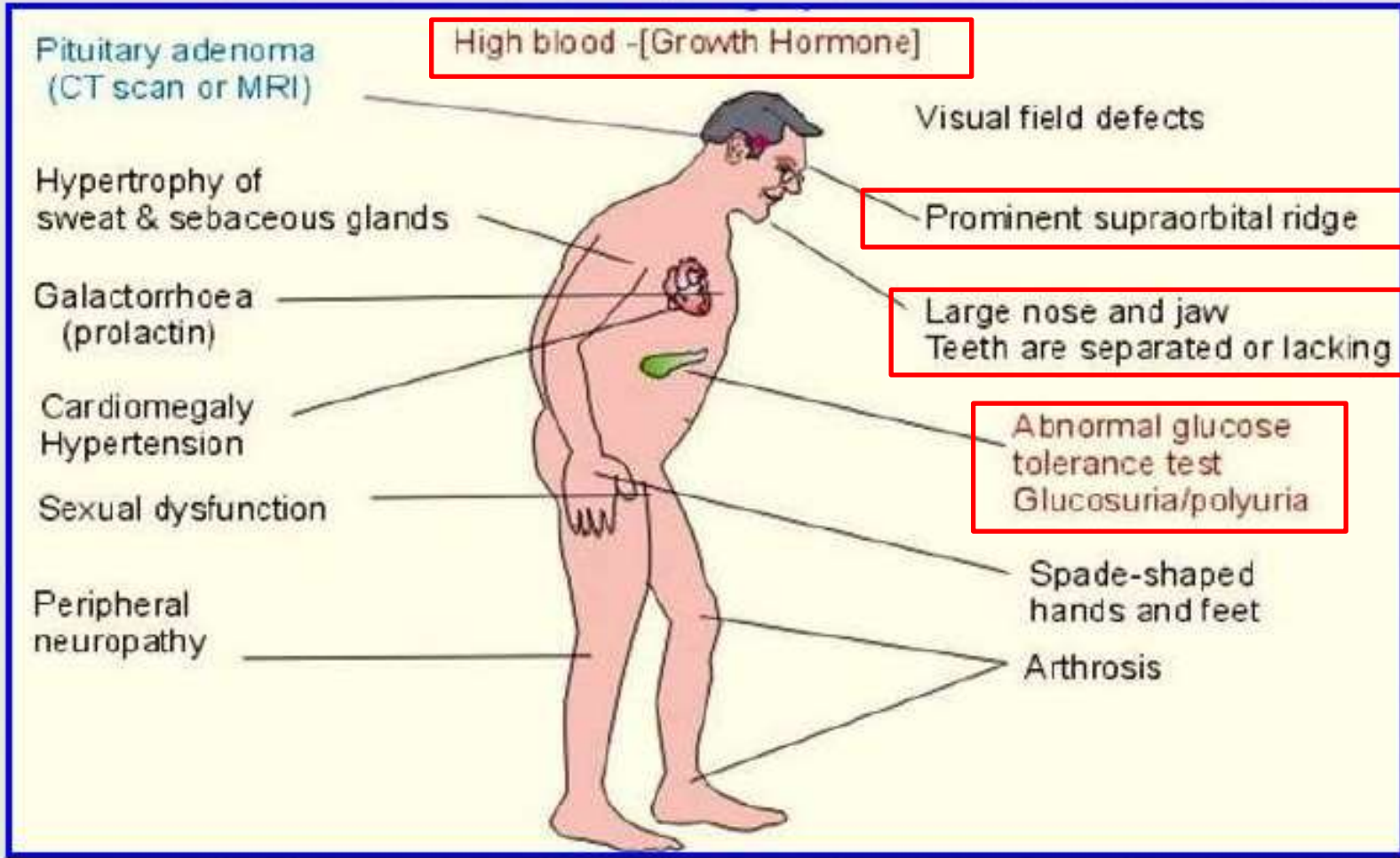
- associated with symptoms of **estrogen deficiency**.
- Not a common condition
- Oral mucosa becomes **dry and shiny**
- Bleeds easily
- Fissuring of mucobuccal fold
- Dry burning sensation throughout the oral cavity
- Abnormal taste sensations
- signs and symptoms are similar to **desquamative gingivitis**



PITUITARY GLAND



HYPERPITUITARISM: CLINICAL MANIFESTATIONS



Hypopituitarism

Easy to diagnose and treat -- if you think of it.



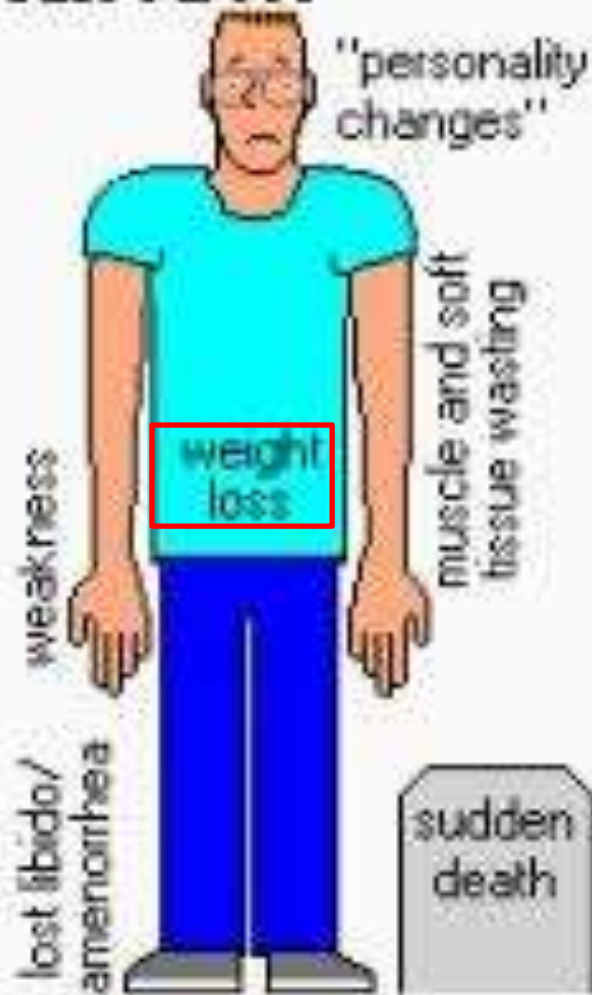
adenoma



infarct



"empty sella"



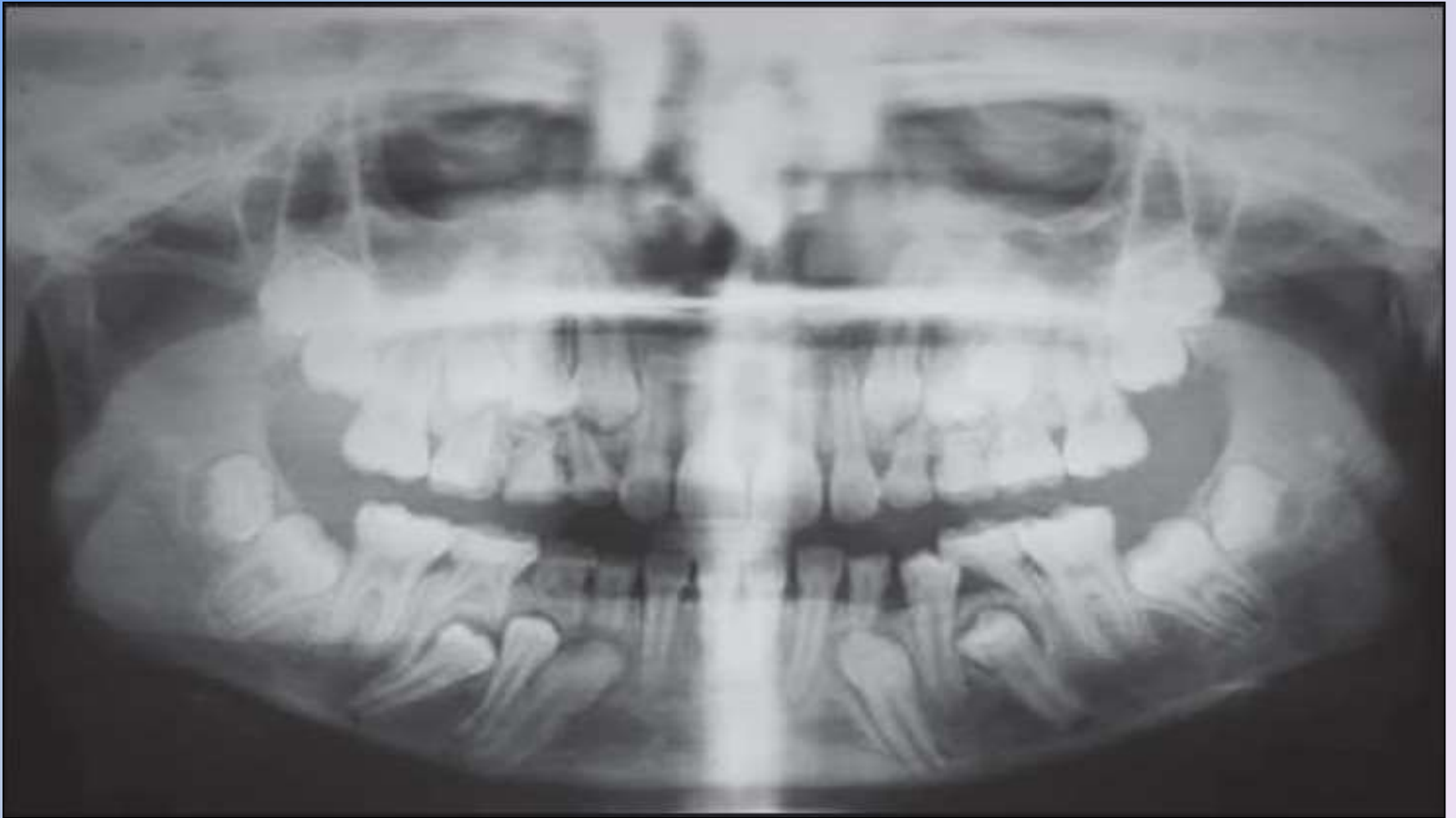
Eventually:

All the problems of primary Addison's (except dark skin)

All the problems of primary hypothyroidism.

May also be present:
- failure of lactation
- diabetes insipidus
- growth failure (kids)

medicscientist

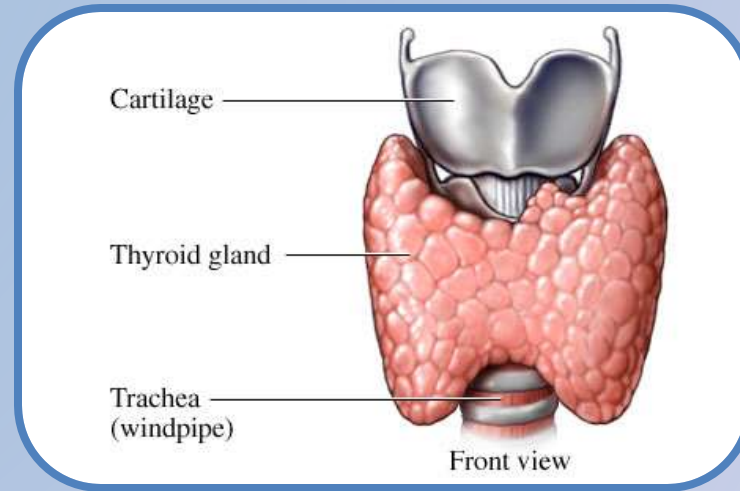


hypopituitarism

Hypopituitarism	Gigantism	Acromegaly
<p><u>Delayed eruption rate</u> as well as <u>delayed shedding of deciduous teeth</u></p> <p>Smaller clinical crown of teeth</p>	<p>Teeth size are <u>proportional to</u> generalized enlarged body size</p> <p><u>Interdental spacing</u></p>	<p><u>Thick and negroid lips</u></p>
<p>Smaller roots with <u>retarded growth</u> of supporting apparatus</p> <p><u>Smaller dental arches</u></p>	<p>Dental malocclusion</p>	<p>Enlarged tongue (<u>macroglossia</u>) with indentations on lateral borders</p>
<p>Smaller dental arches</p> <p>Crowding and malocclusion</p>	<p><u>Hypercementosis</u> of roots</p>	<p>Enlarged prognathic mandible (lantern jaw appearance)</p> <p><u>Class III type of malocclusion</u></p> <p>Teeth are tipped to outside labial or buccal surface due to pressure exerted by tongue</p>
<p><u>Retarded growth</u> of mandible</p> <p>Fine wrinkles around mouth and eyes</p>		<p>Increased periosteal bone formation</p> <p>Major salivary gland enlargement</p> <p>Thickening and coarsening of facial skin</p> <p>Spacing in the teeth</p> <p>Enlarged nasal sinuses</p> <p><u>Anterior open bite</u></p>

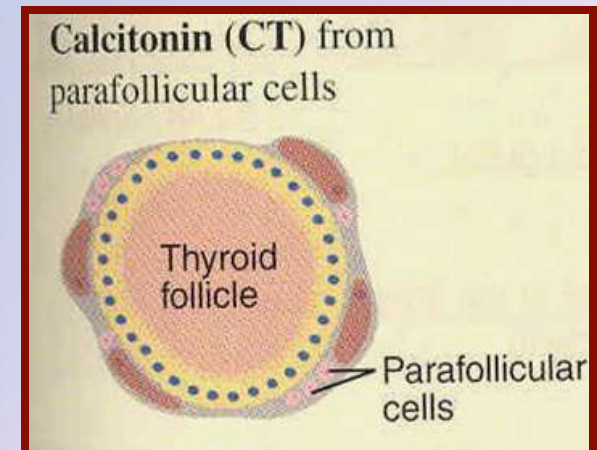
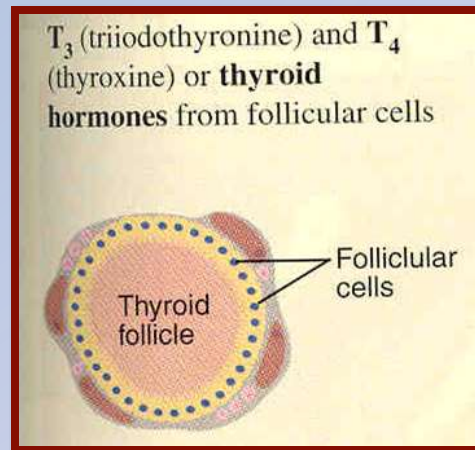
Oral manifestations

Thyroid gland



The thyroid gland secretes:

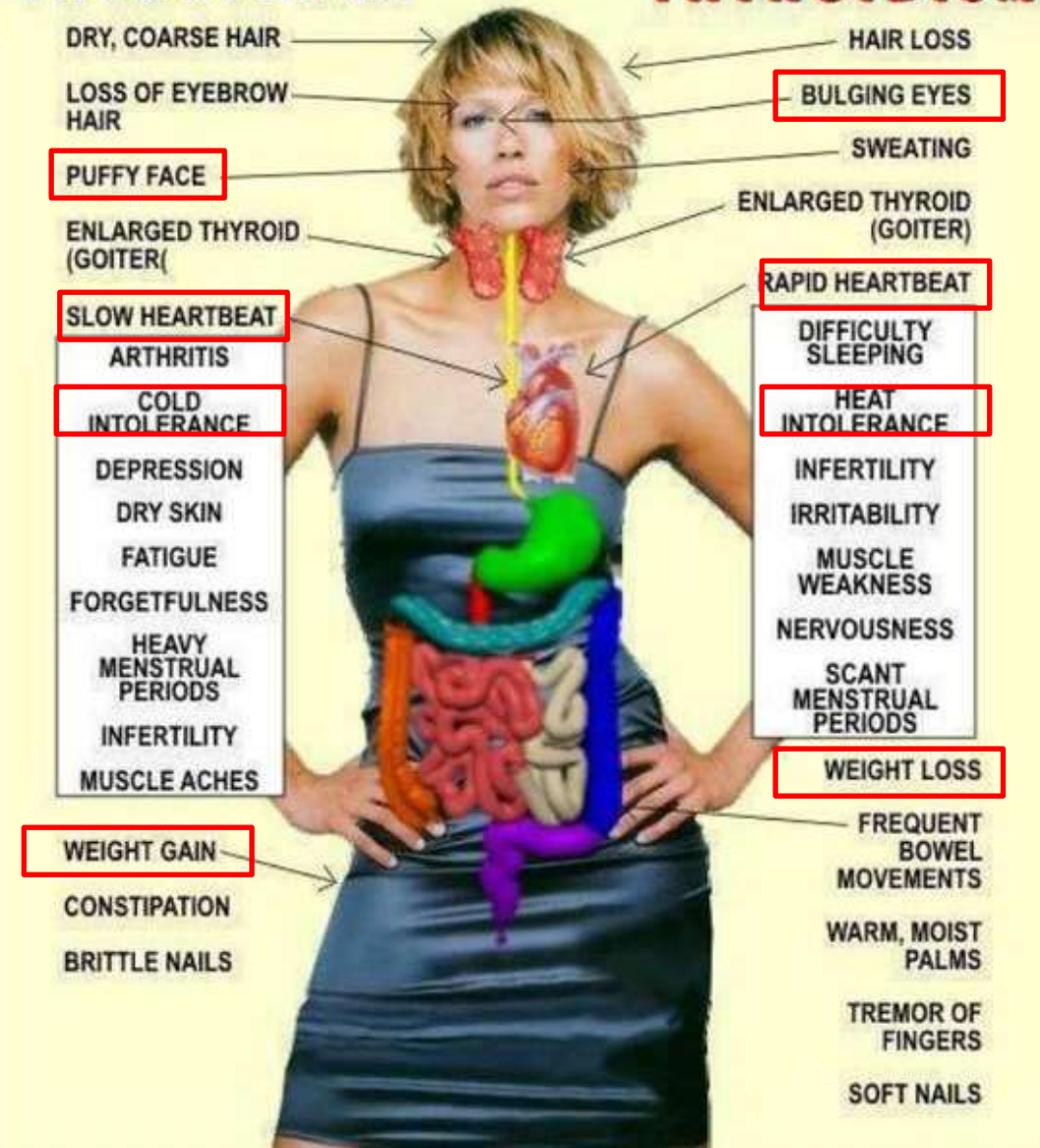
- ✗ Thyroxine(T₄)
- ✗ Triiodothyronine
- ✗ Calcitonin



Thyroid Dysfunction

HYPO THYROIDISM

HYPER THYROIDISM



DRY, COARSE HAIR

LOSS OF EYEBROW
HAIR

PUFFY FACE

ENLARGED THYROID
(GOITER)

SLOW HEARTBEAT

ARTHRITIS

**COLD
INTOLERANCE**

DEPRESSION

DRY SKIN

FATIGUE

FORGETFULNESS

HEAVY
MENSTRUAL
PERIODS

INFERTILITY

MUSCLE ACHES

WEIGHT GAIN

CONSTIPATION

BRITTLE NAILS

HAIR LOSS

BULGING EYES

SWEATING

ENLARGED THYROID
(GOITER)

RAPID HEARTBEAT

DIFFICULTY
SLEEPING

**HEAT
INTOLERANCE**

INFERTILITY

IRRITABILITY

MUSCLE
WEAKNESS

NERVOUSNESS

SCANT
MENSTRUAL
PERIODS

WEIGHT LOSS

FREQUENT
BOWEL
MOVEMENTS

WARM, MOIST
PALMS

TREMOR OF
FINGERS

SOFT NAILS

Hypothyroidism

Dental Management

- ✘ no danger in providing dental care for patients with mild symptoms of untreated hypothyroidism.
- ✘ Risk is high in **elderly patient with severe hypothyroidism**
- ✘ **myxedema coma** can be precipitated by surgery, infections, use of CNS depressants.
- ✘ The condition is characterized by bradycardia, severe hypotension & epileptic seizures.

Hyperthyroidism

Dental management

- ✘ emotional stress, injection, trauma & surgery can precipitate a **thyroid crisis or 'storm'**, which may be fatal.

Signs and Symptoms

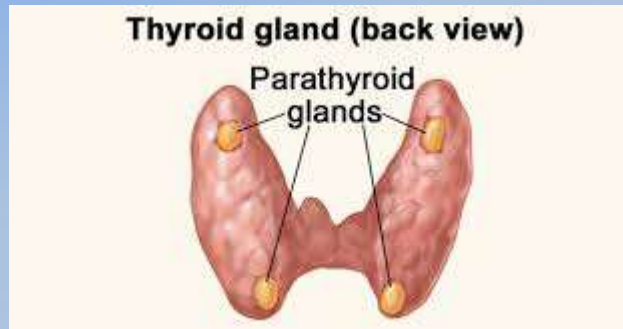
- abrupt onset of abdominal pain.
- fever, profuse sweating, tachycardia, pulmonary edema & congestive heart failure can develop.
- If the patient develops severe hypertension & becomes comatose, death may occur.

Treatment

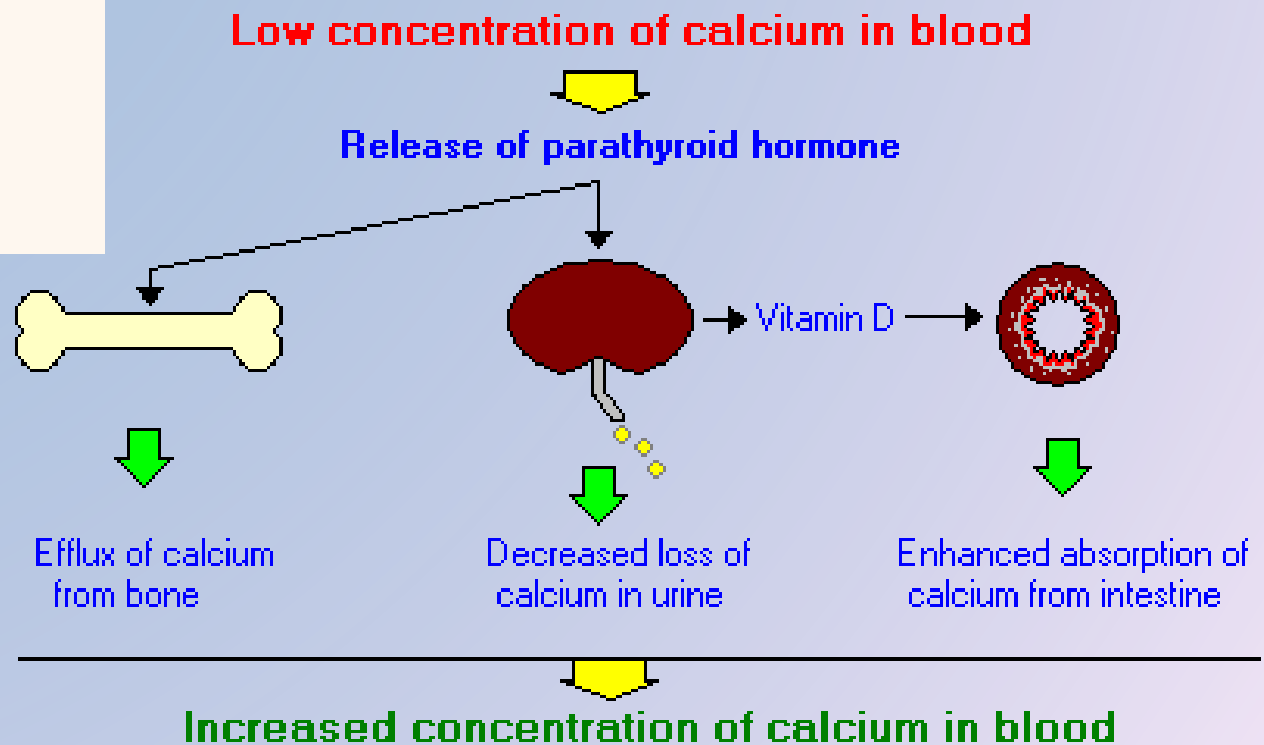
- 600-1000mg of **propylthiouracil** given IV along with other drugs.
- **Side effects** – Agraunulocytosis , hypoprothrombinemia & bleeding disorders
- complete blood count & prothrombin time must be obtained
- **Conservative treatment** consisting of antibiotics & analgesics is advisable.
- the patient should be brought to an **euthyroid state** before any surgery.
- Local anesthetics **without epinephrine**
 - can precipitate severe arrhythmias, tachycardia.

Parathyroid gland

- ✗ The main function is to increase the level of calcium in plasma

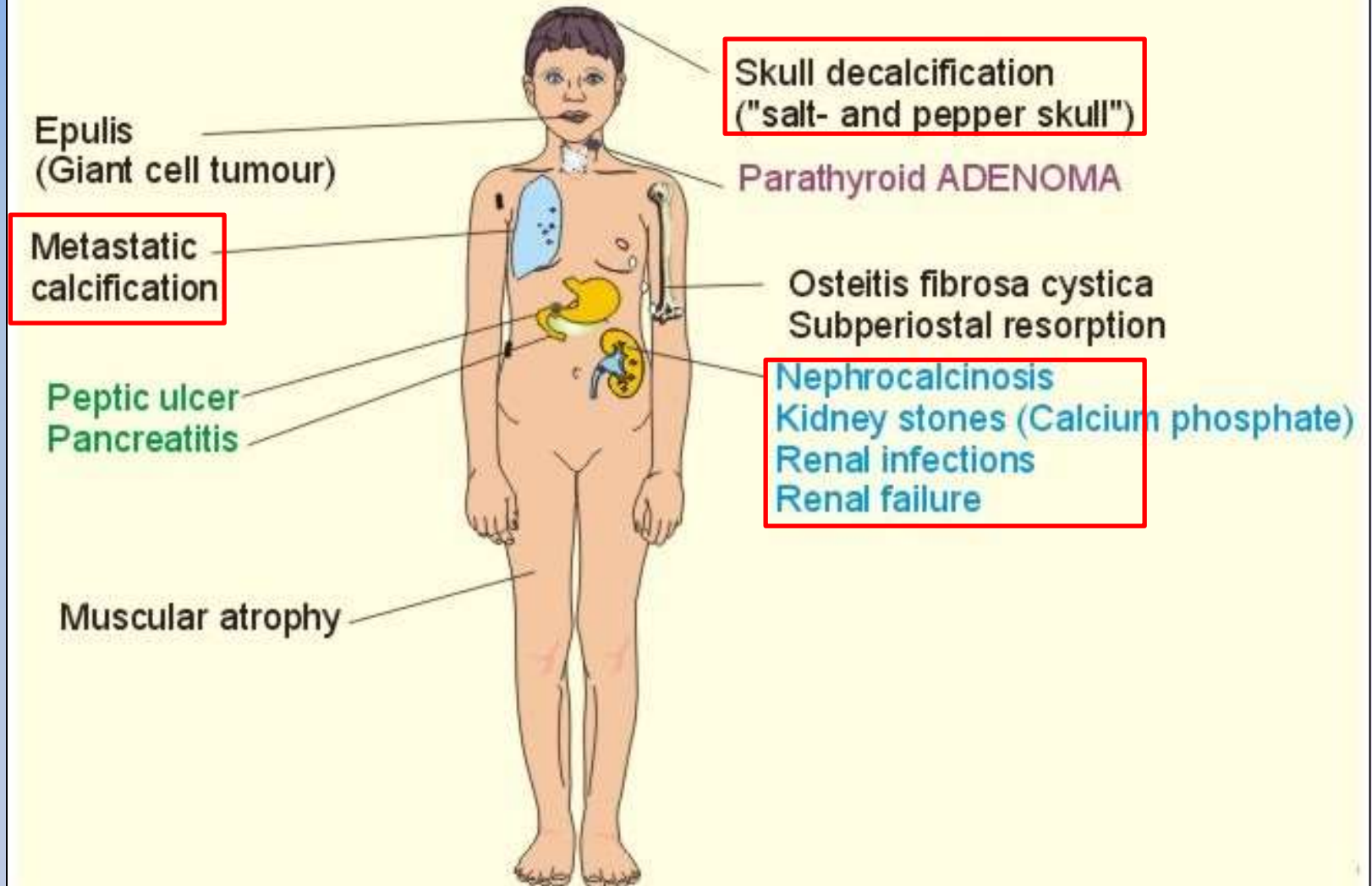


Actions of PTH



Hyperparathyroidism

Increased Blood -[Ca²⁺]



Dental findings

- ✘ Malocclusion due to sudden drifting of teeth with definite spacing, increased mobility.
- ✘ Loss of trabeculations, ground glass appearance, loss of lamina dura.



Osteitis Fibrosa Cystica (von Recklinghausen bone disease)

- ✘ Bone cysts - *brown tumors* - *reparative giant cell granulomas*.
- ✘ If in the periapical region of teeth; can lead to a **misdiagnosis** of a lesion of endodontic origin.



Dental considerations

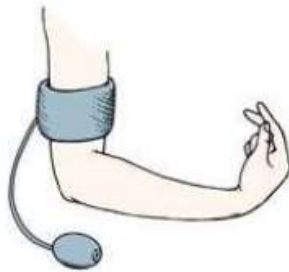
- ✘ If a giant cell lesion is found, particularly in middle aged patient or in patient with renal failure, parathyroid function should be investigated.
- ✘ Prior to complete remineralization, the dentist should avoid surgical procedures which may cause **iatrogenic jaw fractures**.

Hypoparathyroidism

It is a metabolic abnormality characterized by hypocalcemia and consequent neuromuscular symptoms.

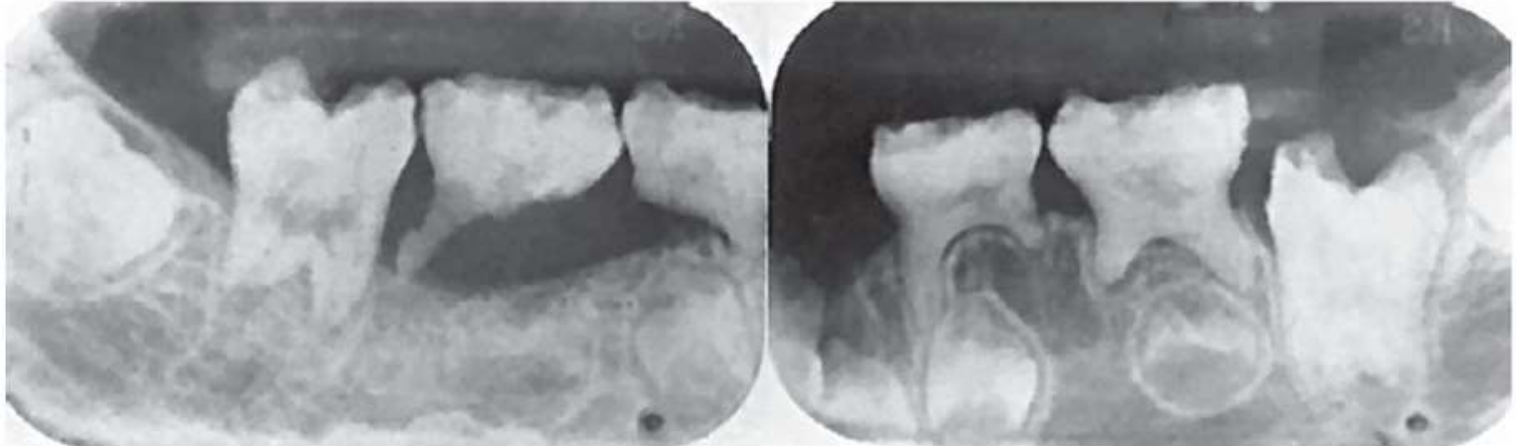
Hypoparathyroidism – signs and symptoms

- Tetany
- Depression
- Carpo-pedal spasms
- Trousseau's sign
- Chvostek's sign
- ECG changes –
Increased Q-T interval



Dental findings

- ✘ Enamel hypoplasia.
- ✘ Malformed teeth, Anodontia.
- ✘ Short blunt roots, elongated pulp chambers.
- ✘ Multiple impacted teeth.



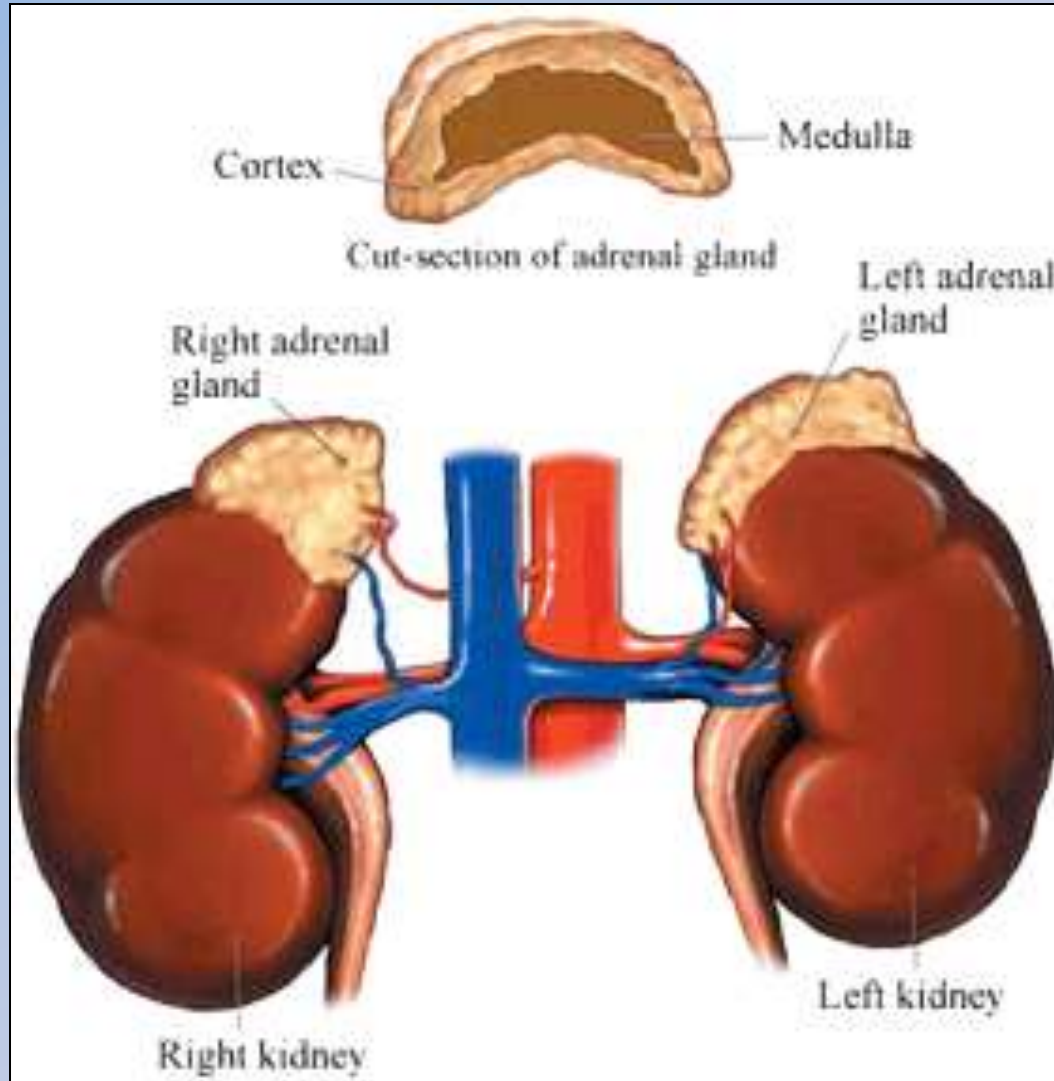
Dental anomalies: enamel hypoplasia, external root resorption, delayed eruption, or root dilaceration

Dental considerations

Dental management may be complicated by;

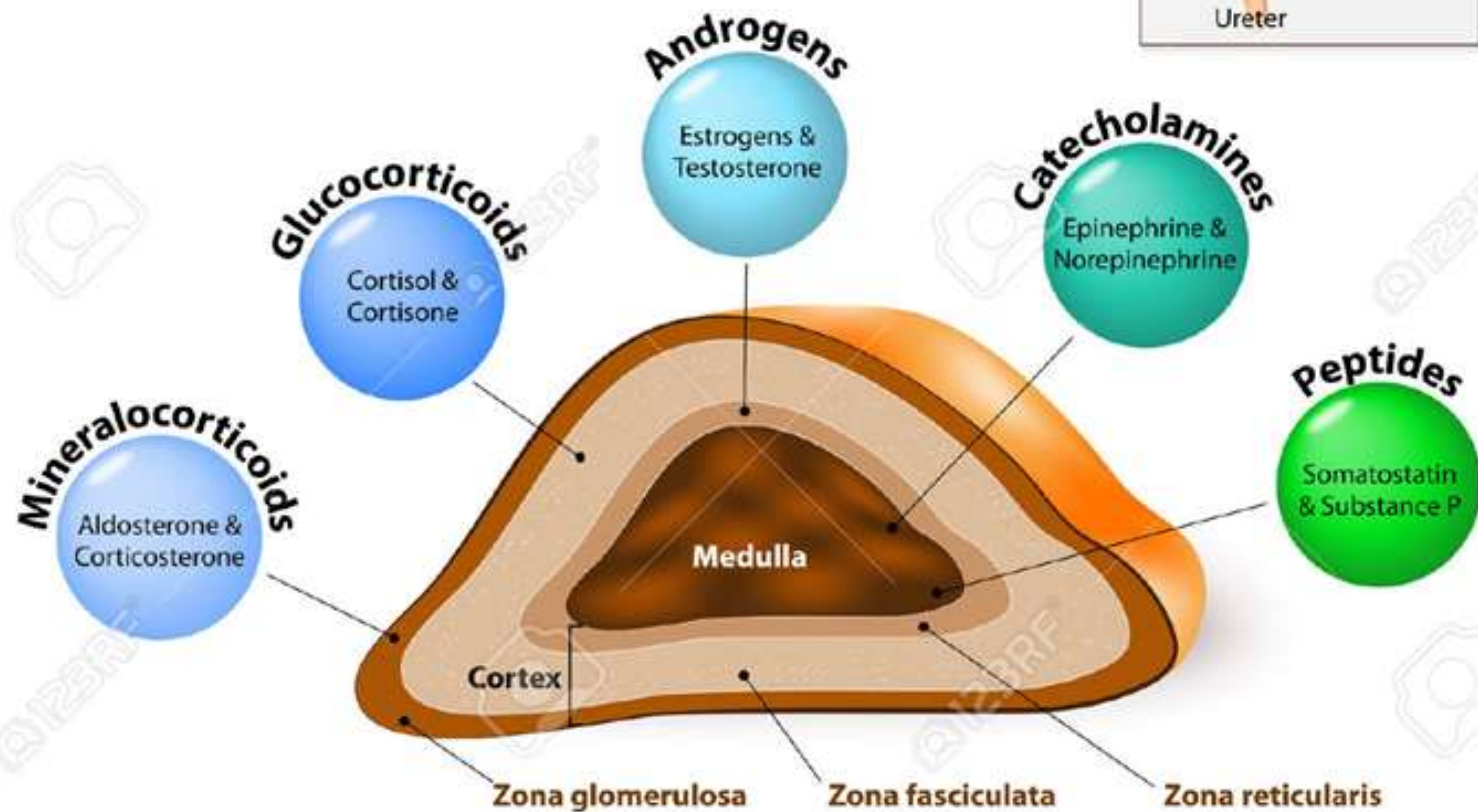
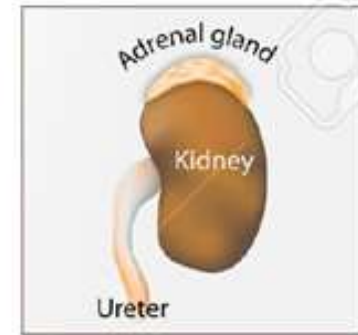
- ✘ Tetany
- ✘ Mental handicap
- ✘ Dysrhythmias.
- ✘ serum Ca level should be monitored to prevent the possibility of cardiac arrhythmias, generalized convulsions, laryngospasm or bronchospasm.

Adrenal glands



ADRENAL GLAND

(hormones)



Adrenal medulla

- ✘ It secretes two catecholamines
 - Epinephrine
 - Norepinephrine.
- ✘ Supports blood pressure by raising the heart rate.
- ✘ It also increases O₂ consumption by the tissue & glucose release by the liver.

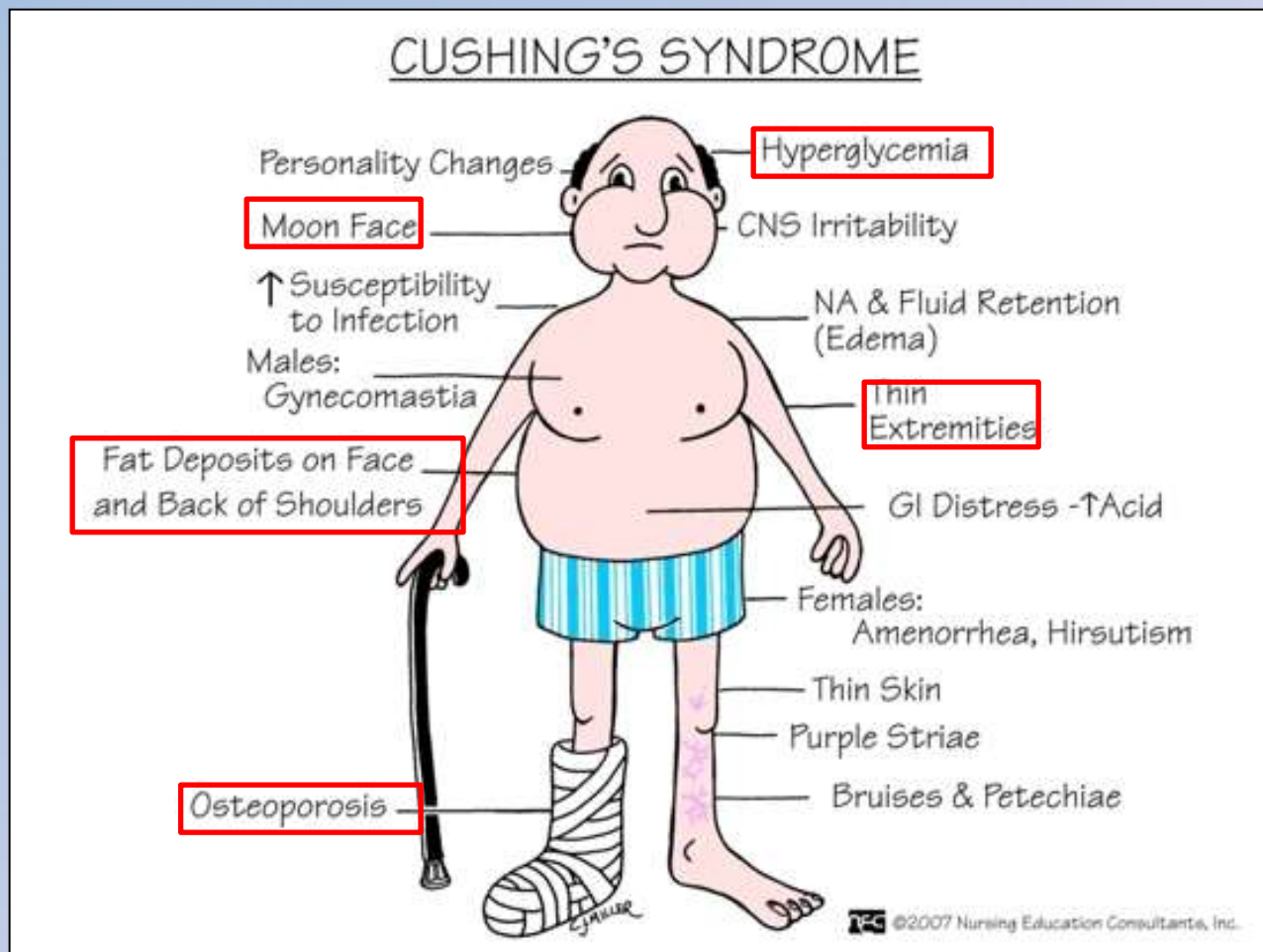
Adrenal cortex

It secretes three major classes of hormone:

- ✘ Glucocorticoids/cortisol - affects the inflammatory process & carbohydrates & protein metabolism.
- ✘ Mineralocorticoid /aldosterone - affects water & electrolyte balance.
- ✘ Sex hormone – testosterone, estrogen & progesterone.

CUSHING'S SYNDROME

Hyperadrenocorticism is a clinical condition that results from a sustained raise in glucocorticoid levels.

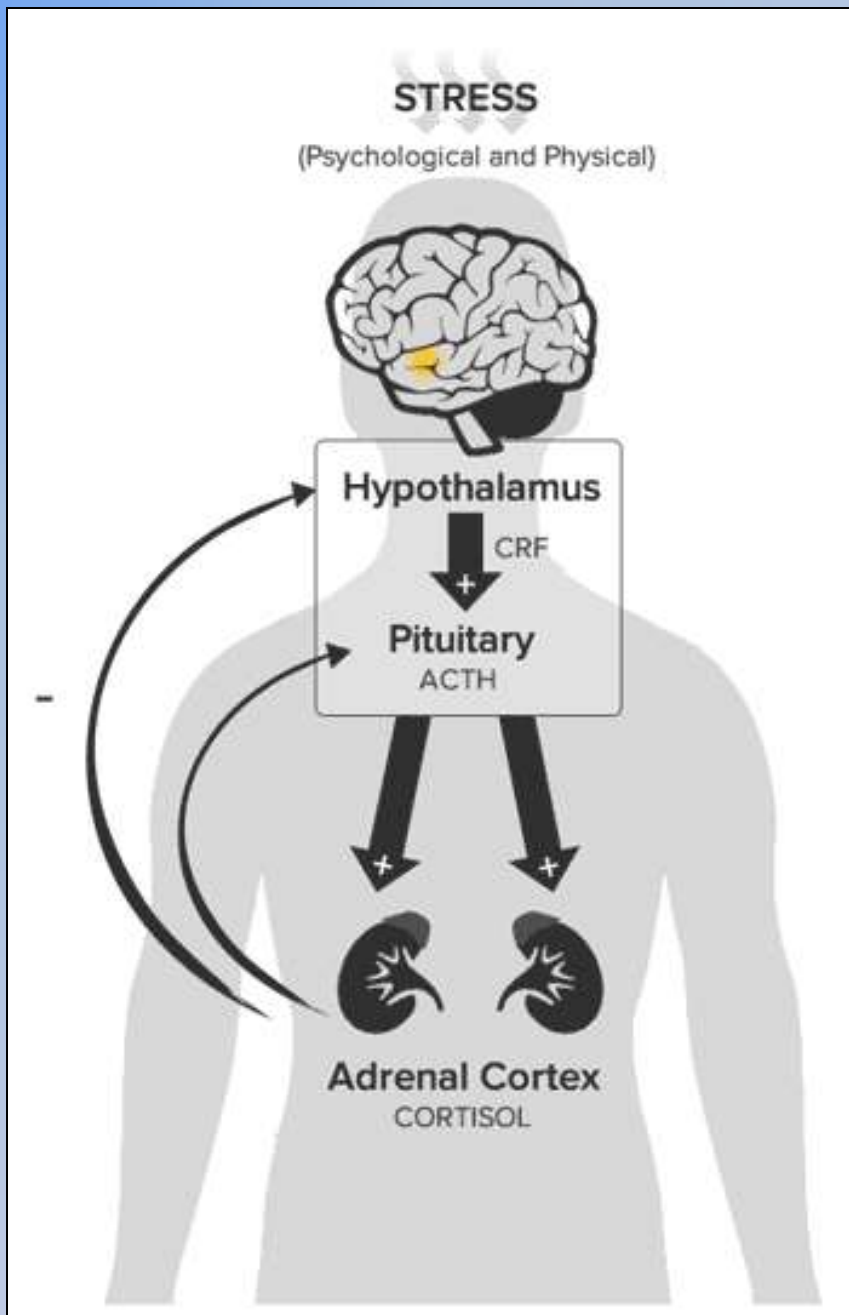


Oral Manifestations

- ✘ In children **growth & development** - dental and skeletal age may be **retarded**.
- ✘ In some instances there may be **osteoporosis of the jaws**.

Radiographic features

- ✘ Generalized osteoporosis
- ✘ Osseous demineralization with **pathological fractures**.
- ✘ Jaw may show areas of loss lamina dura.



HPA axis

Adreno Cortical Insufficiency

```
graph TD; A[Adreno Cortical Insufficiency] --> B[- Primary]; A --> C[- Secondary];
```

- Primary

the defect is with
the gland itself

- C/a Addisons Disease
- 1st recognised by Addison
in 1844

- Secondary

the gland parenchyma
is fully functional but
suppressed by certain
exogenous factors

Normal daily secretion of Cortisol is 20mg/ day

Acute Adreno Cortical Insufficiency is a **Medical Emergency**

BOX 30.5

Manifestations of Acute Adrenal Insufficiency (Adrenal Crisis)

Mental confusion, fatigue, and weakness

Nausea and vomiting

Hypertension

Syncope

Intense abdominal pain, lower back pain, and leg pain

Loss of consciousness

Coma

Management

Management of the patient in an acute adrenal insufficiency crisis is as follows:

1. Terminate periodontal treatment.
2. Summon medical assistance.
3. Administer oxygen.
4. Monitor vital signs.
5. Place the patient in a supine position.
6. Administer 100 mg of hydrocortisone sodium succinate intramuscularly or IV over 30 s.

Oral manifestations

- ✘ brown macular pigmentation.
- ✘ oral mucosal changes are the first manifestations of the disease
- ✘ History of recent onset of oral pigmentation
- ✘ Site affected – Buccal mucosa, gingival, tongue, lips.



Dental Management

Problems

- ✘ Increased **susceptibility to infection** due to the altered host's normal inflammatory response.
- atraumatic & aseptic techniques
- adequate antimicrobial therapy.
- ✘ The **possibility of adrenal crisis**.
- Supplemental Corticosteroids
- stress reduction protocol
 - Profound anesthesia
 - Sedation techniques

Supplemental corticosteroids

- not required for routine minor surgical work
- Required for major lengthy major surgical procedures involving significant blood loss



Important questions

LAQs

- Describe the influence of female sex hormones on the periodontium

SAQs

- Puberty
- Menses
- Pregnancy
- Oral contraceptives
- Menopause

VIVA

- Dental management of thyroid patient
- Dental findings in parathyroid patients
- Pyogenic granulomas