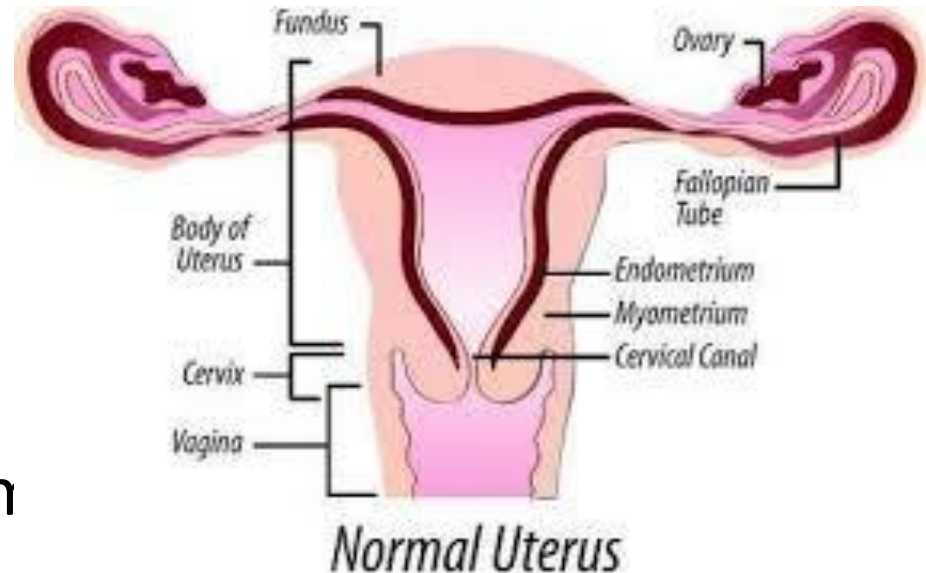


Drugs acting on uterus

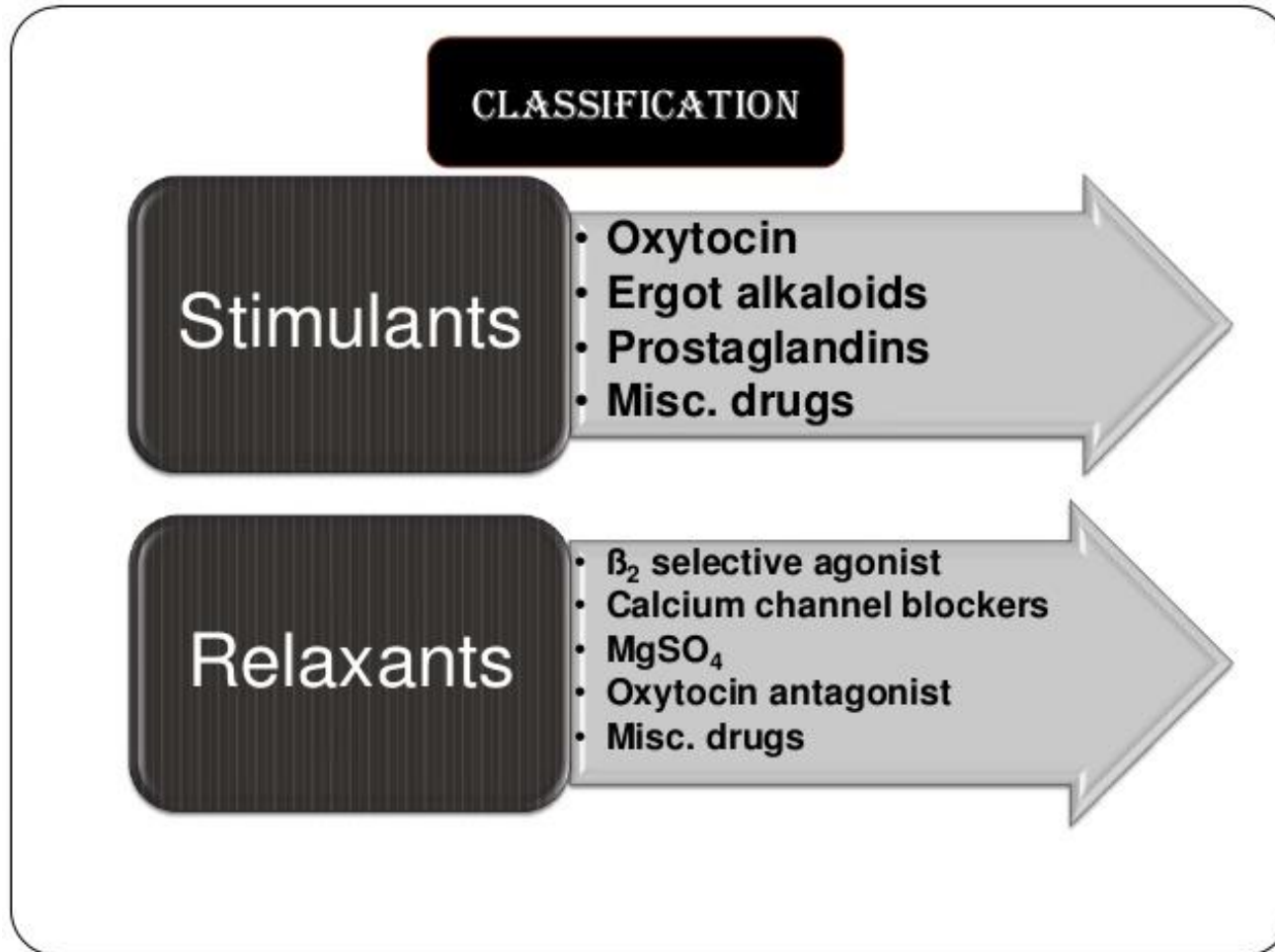
Dr. S Shahani

Anatomy of uterus

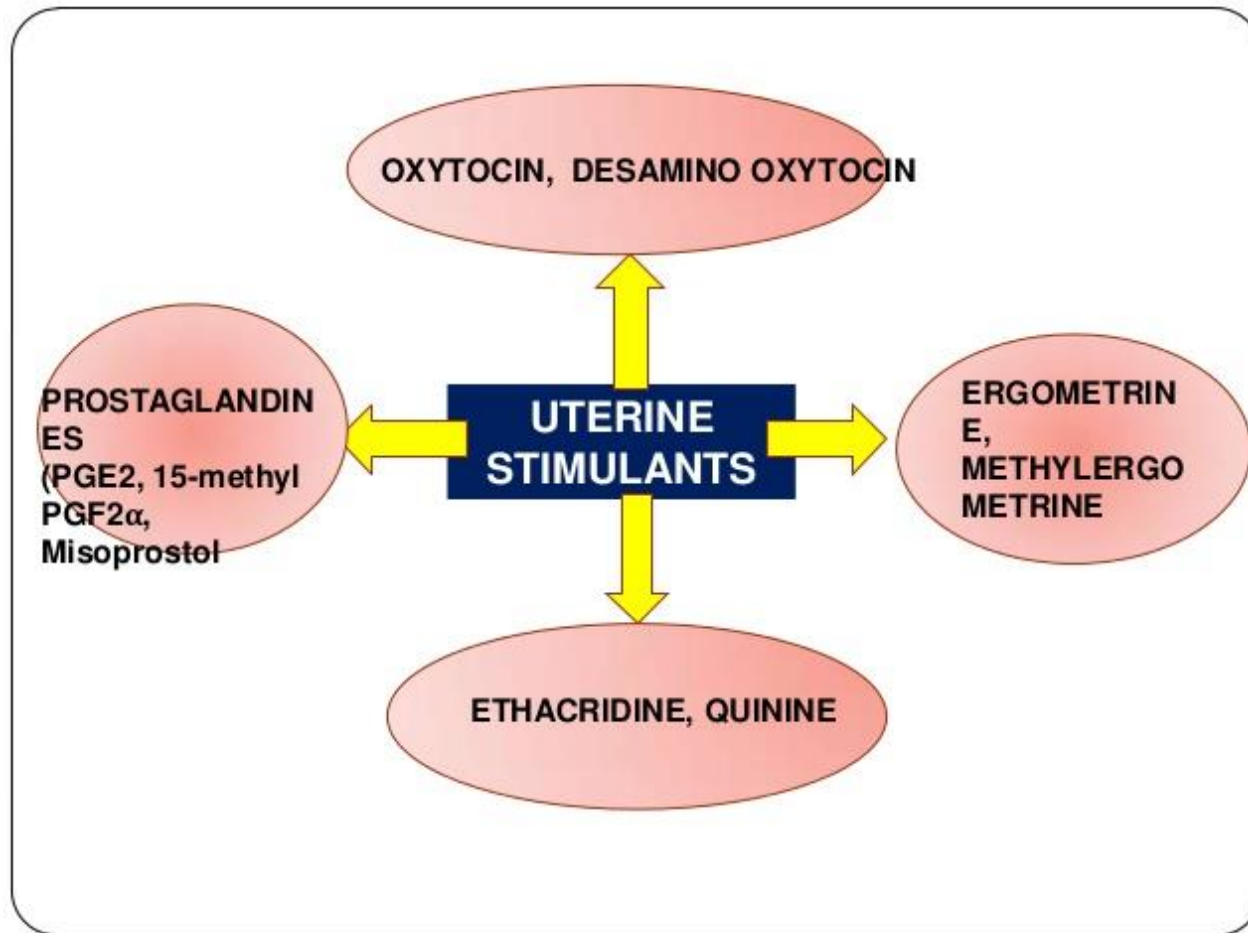
- Uterus has mainly 2 tissues-
- 1-Myometrium- muscle tissue- innervated by sympathetic and parasympathetic system
 - 2- Endometrium- inner lining-effected by hormones



Drugs acting on uterus



Uterine stimulants



Oxytocin

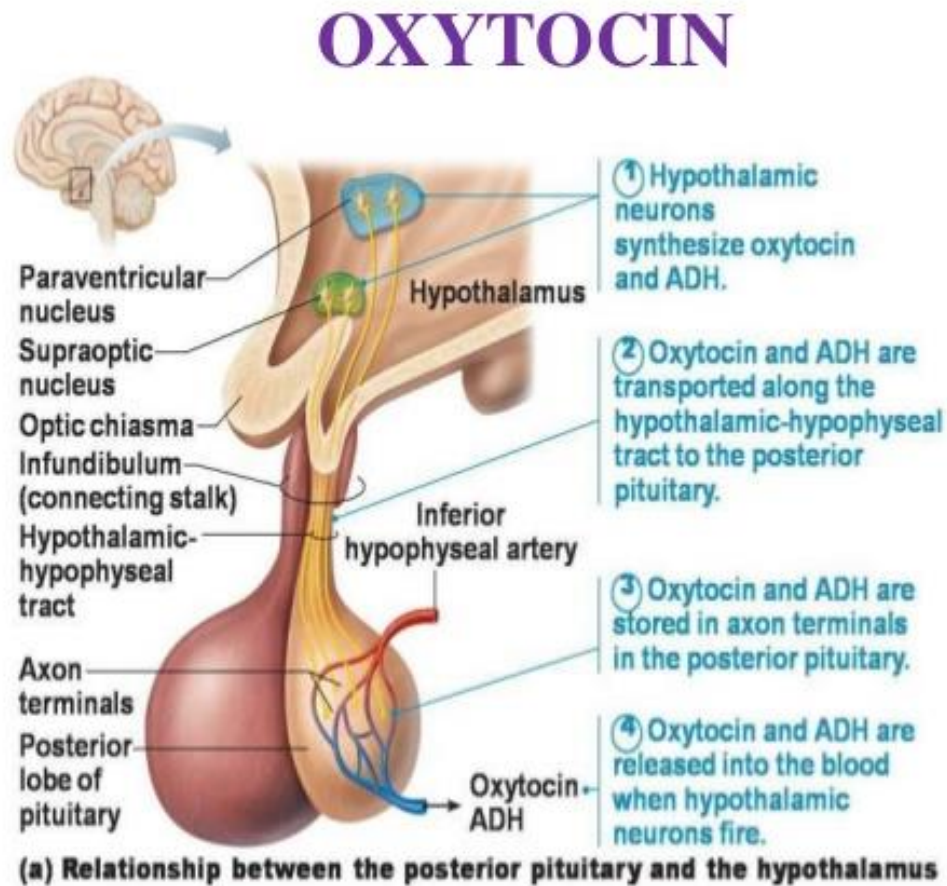
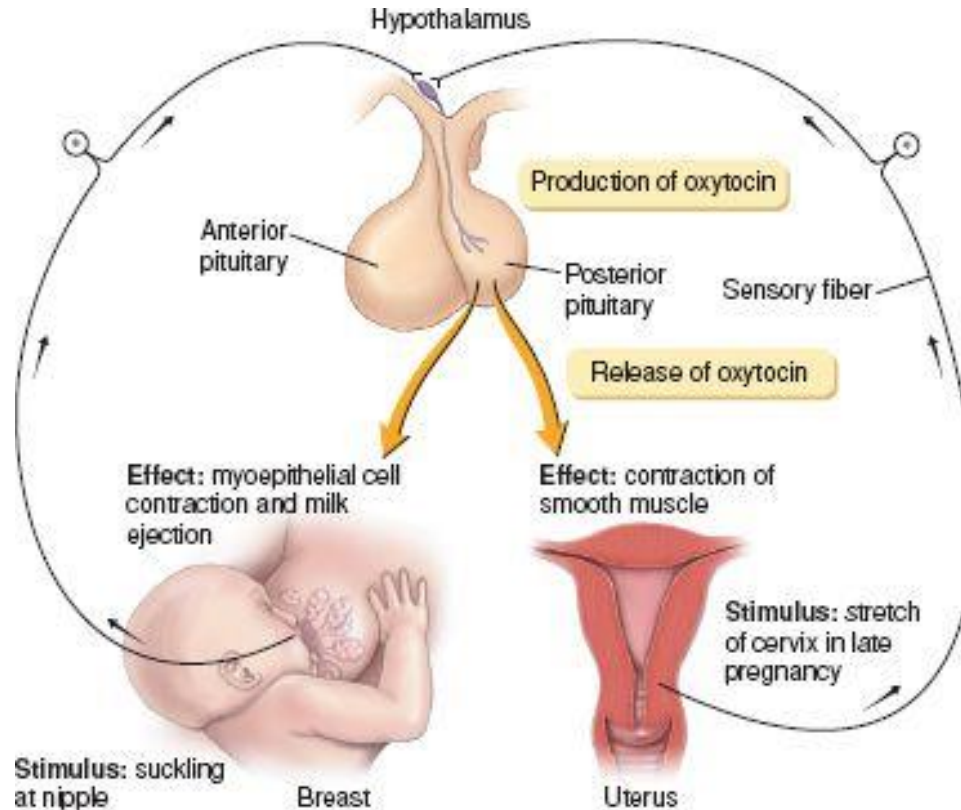


Figure 16.5a

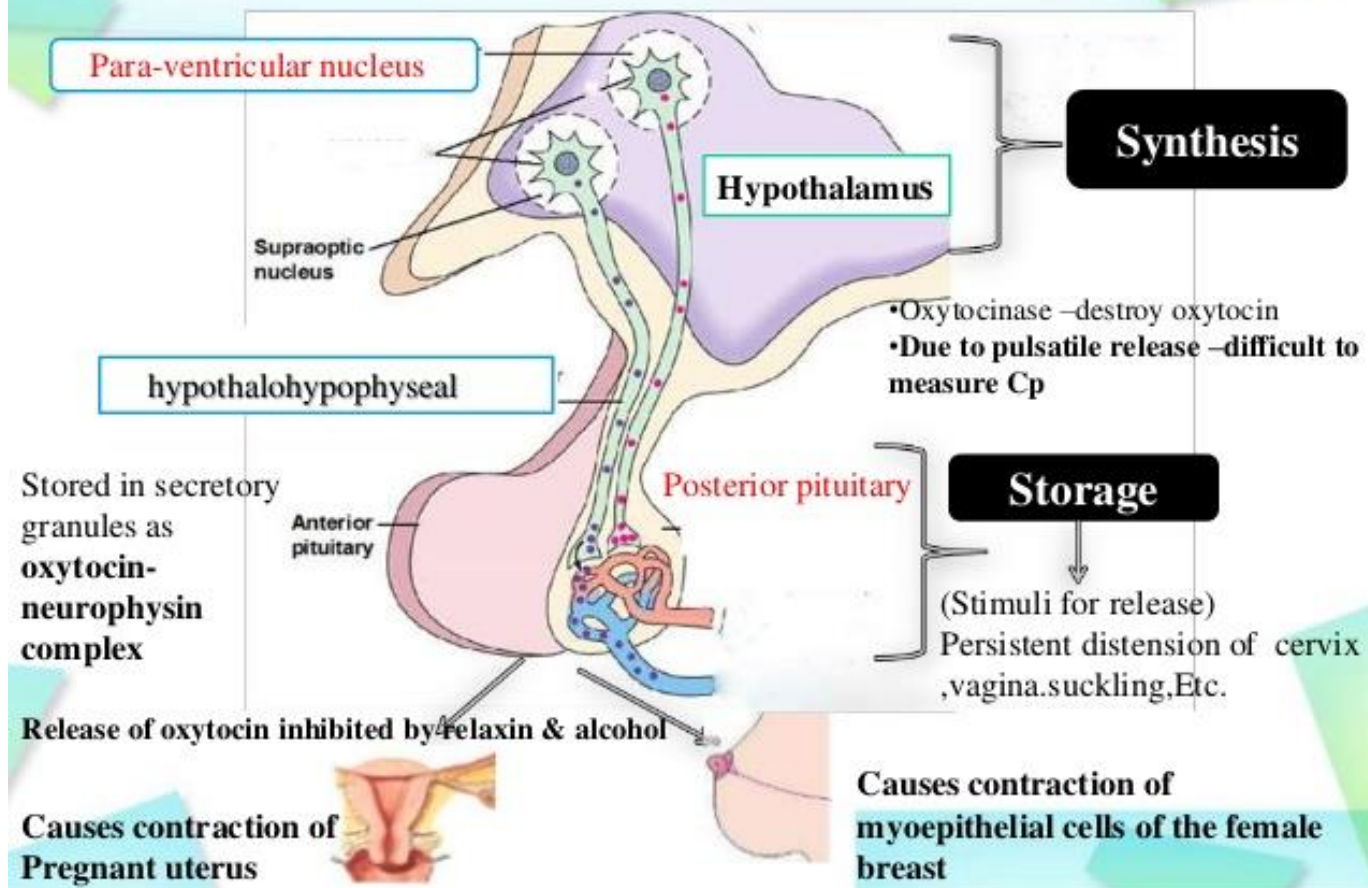
Oxytocin

- Even though oxytocin and ADH are released by common pathway but they are released with different appropriate stimuli
- Oxytocin- predominant action on myometrium
- ADH- Predominant antidiuretic action
- Oxytocin in addition is also synthesized by corpus luteum of ovary, foetal membrane and uterus

oxytocin



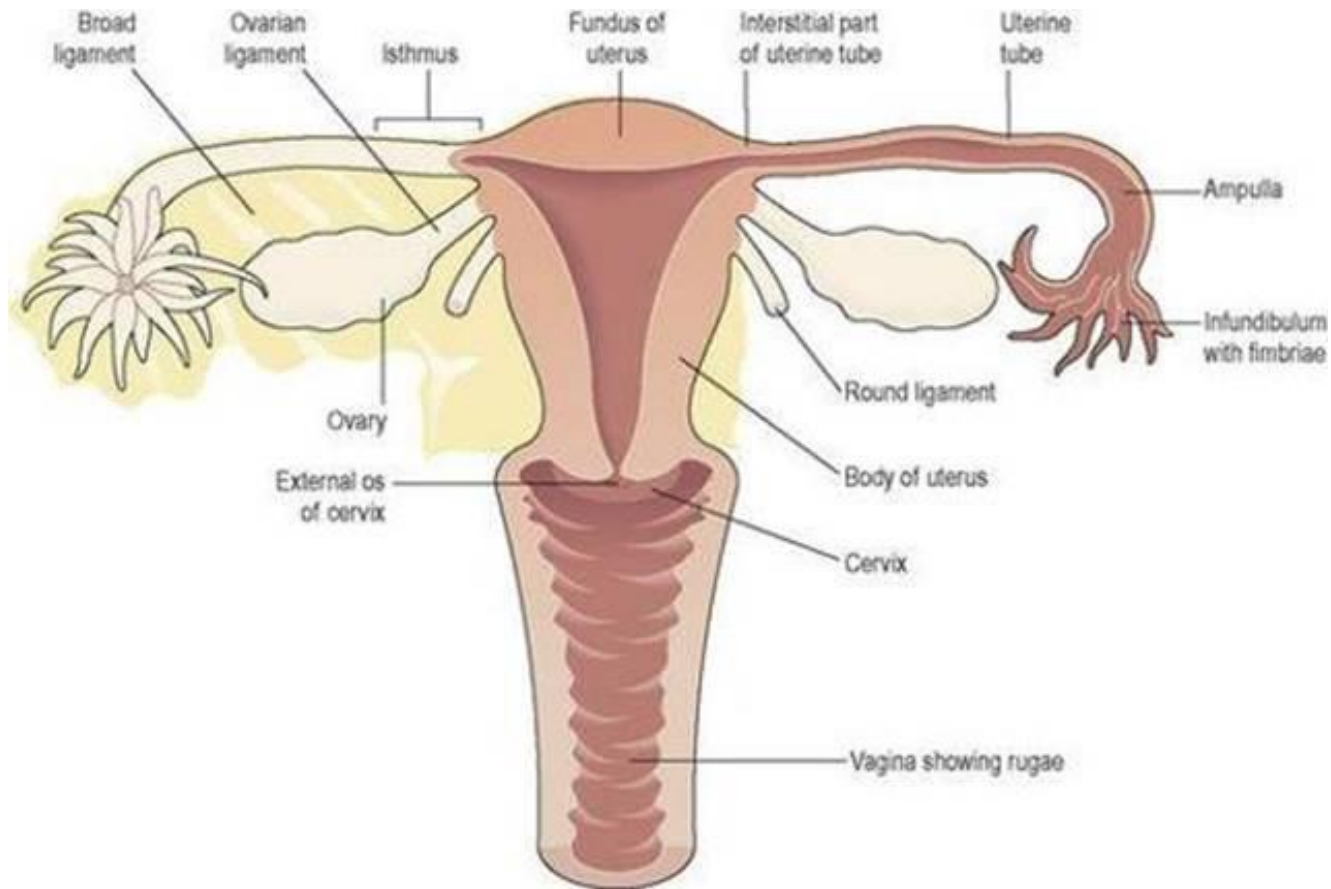
Synthesis, storage and release of Oxytocin



Oxytocin

- Release pattern is pulsatile in nature
- Maximum secretion occur due to persistent distension of cervix and vagina
- Destroyed by oxytocinase
- Release is inhibited by relaxin released from ovary

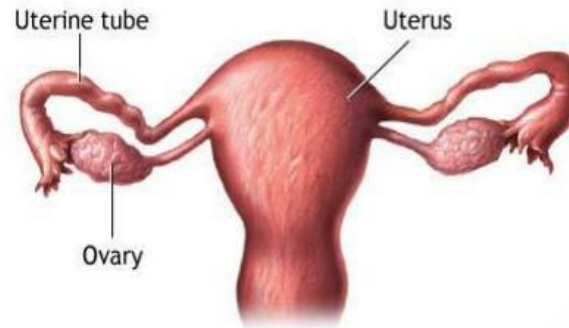
Anatomy of uterus



Pharmacology of oxytocin

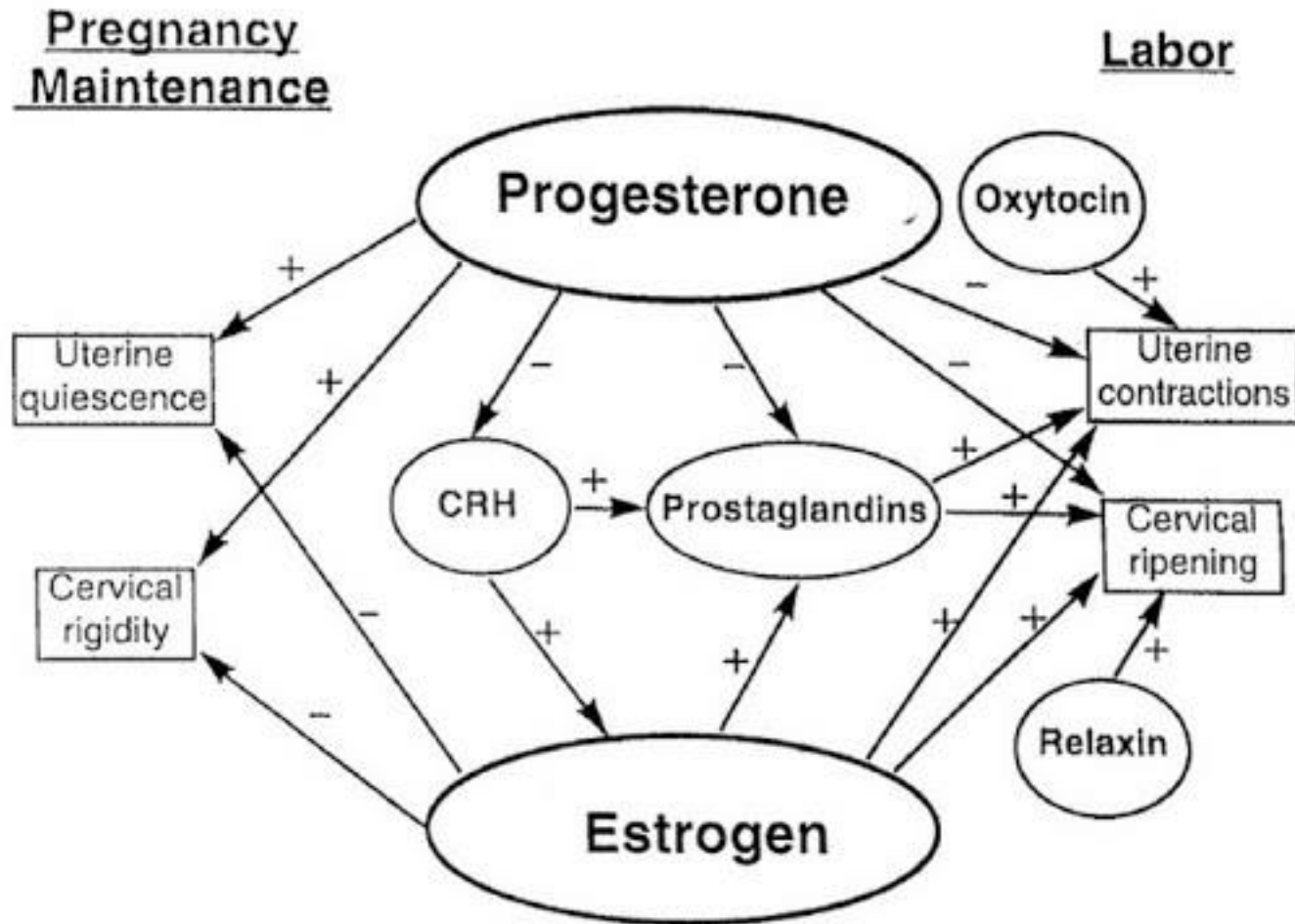
- Uterus-
- Increase in force and frequency of contraction
- Increase contraction only in fundus and body of uterus
- No effect on lower segment of uterus
- End effect is propulsive movement observed during labour

Uterine response to Oxytocin



- Receptors to oxytocin increase in pregnancy; max @ term @ labor
- There is a finite number of oxytocin receptors in the uterus
- Oxytocin infusion during labor down-regulates receptors

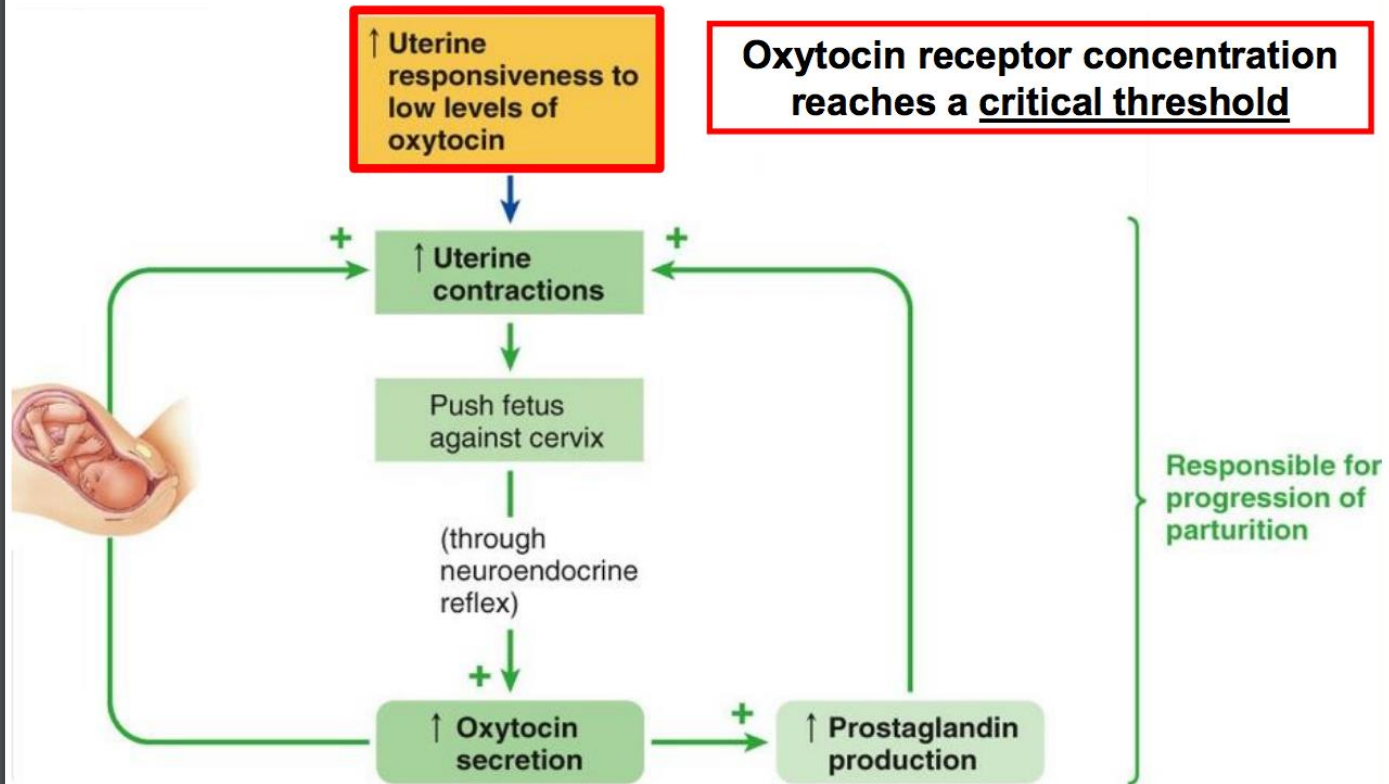
Hormonal function in pregnancy and labour



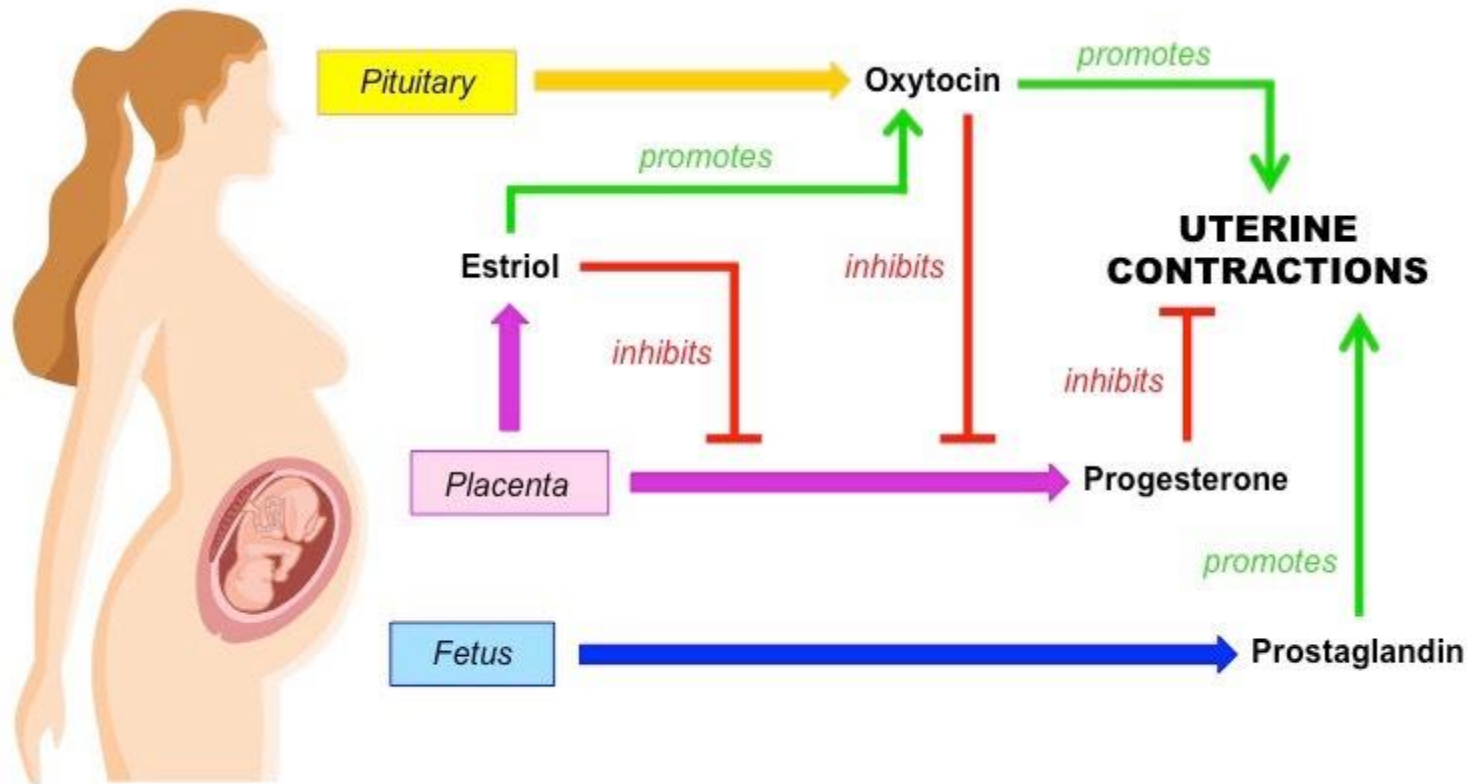
Effect of Oxytocin at various stages of pregnancy

- Minimal in nonpregnant and 1st trimester of pregnancy
- Start increasing from second trimester
- Maximum sensitivity during labour

Role of Oxytocin



Parturition



parturition

- During pregnancy increased level of progesterone decreases sensitivity of oxytocin receptor and keeps uterus in relaxed stage
- At parturition there is increased estrogen release and reduction in progesterone
- Leads to increased release of oxytocin and sensitivity of its receptor
- Increased release of pg from foetal tissue

Physiological role of oxytocin

- Induction of labour
- Milk ejection reflex

Therapeutic uses of oxytocin

- Induction/ augmentation of labour- IV infusion. Rate of infusion to be adjusted based on monitored uterine contractions
- Post partum haemorrhage. high dose to be administered immediately after delivery of foetus- ergometrin is better
- Breast engorgement- used via nasal spray

Contraindications to oxytocin

- cephalopelvic disproportion
 - Abnormal foetal presentation
 - Foetal distress
 - Prematurity
 - Factors predisposing uterine rupture
-
- Always dose to be adjusted monitoring the uterine contractions

Other oxytocin like agents

- Desaminooxytocin- used orally or nasal spray in breast engorgement
- Used in
- case of hypertension where oxytocin may increase BP, PPH
- Carbetocin- used IM in PPH, no antidiuretic effect

Ergot alkaloids

- Ergometrin and methyl ergometrin has mainly uterine effect
- Action-
- Uterus-
- minimum effect on nonpregnant uterus
- Maximum sensitivity at full term pregnant uterus
- Causes contraction of entire uterus so no propulsive activity
- Low dose causes rhythmic contraction with a period of relaxation
- Moderate dose tetanic contraction without relaxation

Uses of ergots

- PPH- .2-.3 mg IM after delivery as prophylactic
Higher dose if PPH is already set in
- Uterine involution- 0.125- 0.25 oral per day X 7 days

Prostaglandin analogues

- Effect on uterus
- Increase in tone and amplitude of uterine contraction
- Pregnant uterus is more sensitive than nonpregnant stage, maximum sensitivity at full term
- Causes ripening of cervix

Uses of Prostaglandins

- Induction of labour in uterine inertia- PGE2- oral / PGF2a- intravaginal
- Cervical ripening
- PPH- PGE2 IM if no response to ergot or oxytocin
- Midtrimester abortion- Intra-amniotic route, intravaginal

Uterine relaxants-tocolytics

- Uses
- To prevent preterm labour
- Agents-
- B2 agonist- solbutalol, isousprine, ritodrine
- Calcium channel blockers- nifedipine, nicardipine
- Magnesium sulphate
- Oxytocin antagonist- atosiban
- Pg inhibitors- aspirin, indomethacin

Uses of uterine relaxants

- Beta 2 agonist not preferred due to its ADRs
- CCB- Preferred over sympathomimetics
- Magnesium sulphate- IV bolus followed by IV infusion- not a preferred agent due to cardiovascular and CNS toxicity
- Oxytocin antagonist- atosiban- more effective than CCB and sympathomimetics
- Used IV bolus followed by infusion not exceeding 48 hrs