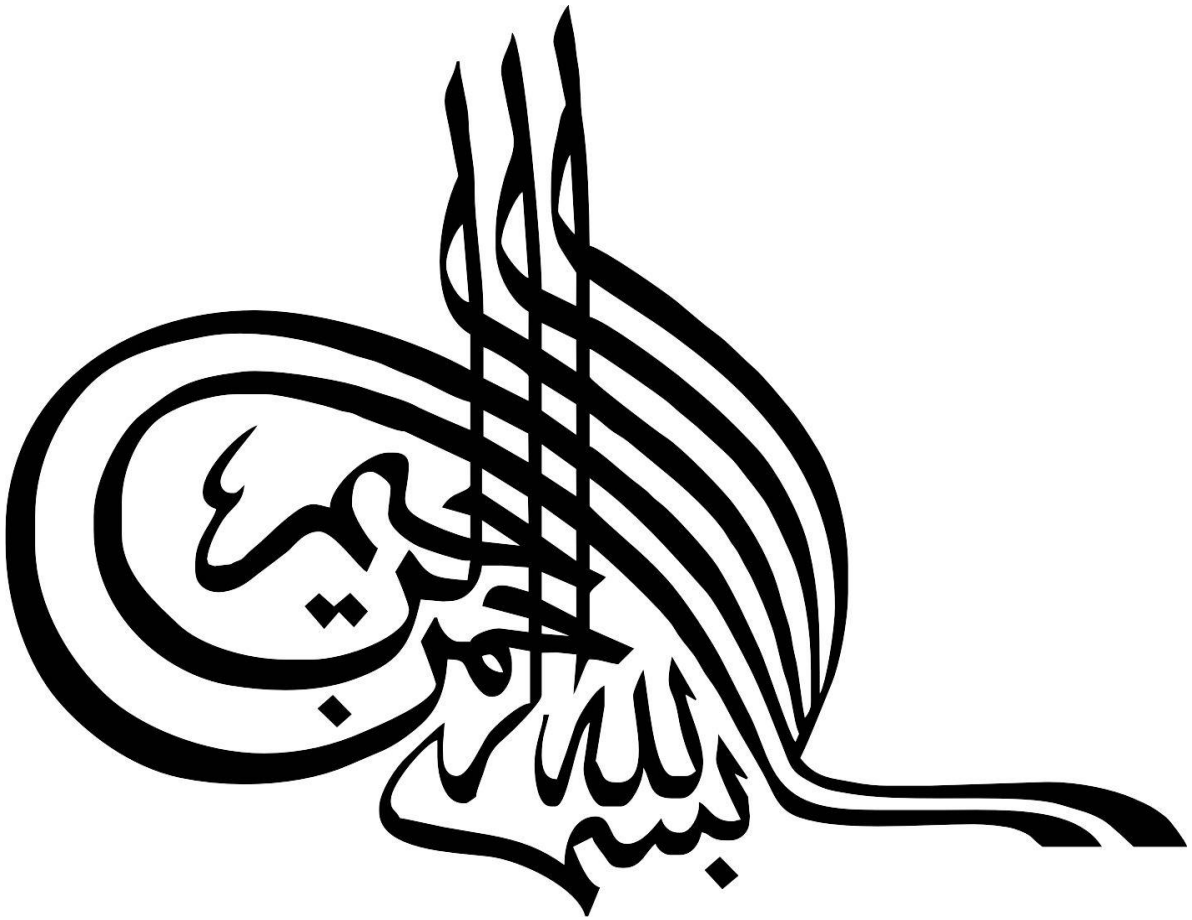

بسم الله الرحمن الرحيم

# CC PI

**ED**

**Libido**

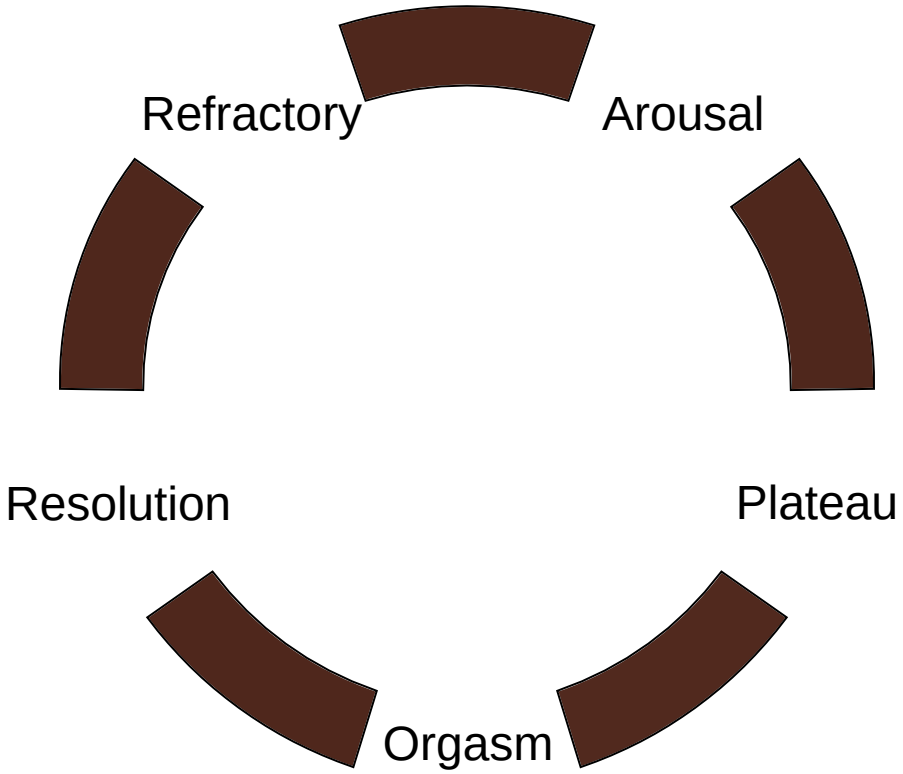
**Premature Ejaculation**

**Anorgasmia**

**Anejaculation**

# Male Sexual Response Cycle

- **Arousal**
- **Plateau**
- **Orgasm**
- **Resolution**
- **Refractory Period**



**Male sexual response curve**

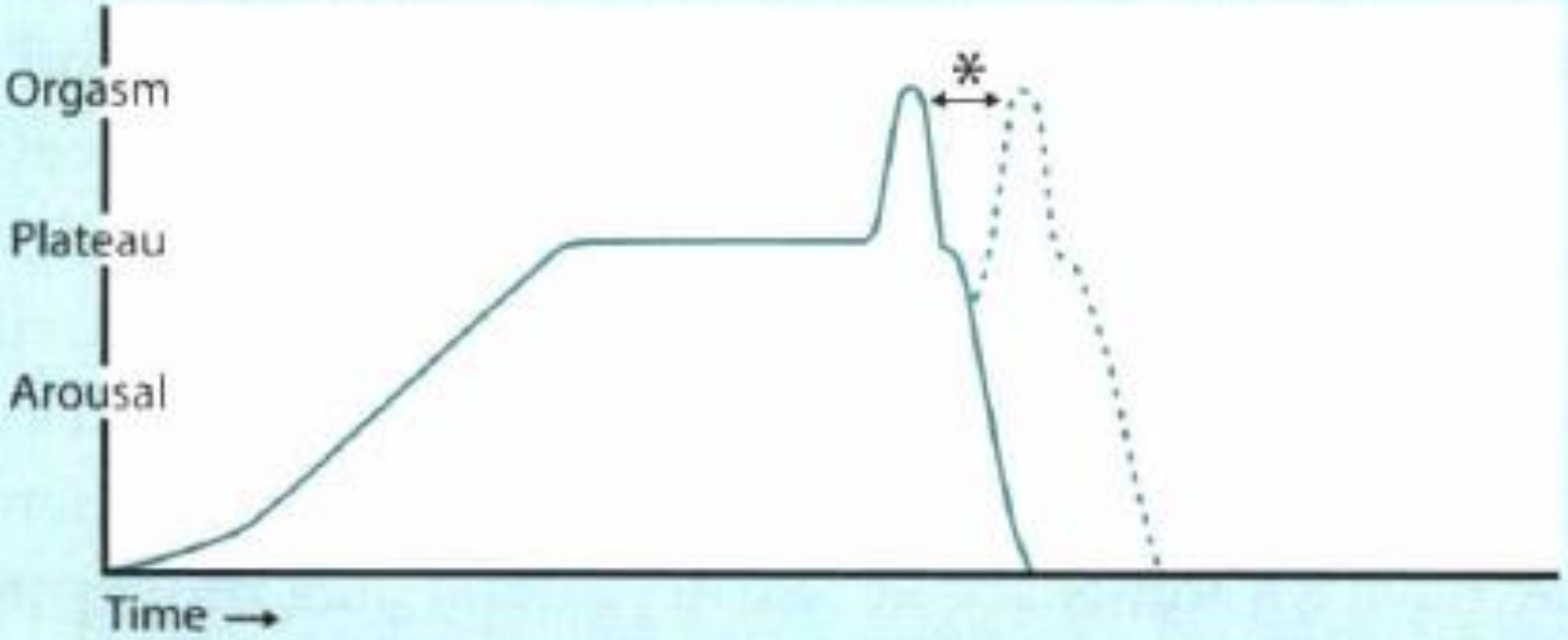
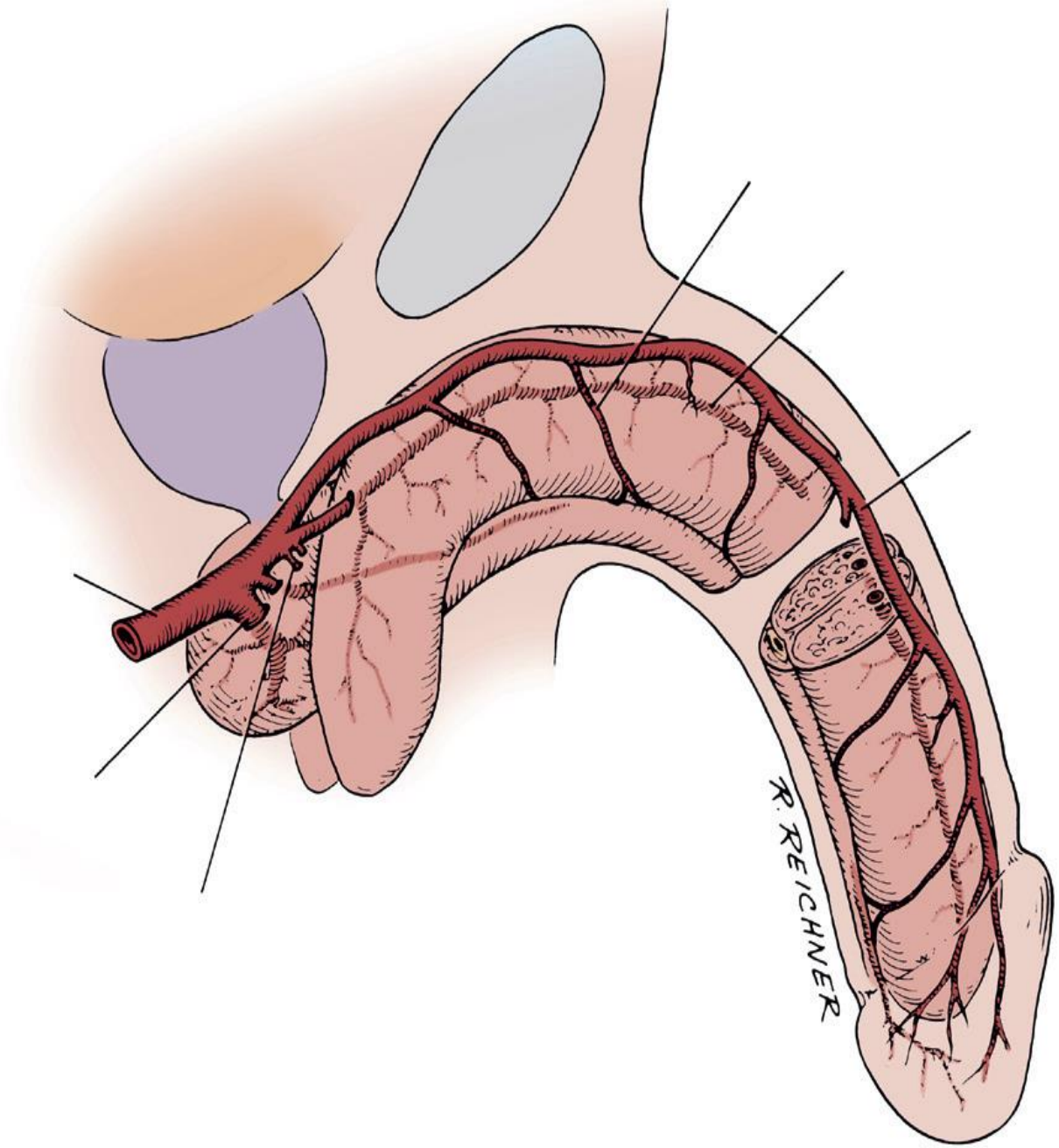



FIGURE 1. Male sexual response curve. From Hawton, K. (1985) *Sex Therapy: A Practical Guide*. Reprinted by permission of Oxford University Press.

- **Erectile Dysfunction**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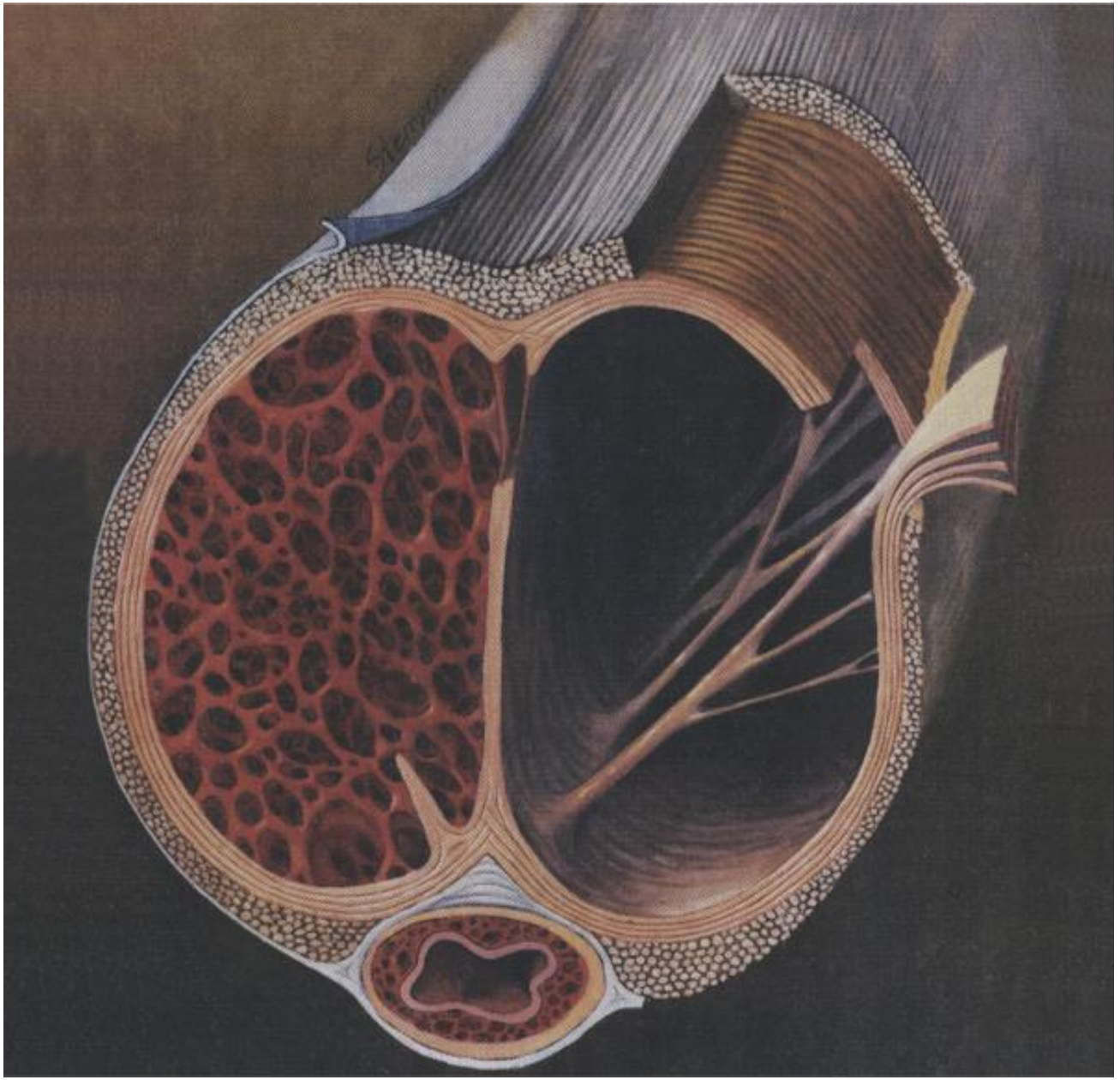
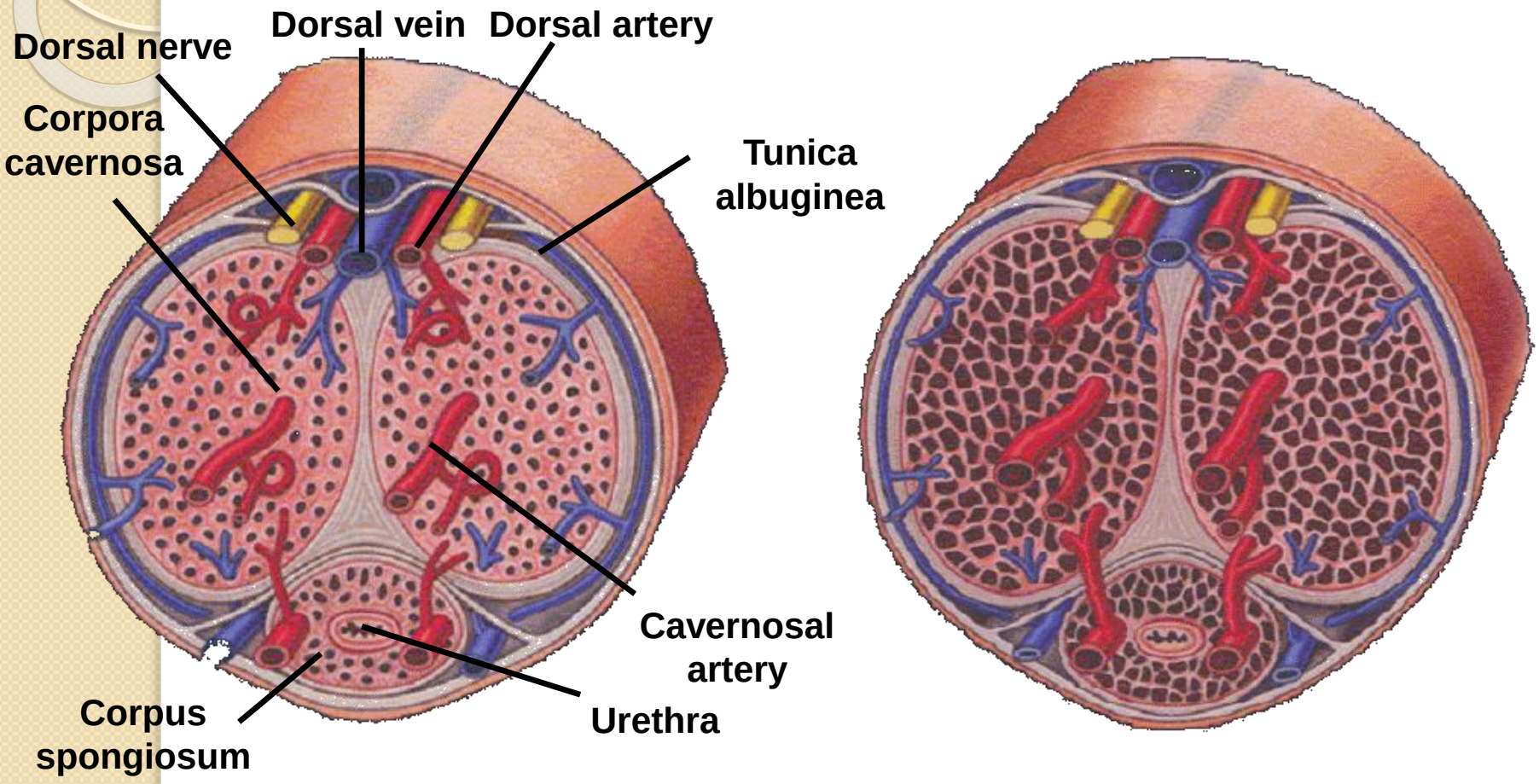
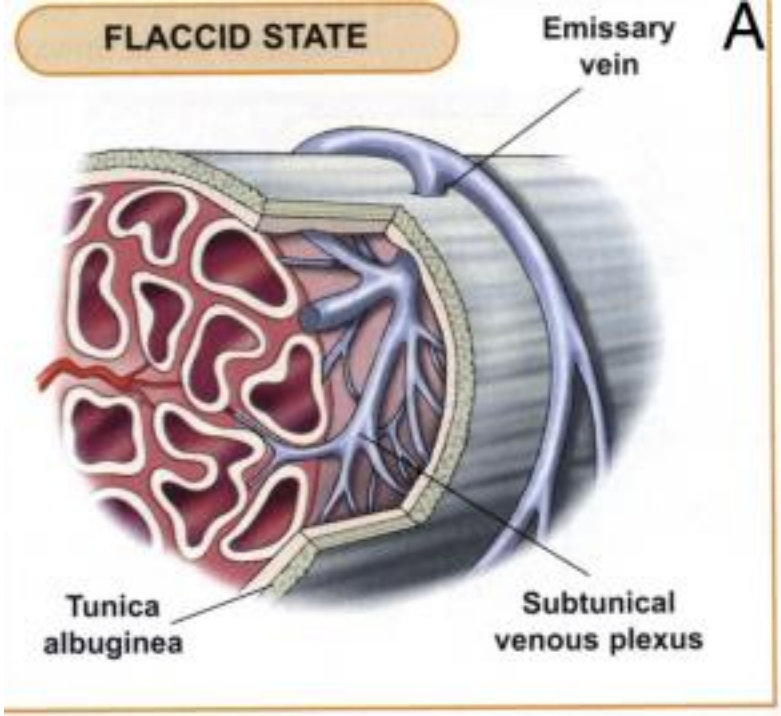
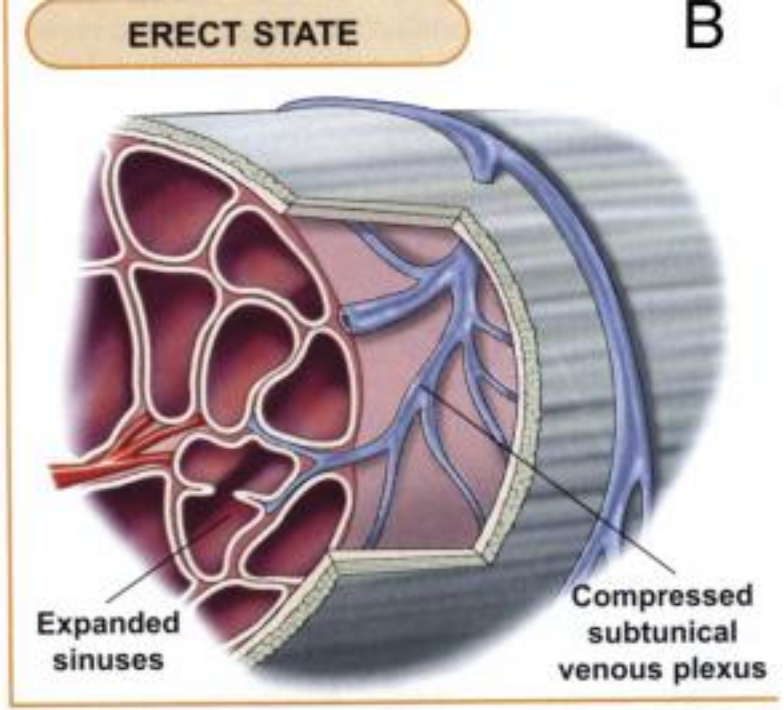


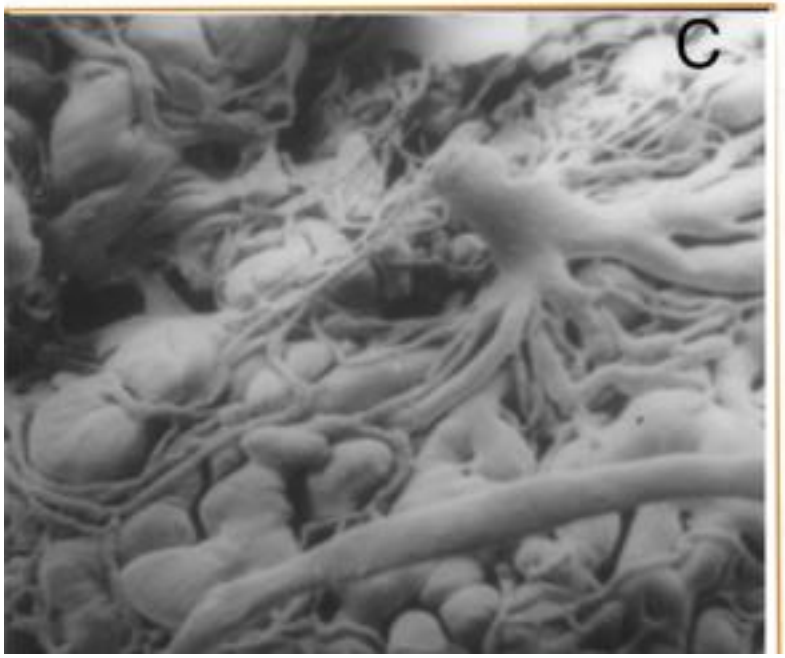
# Mechanism of Erection

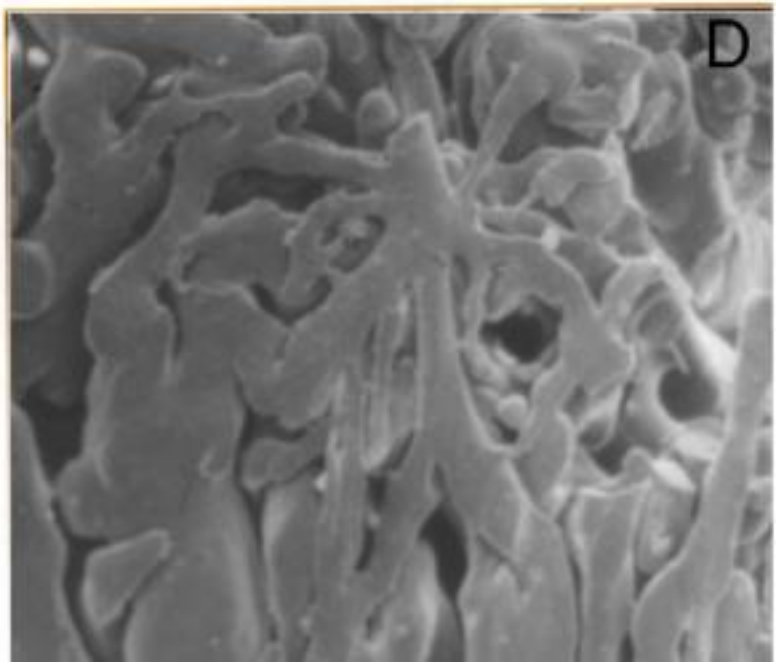


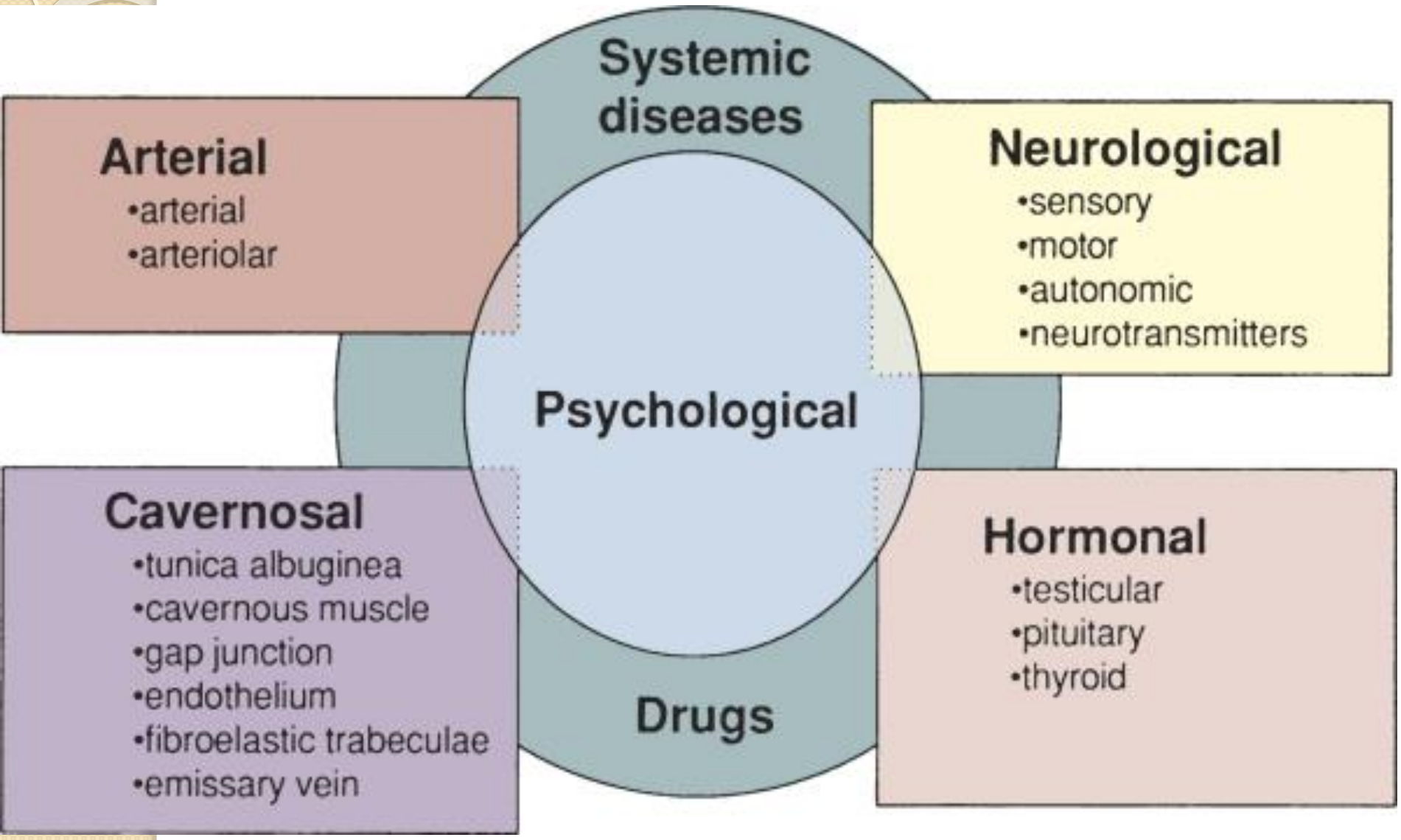

National Erectile Dysfunction Foundation. *Understanding Erectile Dysfunction.* 1998.


FLACCID STATE
A
Emissary vein
Tunica albuginea
Subtunical venous plexus


ERECT STATE
B
Expanded sinuses
Compressed subtunical venous plexus


C


D


Systemic diseases
Arterial
•arterial
•arteriolar
Neurological
•sensory
•motor
•autonomic
•neurotransmitters
Psychological
Cavernosal
•tunica albuginea
•cavernous muscle
•gap junction
•endothelium
•fibroelastic trabeculae
•emissary vein
Hormonal
•testicular
•pituitary
•thyroid
Drugs

# Sexual History

-Privacy

-to ensure patient trust, comfort, and openness

-Partner

-severity, onset, and duration of the problem

# Role of Partner Interview

- **The partner may be the source of important information that guides optimal intervention and response to therapy. The partner may share a new and different perspective on sexual issues affecting the couple, might provide insight into the quality of the couple's relationship, and might relate his/her role in the sexual dysfunction** (Speckens et al, 1995; Fisher et al, 2009).
- **The partner's involvement and attitude may also impact the patient's initiation of and adherence to therapy (Jackson and Lue, 1998; Fisher et al,.(٢٠٠٥)**

ناتوانی جنسی عبارت است از عدم توانایی در ایجاد و حفظ نعوظ آلت جهت انجام یک مقاربت جنسی

رضایت بخش که مدت سه ماه از شروع آن گذشته باشد.

اولین بار مصری ها دو هزار سال قبل از میلاد در مورد ناتوانی جنسی صحبت کرده اند

# Incidence and Epidemiology

- The **increasing incidence** of impotence with age was noted by Kinsey and colleagues in 1948:
- only 1 of 50 men at age 40 years,
- but 1 in 4 men by age 65.

- In 1990, Diokno and colleagues reported that 35% of married men 60 years old and older experienced erectile impotence.

# PMH

- comorbid medical conditions, which include type 2 diabetes mellitus, obesity, cardiovascular disease, hypertension, dyslipidemia, depression, and prostate disease/benign prostatic hyperplasia, hypogonadism, thyroid disorders, trauma, radiation, pelvic surgery

# Medical History, goals

(1) to evaluate the potential role of underlying medical conditions (atherosclerosis, diabetes) and comorbidities (depression); smoking

(2) to differentiate between potential organic and psychogenic causes

(3) to assess the potential role of medication (e.g., some may cause or contribute to the patient's sexual difficulties and some, such as nitrates, may be contraindications for specific treatments, such as phosphodiesterase inhibitors).

# *Risk Factors*

- general health status,
- Diabetes mellitus,
- cardiovascular disease,
- concurrence of other genitourinary disease,
- psychiatric/psychological disorders, other chronic diseases,
- and sociodemographic conditions.

# Neurogenic

- any disease or dysfunction affecting the brain, spinal cord, and
- cavernous or pudendal nerves can induce dysfunction.
- Parkinson disease, stroke, encephalitis, or
- temporal lobe epilepsy, are often associated with ED.
- Other brain lesions associated with ED are tumors, dementias, Alzheimer disease,
- multiple system atrophy, and trauma.

# predictors for the development of ED

- age, lower education, diabetes, cardiovascular disease, hypertension,
- cigarette smoking, passive exposure to cigarette smoke, and overweight condition

- In a study of race/ ethnicity and socioeconomic status in 2301 men 30 to 79 years old from Boston, it was reported that men in the **low** socioeconomic status category had a greater than twofold increase in risk of ED (adjusted odds ratio 2.26, 95% confidence interval 1.39, 3.66).

# Classification

- Many classifications have been proposed. Some are based on the **cause** (diabetic, iatrogenic, traumatic), and some are based on the **neurovascular mechanism** (failure to initiate [neurogenic],
- failure to fill [arterial], and
- failure to store [venous])
- (Goldstein, personal communication, 1990).

# Psychogenic

- **Two possible mechanisms have been proposed to explain the inhibition of erection in psychogenic dysfunction:**
- ***direct inhibition of the spinal erection* center by the brain as an exaggeration of the normal suprasacral inhibition** (Steers, 2000)
- **and *excessive sympathetic outflow* or elevated peripheral catecholamine levels, which may increase penile smooth muscle tone to prevent its necessary relaxation.**

## ORGANIC

I. Vasculogenic
   A. Arteriogenic
   B. Cavernosal
   C. Mixed
II. Neurogenic
III. Anatomic
IV. Endocrinologic

## PSYCHOGENIC

I. Generalized
   A. Generalized unresponsiveness
      1. Primary lack of sexual arousability
      2. Aging-related decline in sexual arousability
   B. Generalized inhibition
      1. Chronic disorder of sexual intimacy
II. Situational
   A. Partner-related
      1. Lack of arousability in specific relationship
      2. Lack of arousability owing to sexual object preference
      3. High central inhibition owing to partner conflict or threat
   B. Performance-related
      1. Associated with other sexual dysfunction (e.g., rapid ejaculation)
      2. Situational performance anxiety (e.g., fear of failure)
   C. Psychological distress or adjustment related
      1. Associated with negative mood state (e.g., depression) or major life stress (e.g., death of partner)

# drug

- drug include **antihypertensive** drugs, such as thiazide diuretics and β-adrenoceptor antagonists, and **psychotherapeutic** drugs, particularly selective serotonin reuptake
- inhibitor (SSRI) antidepressants

| CLASS | SPECIFIC AGENTS |
| --- | --- |
| Antihypertensives | Thiazide diuretics, nonselective β-blockers |
| Antidepressants | Tricyclics; selective serotonin reuptake inhibitors |
| Antipsychotics | Phenothiazines |
| Antiandrogens | Nonsteroidal (flutamide); steroidal (cyproterone acetate); luteinizing hormone-releasing hormone analogues |
| Antiulcer drugs | Histamine $H_2$ receptor antagonists (cimetidine) |
| Cytotoxic agents | Cyclophosphamide, methotrexate |
| Opiates | Morphine |

# Psychosocial History

-Sexual dysfunction may affect the patient's self-esteem and coping ability, as well as social relationships and occupational performance

-In many cases, organic and psychogenic factors often coexist

# Physical Examination

-body habitus (secondary sexual characteristics),

-assessment of the cardiovascular, neurologic, and genital systems,

-with particular focus on the genitalia and secondary sex characteristics

-micropenis, chordee, Peyronie's plaque

-Kallmann's or Klinefelter's, may present with obvious physical signs of hypogonadism

-degenerative neurologic disorders or diabetes :

peripheral neuropathy

genital and perineal sensation ,BCR

| TEST | RECOMMENDATION* |
|---|---|
| **VASCULAR** | |
| Dynamic infusion cavernosometry and cavernosography (DICC) | B |
| Intracavernous injection pharmacotesting (ICI) | B |
| ICI and color duplex ultrasound | B |
| Arteriography | C |
| Computed tomography angiography | D |
| Magnetic resonance imaging (MRI) | D |
| Infrared spectrophotometry | D |
| Radioisotope penography | D |
| **AUDIOVISUAL SEXUAL STIMULATION (AVSS)** | |
| Independent or jointly with vascular testing | C |
| With or without: pharmacologic stimulation (oral, ICI) | C |
| **NEUROPHYSIOLOGIC** | |
| Nocturnal penile tumescence and rigidity (NPTR) | B |
| Erectiometer/rigidometer | D |
| Biothesiometry (vibratory thresholds) | C |
| Dorsal nerve conduction velocity | C |
| Bulbocavernosus reflex latency | B |
| Plethysmography/electrobioimpedance | D |
| Corpus cavernosum electromyography (CC-EMG) | C |
| MRI or positron emission tomography scanning of brain (during AVSS) | D |

# Evidence-Based Tests for Organic Erectile Dysfunction and Recommendations

# Laboratory Testing

serum chemistries, fasting glucose, complete blood count, lipid profile, and serum total testosterone. (LH)

Prolactin measurement may also be done for hormonal assessment.

Thyroid function tests may be performed at the clinician's discretion

-PSA >50 FH

# Review of Findings and Physician/Patient Dialogue

-stress, marital conflict,

-cigarette smoking, alcohol abuse, obesity, and bicycle riding, trauma, surgery (RP),

-drugs, including psychotropic and cardiovascular agents

# Psychophysiologic Evaluation

-Nocturnal Penile Tumescence

-Audiovisual and Vibratory Stimulation

# Nocturnal penile tumescence (NPT)

-80% of NPT occurs during rapid eye movement (REM) sleep

-peaks at the age of puberty,

-when as much as 20% of total sleep

**NPT is recorded in conjunction with EEG, electro-oculography, and EMG, with nasal air flow, and with oxygen saturation to document REM sleep and the presence or absence of hypoxia (sleep apnea)**

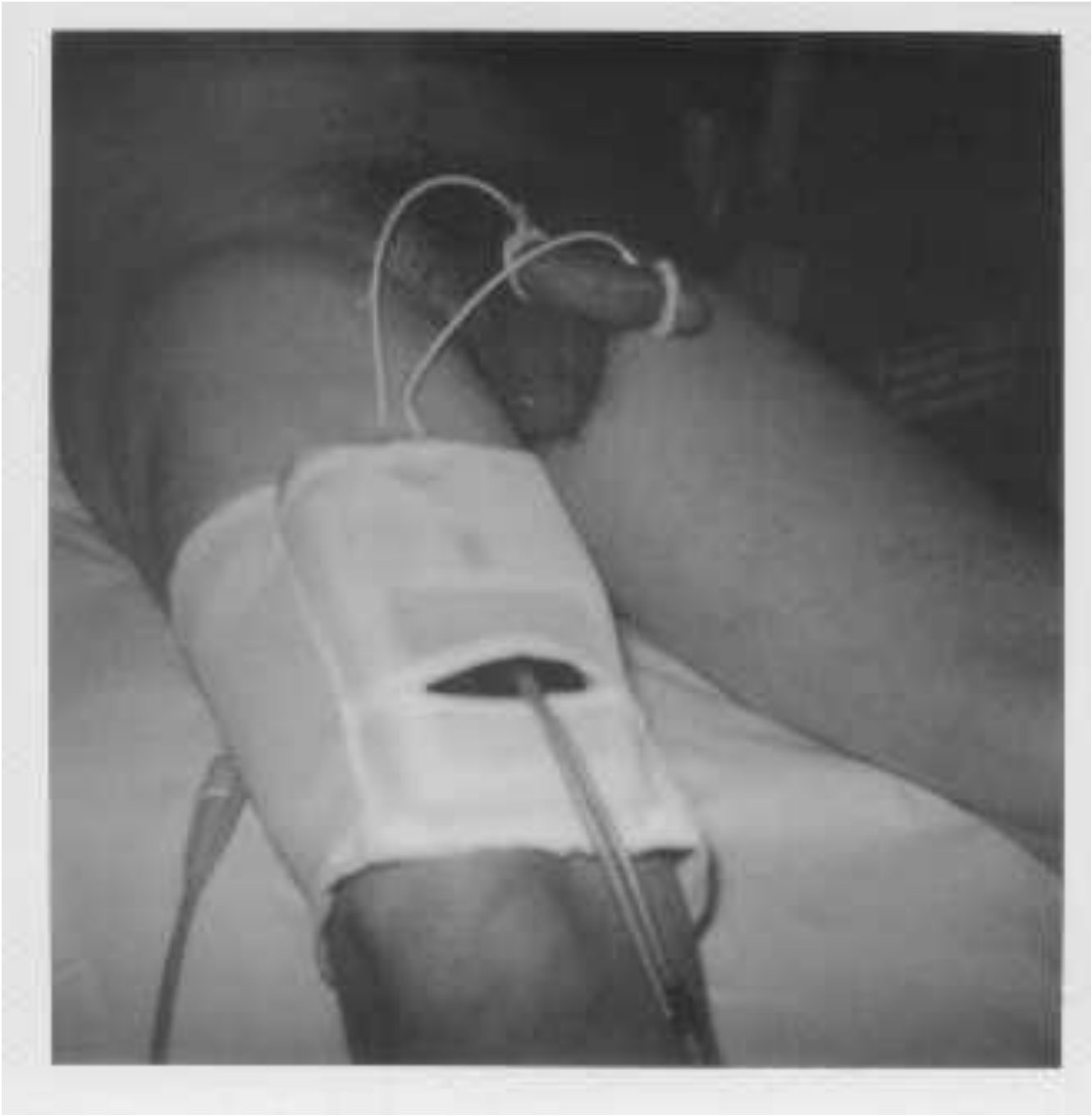
# RigiScan

nocturnal monitoring devices that measure:

1) the number of episodes,
2) tumescence (circumference change by strain gauges),
3) maximal penile rigidity,
4) and duration of nocturnal erections

vaginal penetration:500g, complete rigidity 1.5


DJO/CMED
RIGISCAN
Plus



-Radial rigidity >70% represents a nonbuckling erection,

-and a rigidity of < 40% represents a flaccid penis

The number of erections considered normal is 3-6/8h

lasting an average of 10 to 15 minutes each

- include four to five erectile episodes per night, mean duration longer than 30 minutes, an increase in circumference of more than 3 cm at the base and more than 2 cm at the tip, and maximal rigidity greater than 70% at both base and tip (Cilurzo et al,)١٩٩٢

# Psychological Evaluation

# Differentiation between Psychogenic and Organic ED (NPT)

| *Characteristic* | *Organic* | *Psychogenic* |
|---|---|---|
| Onset | Gradual | Acute |
| Circumstances | Global | Situational |
| Course | Constant | Varying |
| Noncoital erection | Poor | Rigid |
| Psychosexual problem | Secondary | Long history |
| Partner problem | Secondary | At onset |
| Anxiety and fear | Secondary | Primary |

# Neurologic Evaluation

# Somatic Nervous System

**Biothesiometry**

**Sacral Evoked Response-**
**Bulbocavernosus Reflex Latency**

**Dorsal Nerve Conduction Velocity**

**Genitocerebral Evoked Potential**

# Autonomic Nervous System

**Heart Rate Variability and Sympathetic Skin Response**

**Penile Thermal Sensory Testing**

**Corpus Cavernosum Electromyography (CC-EMG) and Single Potential Analysis of Cavernous Electrical Activity**

# Hormonal Evaluation

-a significant increase of hypogonadism with age

**The diurnal pattern has a peak level in the early morning and a nadir in the evening**

**T: 300-1000ng/dl 3-10ng/ml**

**#2% : unbound (free testosterone)**

**#30% is bound to SHBG**

**#The remainder is bound with lower affinity to albumin**

**estrogens, thyroid hormone, and aging :**

**increase SHBG and decrease bioavailable T**

**exogenous androgens, GH, and obesity:**

**depress SHBG and increase the free T**

# Hyperprolactinemia

-men with low sexual desire,

-gynecomastia,

-serum T< 4 ng/mL

# Hyperprolactinemia causes:

- **hypogonadism by suppression of gonadotropin-releasing hormone from the hypothalamus, which *impairs the pulsatile LH secretion* required for serum testosterone production by the gonads**
- **(Morales et al, 2004).**

- Offending drugs, such as estrogens, morphine, sedatives, and neuroleptics, should be discontinued

- (Molitch, 2008).

# *Serum Thyroid Function Tests*

- **Hyperthyroidism is associated with ED, possibly by increasing aromatization of testosterone into estrogen (which raises levels of SHBG) (Morales et al, 2004) or**

- **by increasing adrenergic tone (which causes smooth muscle contractile effects or exerts psychobehavioral effects) (Carani et al, 2005).**

# History of ED treatments

- 1960s – sex therapy, counseling
- 1970s – implants, vacuum devices
- 1980s – penile injections
- 1990s – oral medication - Viagra
- 2000s – Cialis, Levitra
- 2010s – gene & stem cell therapies

# Lifestyle Modification

- Reduce fat and cholesterol in diet
- Decrease or limit alcohol consumption
- Eliminate tobacco use and substance abuse
- Weight loss if appropriate
- Regular exercise

- **Medication Change:**
- thiazide diuretics and β-blockers to

**calcium channel blockers and ACEIs**

- **Psychosexual Therapy**

- **Hormonal Therapy**

# Androgen Replacement Therapy

- Indications: **hypogonadism** (<285ng/dl)
- Avoid oral estrogens-increase LFTs
- Injectable – 200mg testosterone (cypionate, enathate, propionate), q2-3 weeks
- Transdermal
  - Patch
  - gel

# Androgen Replacement Therapy

- Avoid in patients with prostate or breast cancer
- Slight increase risk of BPH
- Monitor all patients with annual DRE and PSA
- haematocrit level should be monitored
- Fertility - Azoo

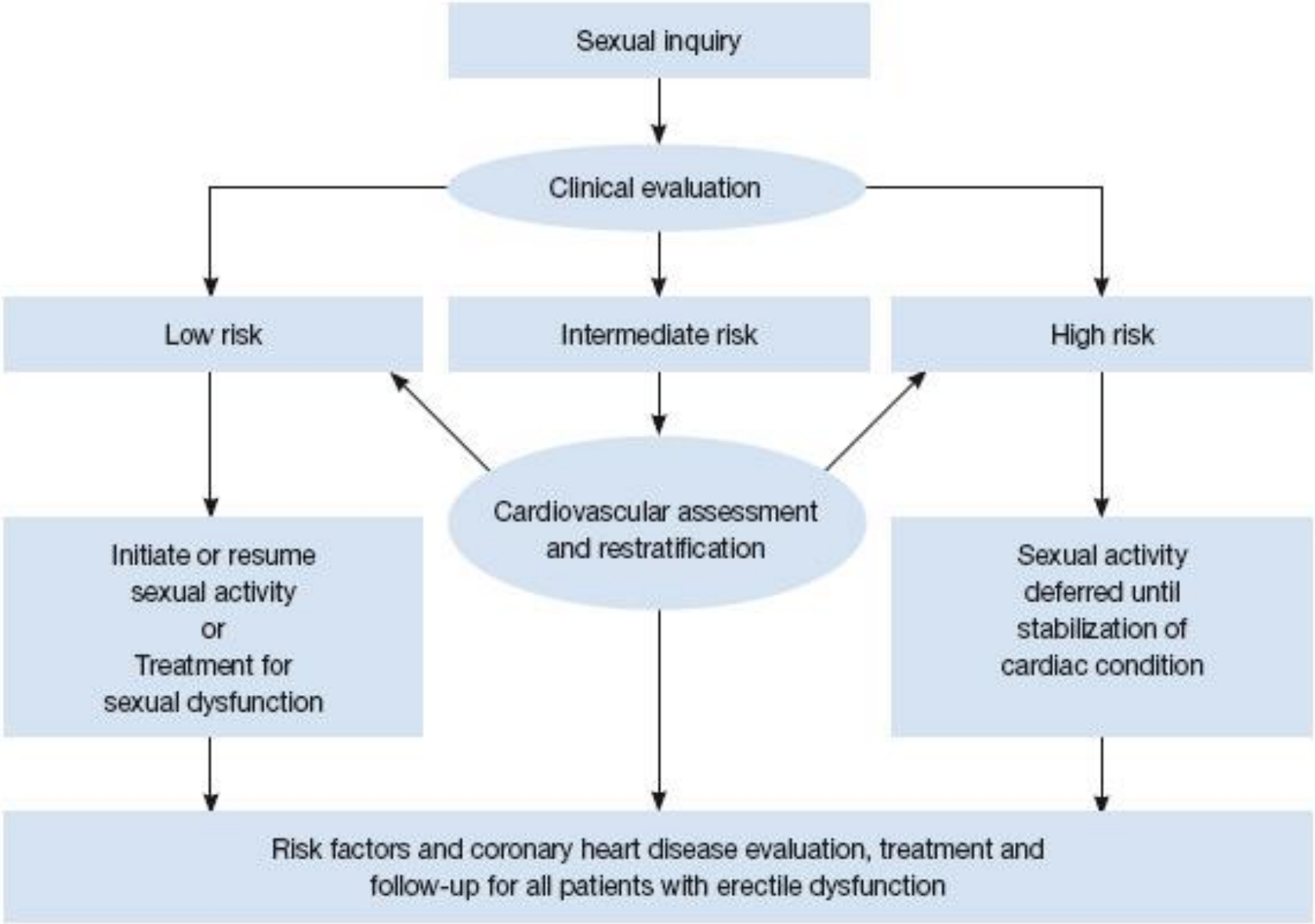
# Testosterone Replacement

- Efficacy of testosterone supplementation is best judged by clinical response rather than a precise testosterone determination

- Current recommendations suggest that a short (e.g., 1-3month) therapeutic trial is justified, and in the absence of a response testosterone administration should be discontinued

- **Injectable:** deep intramuscular injection 150 to 300 mg every 2 to 4 weeks

Figure 2: Treatment algorithm for determining level of sexual activity according to cardiac risk in ED



# Low-risk category

- Asymptomatic, < 3 risk factors for CAD (excluding gender)
- Mild, stable angina (evaluated and/or being treated)
- Uncomplicated previous MI
- LVD/CHF (NYHA class I)
- Post-successful coronary revascularization
- Controlled hypertension
- Mild valvular disease

# Intermediate-risk category

- ≥ 3 risk factors for CAD (excluding gender)

- Moderate, stable angina
- Recent MI (> 2, < 6 weeks)
- LVD/CHF (NYHA class II)
- Non-cardiac sequelae of atherosclerotic disease (e.g. stroke, peripheral vascular disease)

# High-risk category

- High-risk arrhythmias
- Unstable or refractory angina
- Recent MI (< 2 weeks)
- LVD/CHF (NYHA class III/IV)
- Hypertrophic obstructive and other cardiomyopathies
- Uncontrolled hypertension
- Moderate-to-severe valvular disease

# Oral pharmacotherapy

- Sildenafil, launched in **1998** Viagra,
- Tadalafil, February **2003** Cialis,
- Vardenafil, March **2003** Levitra,
- Avanafil, in **2012** Stendra,

- **PDEI**

**TABLE 27-7** Comparison of Four Phosphodiesterase Type 5 Inhibitors Currently Available in the United States

| | SILDENAFIL | VARDENAFIL | TADALAFIL | AVANAFIL |
|---|---|---|---|---|
| Cmax (ng/mL) | 450 | 20.9 | 378 | 2153 |
| Tmax (hr) | 0.8 | 0.7-0.9 | 2 | 0.3-0.5 |
| Onset of action (min) | 15-60 | 15-60 | 15-120 | 15-60 |
| Half-life (hr) | 3-5 | 4-5 | 17.5 | 3-5 |
| Bioavailability | 40% | 15% | Not tested | 30% |
| Fatty food | Reduced absorption | Reduced absorption | No effect | Reduced absorption |
| Recommended dosage | 25, 50, 100 mg | 5, 10, 20 mg | 5, 10, 20 mg | 50, 100, 200 mg |
| Side effects: | | | | |
| Headache, dyspepsia, facial flushing | Yes | Yes | Yes | Yes |
| Backache, myalgia | Rare | Rare | Yes | Rare |
| Blurred/blue vision | Yes | Rare | Rare | No |
| Precaution with antiarrhythmics | No | Yes | No | No |
| Contraindication with nitrates | Yes | Yes | Yes | Yes |

Cmax, maximal plasma concentration; half-life, time required for elimination of one half of the medication from plasma; Tmax, time required to attain Cmax.

| | Sildenafil | Vardenafil | Tadalafil |
|---|---|---|---|
| T max (h) | 0.8 | 0.7-0.9 | 2 |
| Onset of action (mi) | 15-60 | 15-60 | 15-120 |
| Half Life (h) | 3-5 | 4-5 | 17.5 |
| Fatty Food | Reduced Absorption | Reduced Absorption | No effect |
| Dosage | 25, 50, 100 | 25, 50, 100 | 5, 10, 20 |
| Backache, myalgia | Rare | Rare | Yes |
| Blurred/blue vision | Yes | Rare | Rare |
| Precaution with antiarrhythmics | No | Yes | No |
| Contraindication with nitrates | Yes | Yes | Yes |

# Medications achieve peak serum concentrations

- (i.e., approximately ٠,٥hour for avanafil,
- 1 hour for sildenafil and vardenafil,
- and 2 hours for tadalafil).

- All four PDE5 inhibitors have demonstrated equivalent efficacy and tolerability in clinical trials for the treatment of ED of varying severity and cause

- (Carson and Lue, 2005; Hellstrom, 2007; Giuliano et al, 2010; Bruzziches et al, 2013; Porst et al, 2013; Yuan et al,. (٢٠١٣)

- **In general, the agents effectively result in successful sexual intercourse rates of approximately 70%**

- **(Carson and Lue, 2005; Khera and Goldstein,.(٢٠١١)**

# Medication (PDE Inhibitors)

**Side effects:**

- **headache (7% to 16%),**
- **dyspepsia (4% to 10%),**
- **flushing (4% to 10%),**
- **myalgia/back pain (0% to 3%),**
- **nasal congestion (3% to 4%),**
- **and visual disturbances (e.g., photophobia, blue vision) (0% to 3%).**

# Medication (PDE Inhibitors)

**Contraindications:**

- Organic Nitrites:
  - Oral
  - Sublingual
- Severe cardiac disease
- Myocardial infarction, stroke, or life-threatening arrhythmia within the previous 6 mo
- retinal disorders, Severe hepatic impairment
  - Resting hypotension or hypertension

# Choice or preference between the different PDE5 inhibitors

To date, no data are available from double- or triple-blind multicentre studies comparing the **efficacy and/or patient preference** for sildenafil, tadalafil and vardenafil.

Choice of drug will depend on the **frequency of intercourse** (occasional use or regular therapy, 3-4 times weekly) and the **patient's personal experience.**

- Caution is advised for the use of PDE5 inhibitors in patients with certain conditions:
- aortic stenosis, left ventricular outflow obstruction, hypotension, and hypovolemia.

- The agents have a minimal effect on QTc interval
- (Morganroth et al, 2004).

# Nitrates are totally contraindicated with PDE5 inhibitors

- Organic nitrates (e.g. nitroglycerine, isosorbide mononitrate, isosorbide dinitrate) and other nitrate preparations used to treat angina, as well as amyl nitrite or amyl nitrate
- falls in blood pressure and symptoms of hypotension

- If a PDE5 inhibitor is taken and the patient develops chest pain, nitroglycerine must be withheld for at least 24 h if sildenafil (and probably also vardenafil) was used (half-life, 4 h),
- and for at least 48 h if tadalafil was used (half-life, 17.5 h).

- (Cheitlin et al, 1999).

# Antihypertensive drugs

- **Co-administration of PDE5** inhibitors with antihypertensive agents (ACEIs, angiotensin-receptor blockers, calcium blockers, beta-blockers, diuretics) may result in small additive drops in blood pressure

- **No pharmacologic antidote to the PDE5 inhibitor/nitrate interaction exists**

# Alpha-blocker interactions

- may result in orthostatic hypotension.
- 50 or 100 mg of **sildenafil** should not be taken within 4 h following treatment with an alpha-blocker. This restriction does not apply to 25 mg dose of sildenafil.

- • **Tadalafil** is contraindicated in patients taking alpha-blockers, except for Tamsulosin, 0.4 mg.

# Check that the medication has been properly prescribed and correctly used

- failure to use adequate sexual stimulation
- failure to use an adequate dose
- failure to wait an adequate amount of time between taking the medication and attempting sexual intercourse.
- by repeating attempts with the medications several times (up to nine or ten attempts affords maximal probability of success) (McCullough et al, 2002; Barada, 2003; Shindel, 2009).

- Certain drugs such as **ketoconazole** and **itraconazole** and **protease inhibitors such as ritonavir** can impair the metabolic breakdown of PDE5 inhibitors by blocking the CYP3A4 pathway. Such agents **may increase blood levels** of inhibitors, requiring a PDE5 dose reduction.
- On the other hand, agents such as **rifampin** may induce CYP3A4, enhancing the **breakdown** of inhibitors and requiring higher PDE5 doses.
- Kidney or hepatic dysfunction may require ***dose adjustments*** or warnings.

# Other oral agents

- Yohimbine is a centrally and peripherally active alpha-2 adrenergic antagonist

**5.4 mg** three times daily

- Trazodone is a serotonin reuptake inhibitor (antidepressant)- Nor FDA approved for ED

- Although **yohimbine** may be well tolerated, its modest results suggest that it may be best limited to men with psychogenic ED

- (Porst et al, 2013).

# Apomorphine sublingual

- centrally acting dopamine agonist
- Apomorphine has been approved for ED treatment in several countries but not in the USA. Awaiting FDA approval
- not contraindicated in patients taking nitrates or antihypertensive drugs (of all classes) and it does not affect vital signs
- 64% to 67% response rate with ED
- 12 minutes

- medication is administered in sublingual form with a dosage range of 2, 4, and 6 mg, and it has ***no erectile efficacy*** if it is swallowed
- (Heaton, 2000).

# Other Oral Therapies.

- L-arginine (the amino acid precursor of nitric oxide), L-dopa (dopamine precursor), limaprost (prostaglandin E1), and naltrexone (opioid antagonist), have been proposed (Burnett, 1999).
- Each of these agents has a plausible mechanism of action to induce erections. However, they remain insufficiently studied, and their clinical roles remain unclear (Porst et al, 2013).

# Topical pharmacotherapy

- Several vasoactive drugs (2% nitroglycerine, 15-20% papaverine gel and 2% minoxidil solution or gel) have been used for topical application to the penis.

- No topical therapy has been approved and currently these agents have no role in treatment of ED

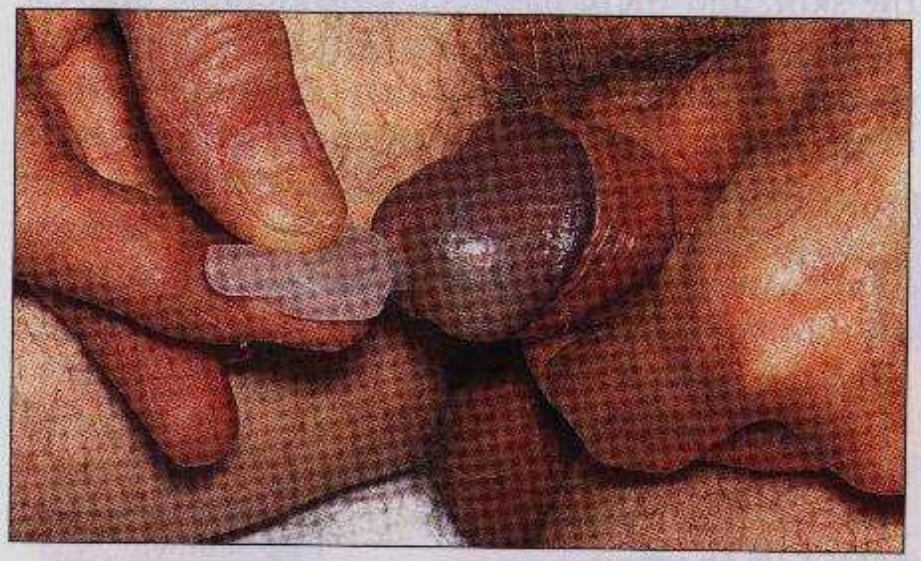
# Transurethral Therapy Alprostadil - **MUSE**

- Mechanism of Action: vasodilator
- Administration: 125, 250, 500. 1000ug
- Insert in the urethra
- Erection occurs 10-15 minutes later
- Erection lasts 30-45 minutes
- Results: 10-65%
- Side effects: Pain, bleeding, priapism (<3%)
- FDA Approved

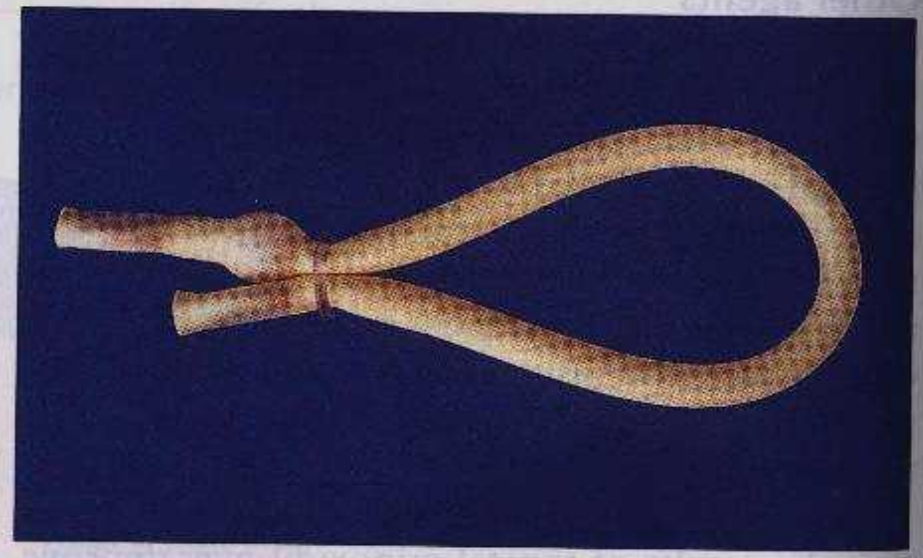
8.4 The MUSE™ device.

**MUSE**

8.5 The MUSE™ device following depression of the button. The Alprostadil pellet is visible at the top of the device.



8.6 The MUSE™ device inserted into the urethra.



8.7 The MUSE™ constriction ring (ACTIS™).

- **A calculated final responder rate to MUSE is approximately 50%, and among responders approximately 70% of administrations result in sexual intercourse**
- **(Hellstrom et al, 1996;** Padma-Nathan et al, 1997; Guay et al, 2000; Khera and Goldstein, 2011; Porst et al, 2013).

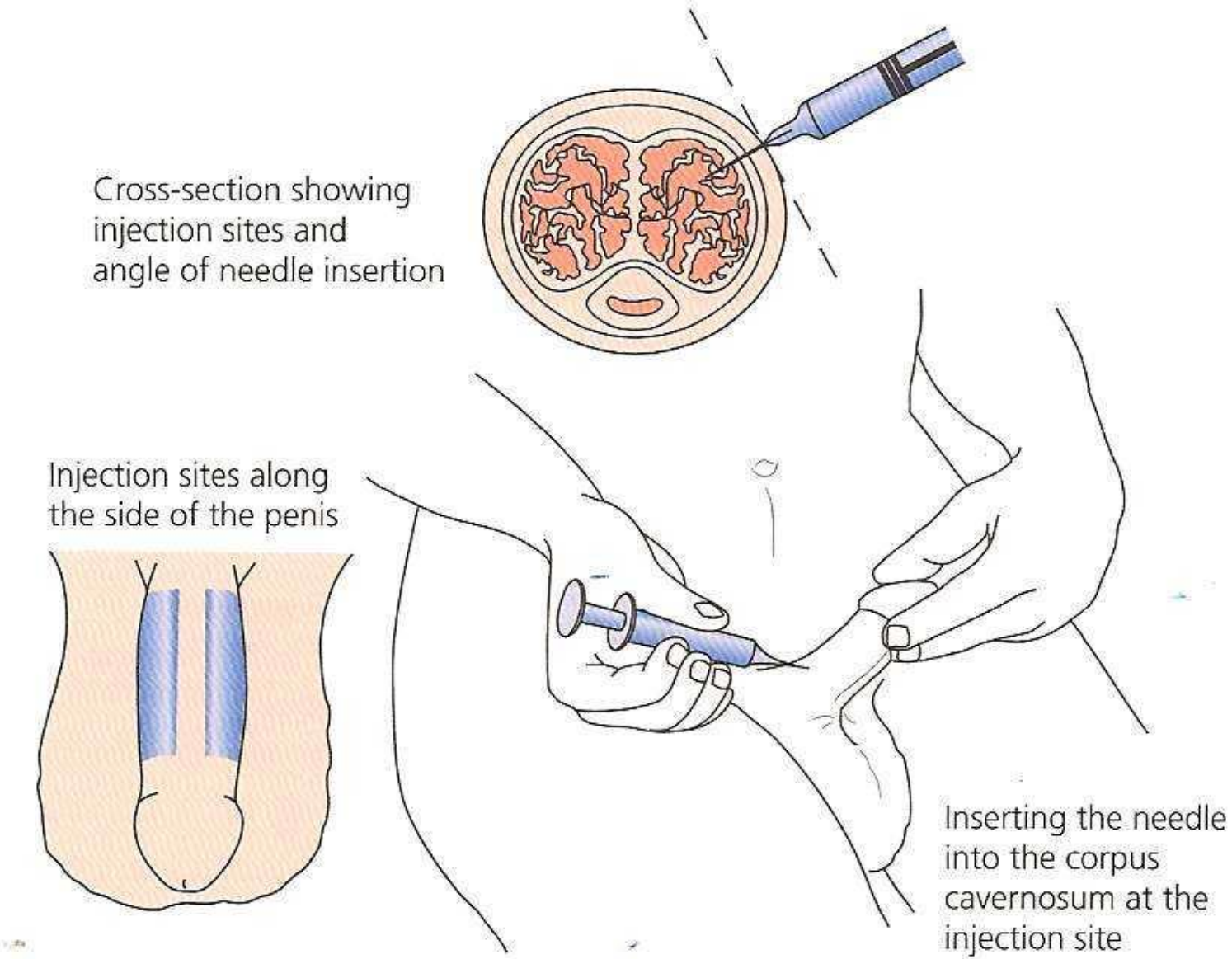
- A transurethral **bimix** consisting of ***alprostadil and α1-adrenergic antagonist*** **prazosin** (ALIBRA) was introduced and in a multicenter trial of nearly 400 patients was shown to increase the at-home responder rate for successful sexual intercourse from 47% with alprostadil alone to 70% with ALIBRA
- (Qureshi, 2001).

- Another rare indication for intraurethral therapy is patients complaining about a **soft (cold) glans syndrome**, which may occur after penile prosthesis implantation or as a clinical entity itself
- (Porst et al, 2013).

- . MUSE seems safe for female partners, producing only a 5.8% incidence of vaginal burning or itching, although it should not be used without a condom for intercourse with a pregnant woman.

# Intracavernous injections

- Papaverine (20-80 mg)
- Phentolamine (Regitine) has been used in combination therapy
- Papaverine (7.5-45 mg) plus phentolamine (0.25-1.5 mg), and
- papaverine (8-16 mg) plus phentolamine (0.2-0.4 mg) plus alprostadil (10-20 µg),


Cross-section showing injection sites and angle of needle insertion
Injection sites along the side of the penis
Inserting the needle into the corpus cavernosum at the injection site

# Trimix

- Alprostadil + papaverine + phentolamine 10 μg/mL + 30 mg/mL + 1.0 mg/mL

# Penile Injection Therapy Caverject, Edex, Tri/Bi-Mix

- Mechanism of action: smooth muscle vasodilator
- Administration: 10, 20, 40ug
- Inject directly into corporeal bodies of the penis
- Results: 70%-90%
- Dropout rates: 25%-60%
- Side effects: pain (36%), priapism (4%), fibrosis

# PRIAPUS

# Priapism

# Contraindications

- Previous **Priapism**
- **psychological instability**
- **Coagulopathy**
- **unstable cardiovascular**
- **reduced manual dexterity** (although the partner can be trained in the injection technique),
- Severe **fibrosis**
- Visual Inability (risk of injury to penis)
- MAOI (priapism)

- **use of monoamine oxidase inhibitors (because of the risk of precipitating a life-threatening hypertensive crisis in the event that an intracavernosal α-adrenergic agonist is used to reverse a *priapic* episode)**
- **(Sharlip, 1998).**

# Vacuum Constriction Device

- Erection limited to 30 minutes (skin necrosis )
- Results: 80%-90%
- Contraindications: bleeding disorders, sickle cell disease, anticoagulation
- Complications: coolness, petechiae, numbness, pain with ejaculation, penile pain and numbness, difficult ejaculation, ecchymosis, and petechiae, and major complications (e.g., penile skin necrosis, urethral varicosities, Fournier gangrene) are infrequent
- High drop out rate
- FDA Approved 1982

- **Efficacy rates as high as 90% have been reported for achieving satisfactory erections for ED associated with various severities and etiologies, but satisfaction rates with the device are *lower*, ranging commonly from 30% to 70% (Hellstrom et al, 2010; Porst** et al, 2013).

# ErecAid® System offers your patients immediate results.

Load elastic tension ring on open end of vacuum cylinder and place flaccid penis inside cylinder.

Press the power button on the pump to create negative pressure.

After penis is fully engorged, transfer tension ring from cylinder to penis.

Remove tension ring. Penis returns to flaccid state.

# Vacuum Constriction Device

- Was previously first-line treatment for ED
- Seldom used now that oral therapy is available

- Considered an alternative if patient fails oral therapy and does not want to proceed with surgery

# Penile Prosthesis

Indications:

- Patients who have failed other therapies
- Peyronie's disease
- Severe vasculogenic disease

# Choosing a Penile Prosthesis

**Considerations**:

- Medical condition
- Lifestyle
- Cost
- Insurance coverage
- As with all prescription products, complications are possible

# Malleable Prosthesis

- Easy for patient and partner to use
- Few mechanical parts
- Same-day surgery usually possible
- Least expensive type of prosthesis

# Two-Piece Inflatable Prosthesis

- Small inflation pump provides comfort and ease
- Fast and easy one-step deflation procedure
- Better conceal ability when flaccid than with malleable or self-contained devices

# Three-Piece Inflatable Prosthesis

- Most closely approximates the feel of a natural erection
- Cylinders expand in girth
- Some cylinders have the potential to expand in length
- When *inflated*, it feels more firm and more full than other prosthetic erections
- When *deflated*, it feels softer and more flaccid with better conceal ability than with other prosthetic devices

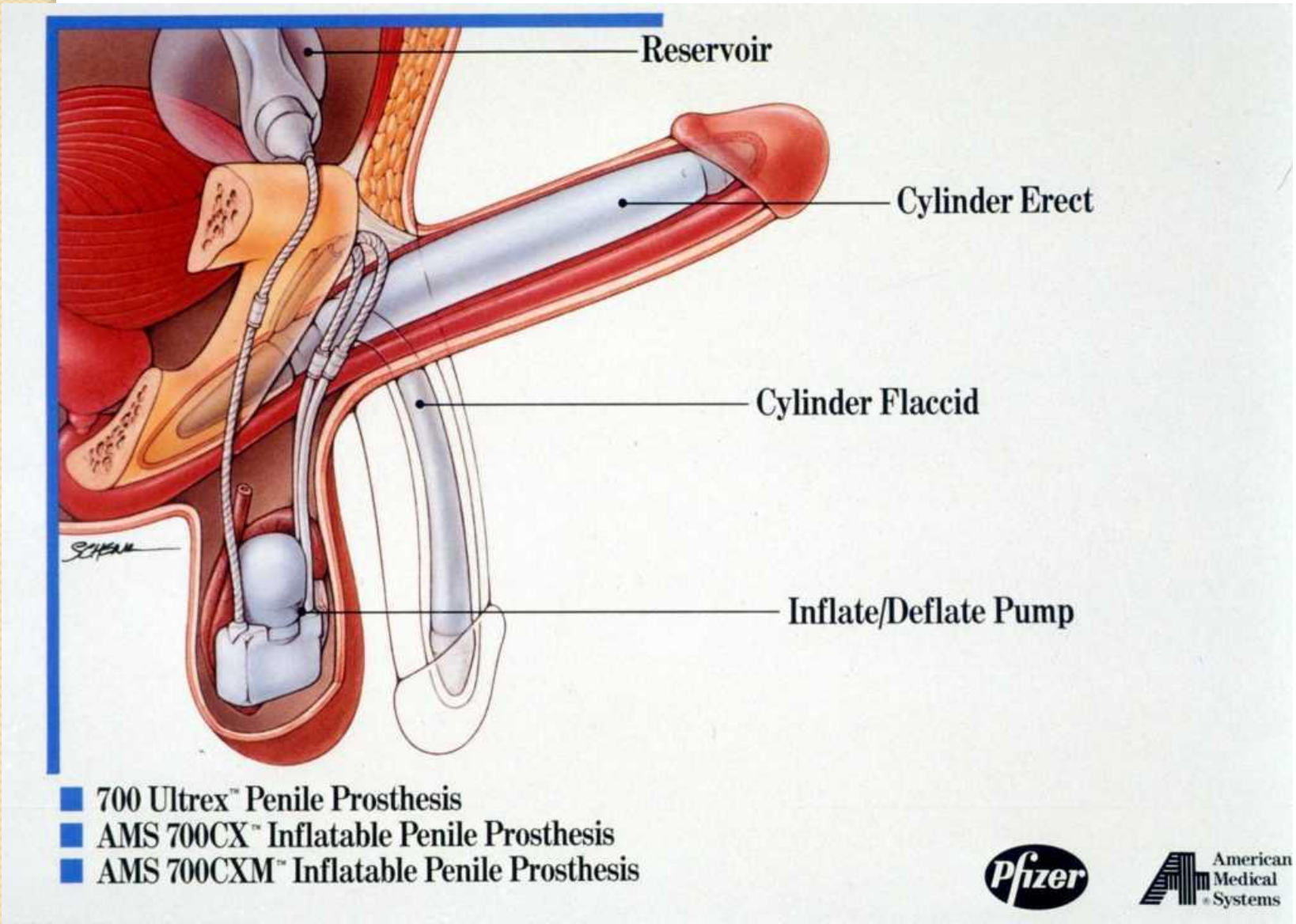
## Self-Contained Penile Prostheses

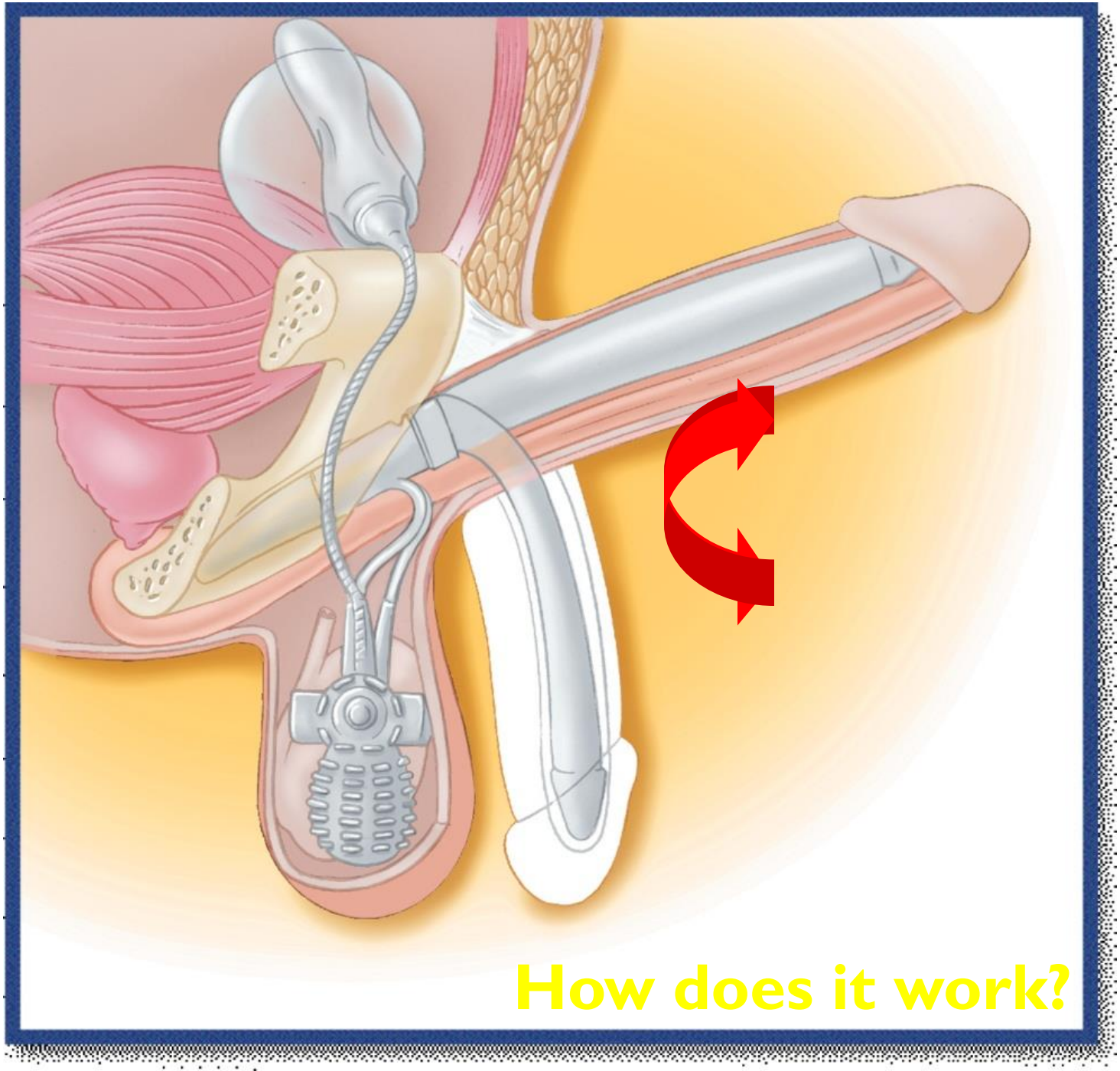
## Inflatable Penile Prostheses

## Malleable Penile Prostheses

Pfizer

American Medical Systems


Reservoir
Cylinder Erect
Cylinder Flaccid
Inflate/Deflate Pump
700 Ultrex™ Penile Prosthesis
AMS 700CX™ Inflatable Penile Prosthesis
AMS 700CXM™ Inflatable Penile Prosthesis
Pfizer
American Medical Systems


How does it work?

# Penile Prosthesis

Advantages:

- Low-morbidity
- Low-mortality surgery
- Low complication rates
- High success rates – 5% malfunction rate at 5 years
- High satisfaction rate – 87%
- High partner satisfaction rate

# Alternative Therapies

- from herbs, ointments, and concoctions of antiquity to vitamins, nutraceuticals, and dietary supplements in commercial supply today.
- Indeed, the true efficacies of proposed alternative therapies (e.g., ginkgo biloba, L-arginine, Korean red ginseng) remain **uncertain** in the absence of evidenced benefit in rigorously performed, randomized, controlled clinical trials

- (Moyad et al, 2004; Khera and Goldstein, 2011).
- placebo effect: to as much as 25% to 50%

**Premature Ejaculation**

**Retarded Ejaculation**

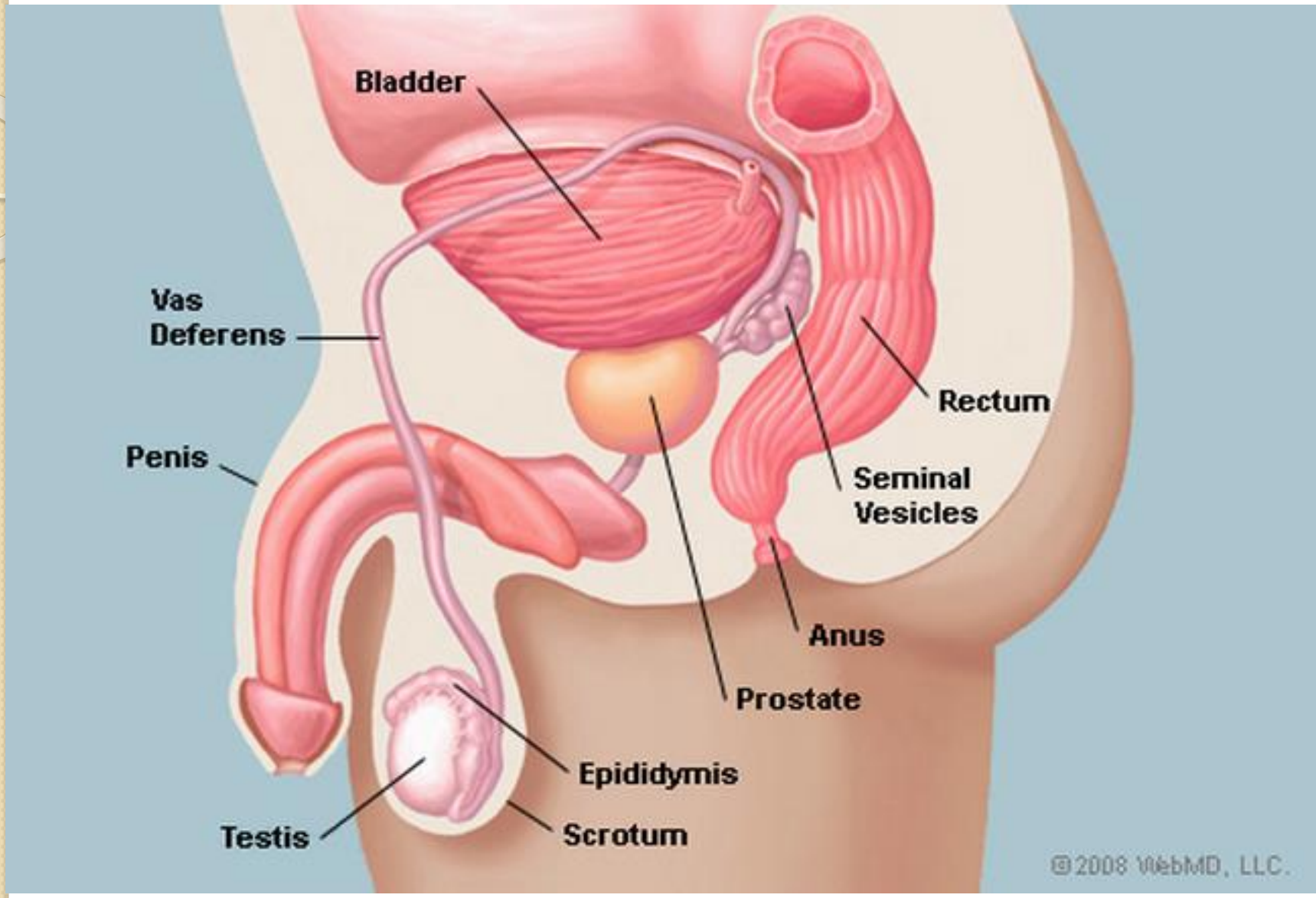
**Retrograde Ejaculation**

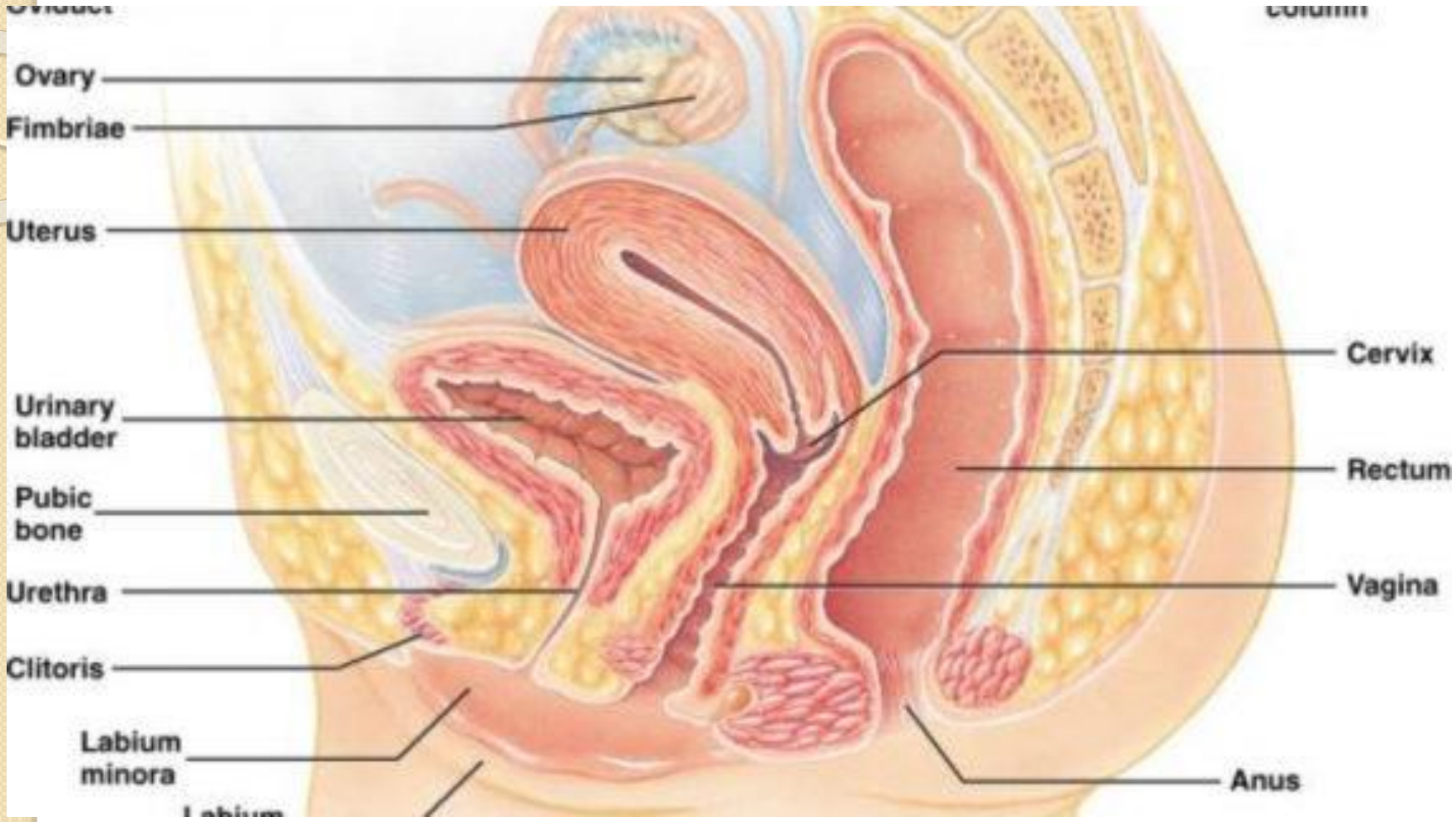
**Anesthetic Ejaculation (Ejaculatory Anhedonia)**

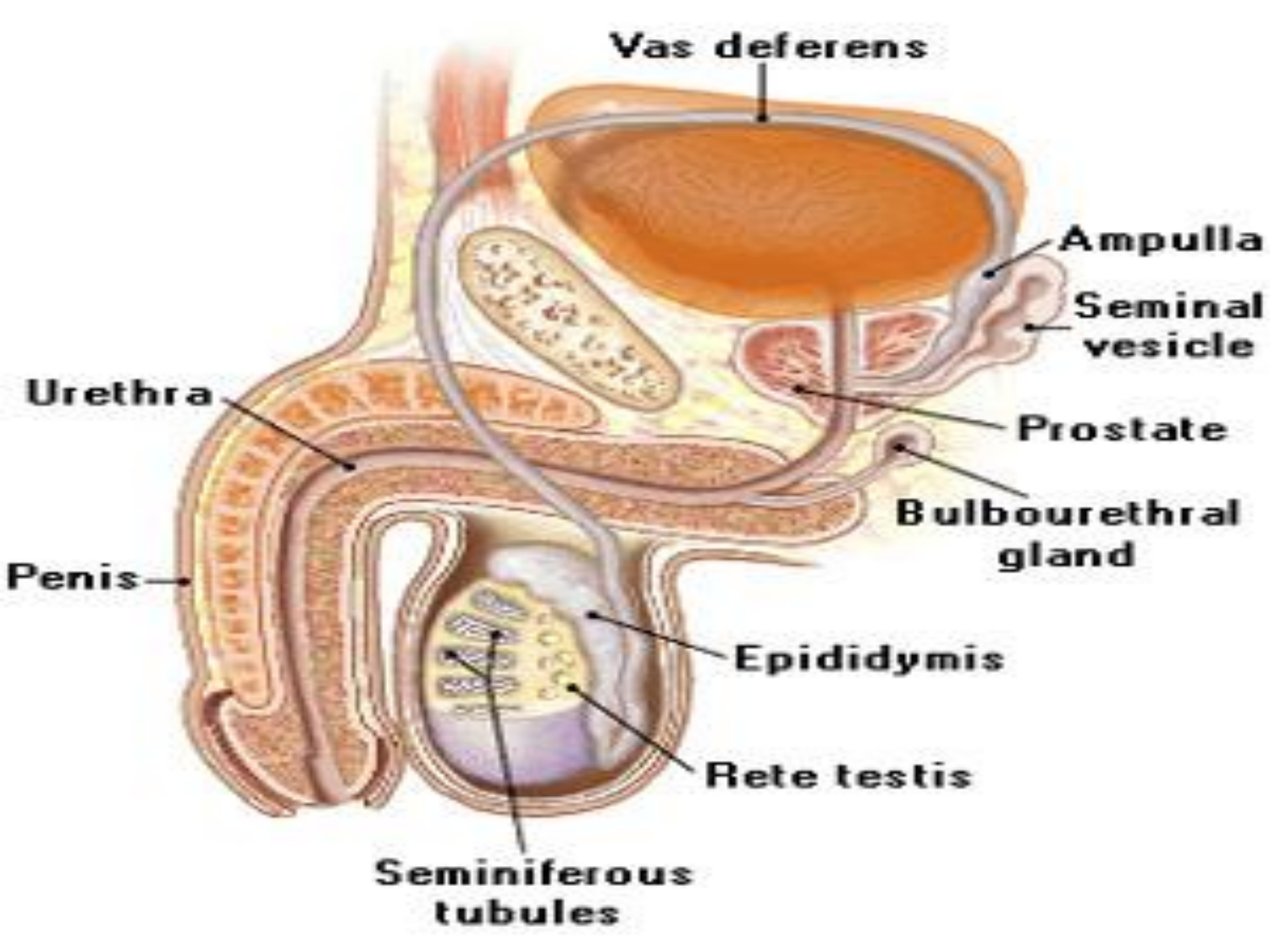
**Partial Ejaculatory Incompetence**

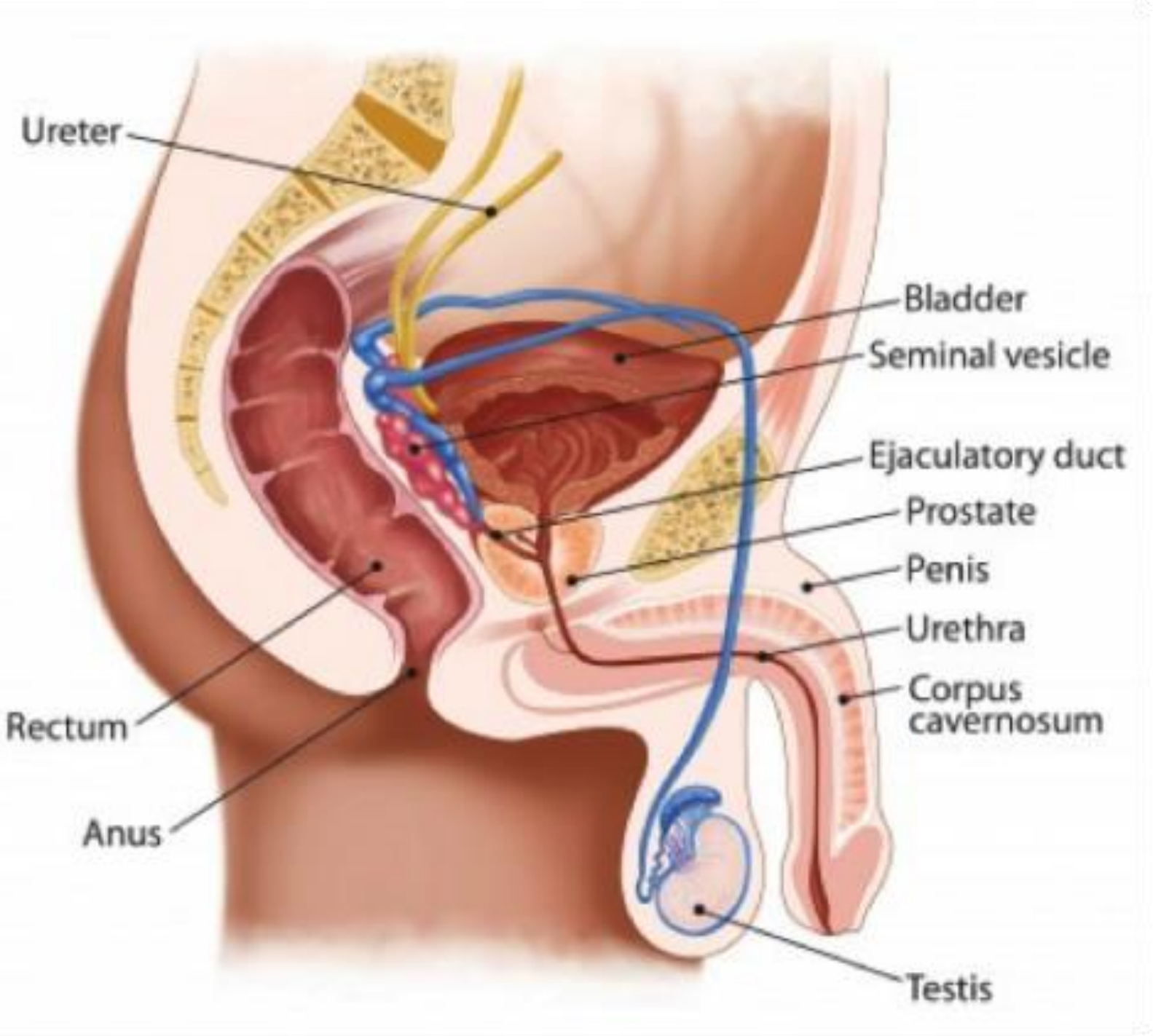
**Painful Ejaculation**

**Post Orgasmic Illness Syndrome**

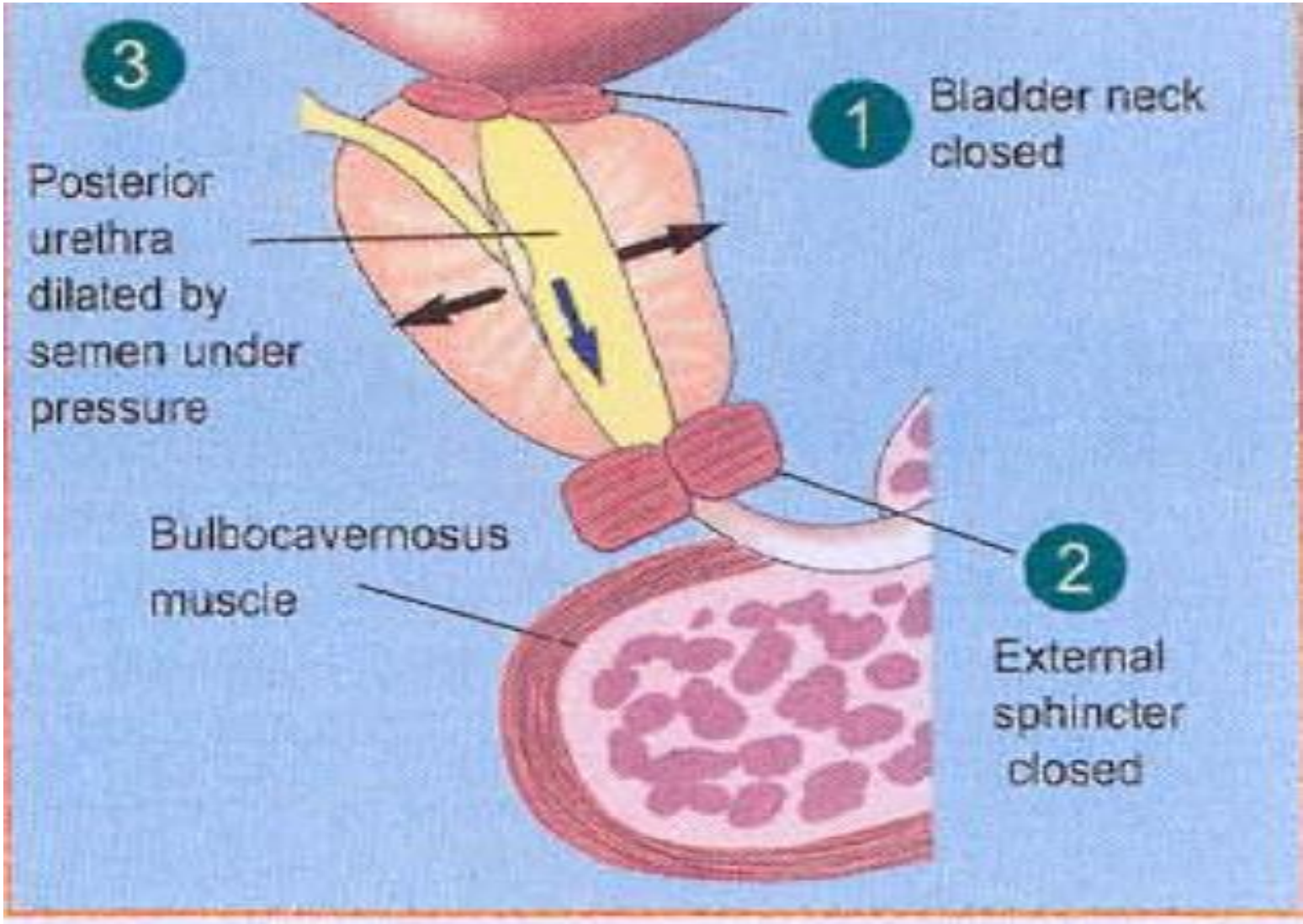

Bladder
Vas Deferens
Penis
Rectum
Seminal Vesicles
Anus
Prostate
Epididymis
Testis
Scrotum
©2008 WebMD, LLC.


Ovary
Fimbriae
Uterus
Urinary bladder
Pubic bone
Urethra
Clitoris
Labium minora
Cervix
Rectum
Vagina
Anus

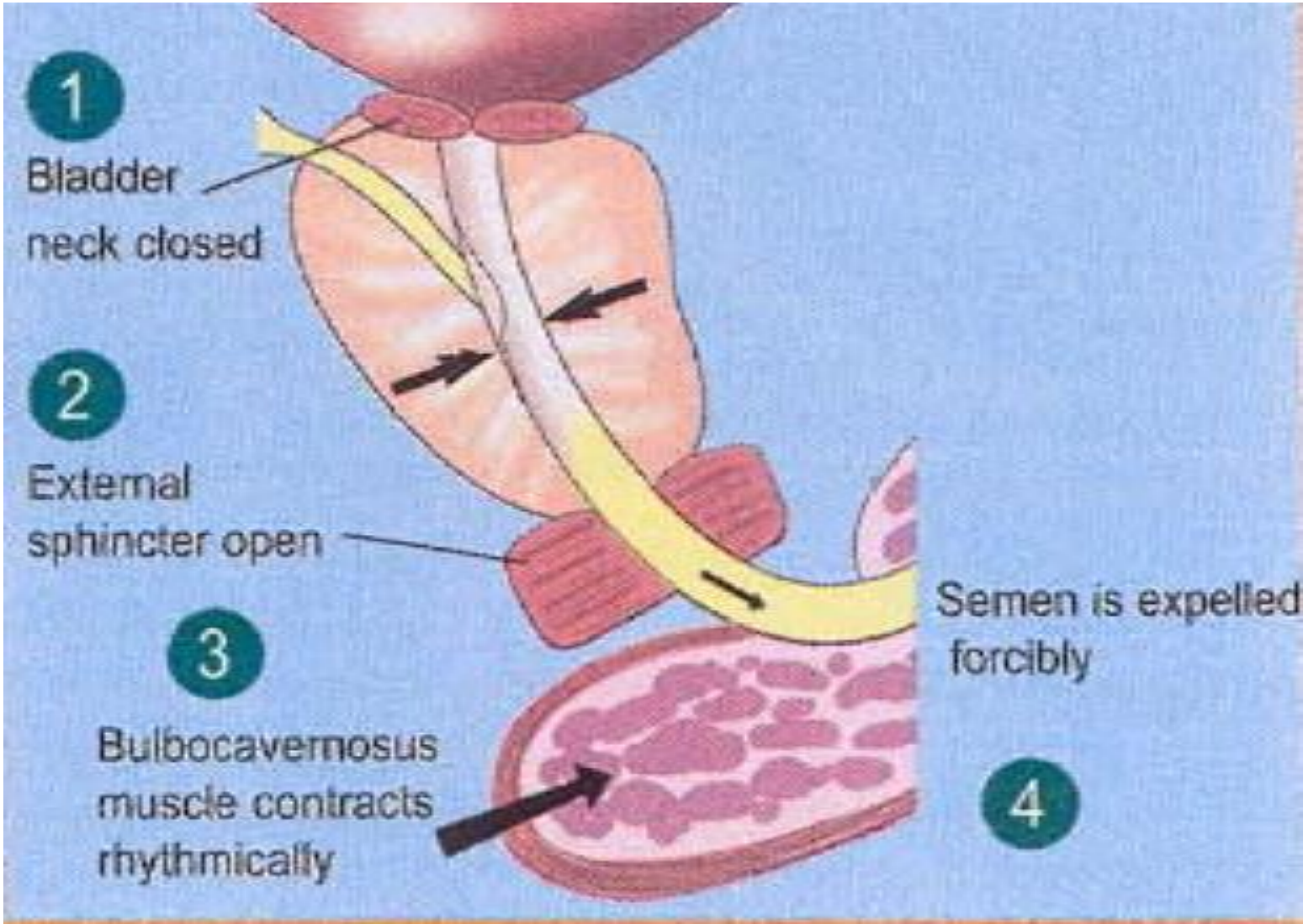

Vas deferens
Ampulla
Seminal vesicle
Urethra
Prostate
Bulbourethral gland
Penis
Epididymis
Rete testis
Seminiferous tubules

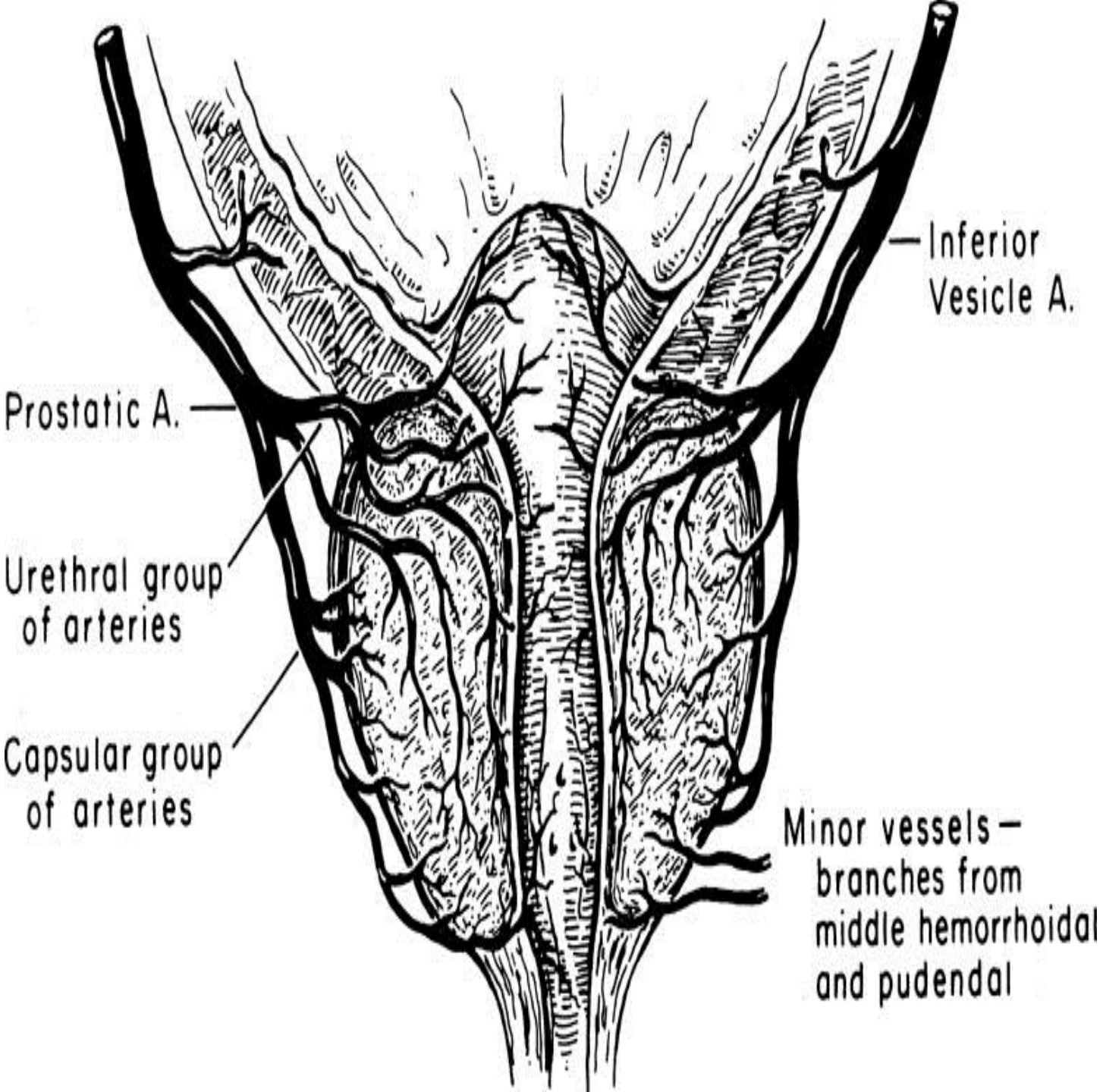

Ureter
Bladder
Seminal vesicle
Ejaculatory duct
Prostate
Penis
Urethra
Corpus cavernosum
Rectum
Anus
Testis

# Emission


3
Posterior urethra dilated by semen under pressure
1
Bladder neck closed
Bulbocavernosus muscle
2
External sphincter closed

# Ejection


1
Bladder
neck closed
2
External
sphincter open
3
Bulbocavernosus
muscle contracts
rhythmically
Semen is expelled
forcibly
4


Inferior
Vesicle A.
Prostatic A.
Urethral group
of arteries
Capsular group
of arteries
Minor vessels –
branches from
middle hemorrhoidal
and pudendal

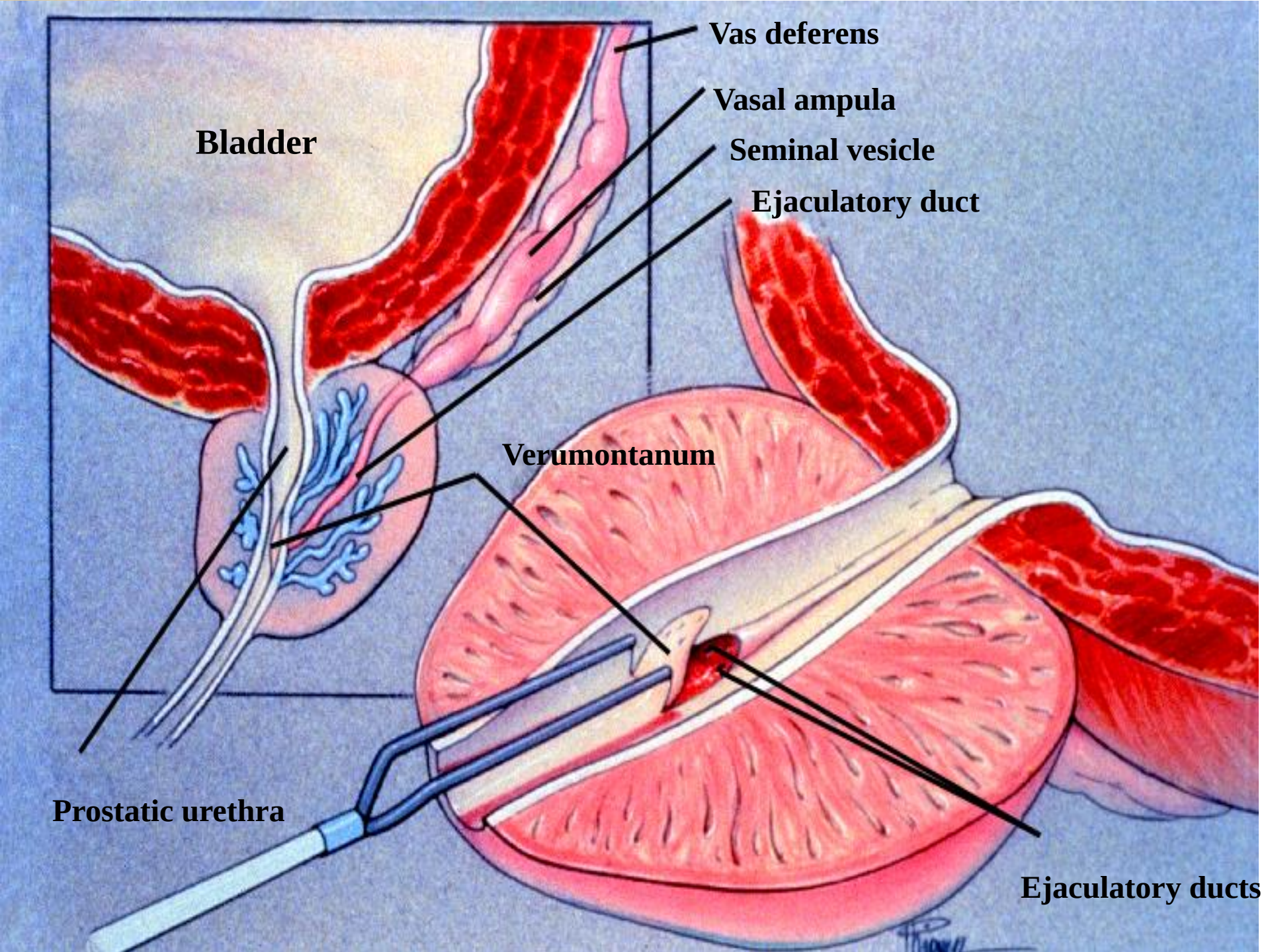
# Iatrogenic Sexual Dysfunction

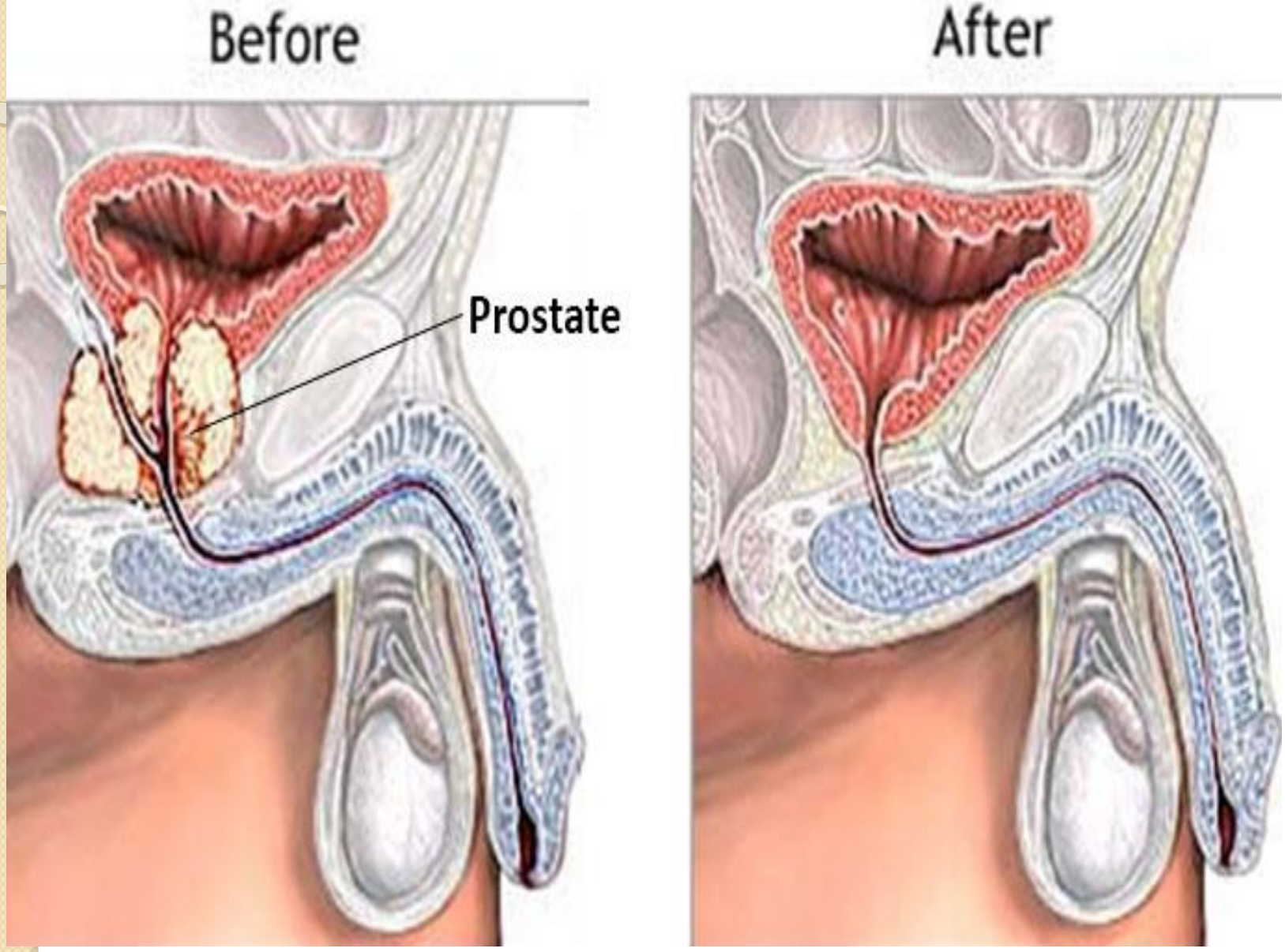
- Libido
- Ejaculation/Orgasm
- Erection

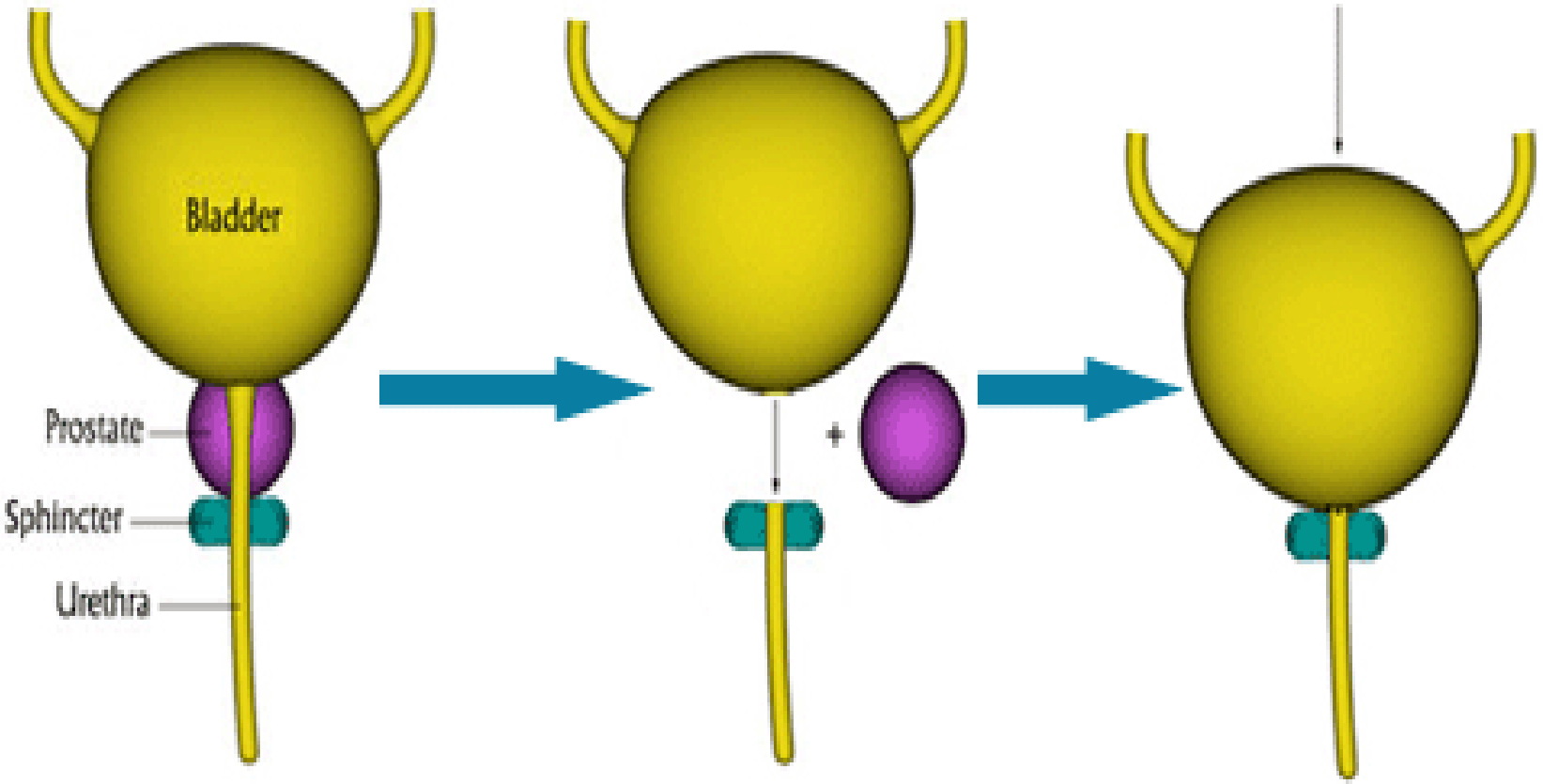
# Iatrogenic

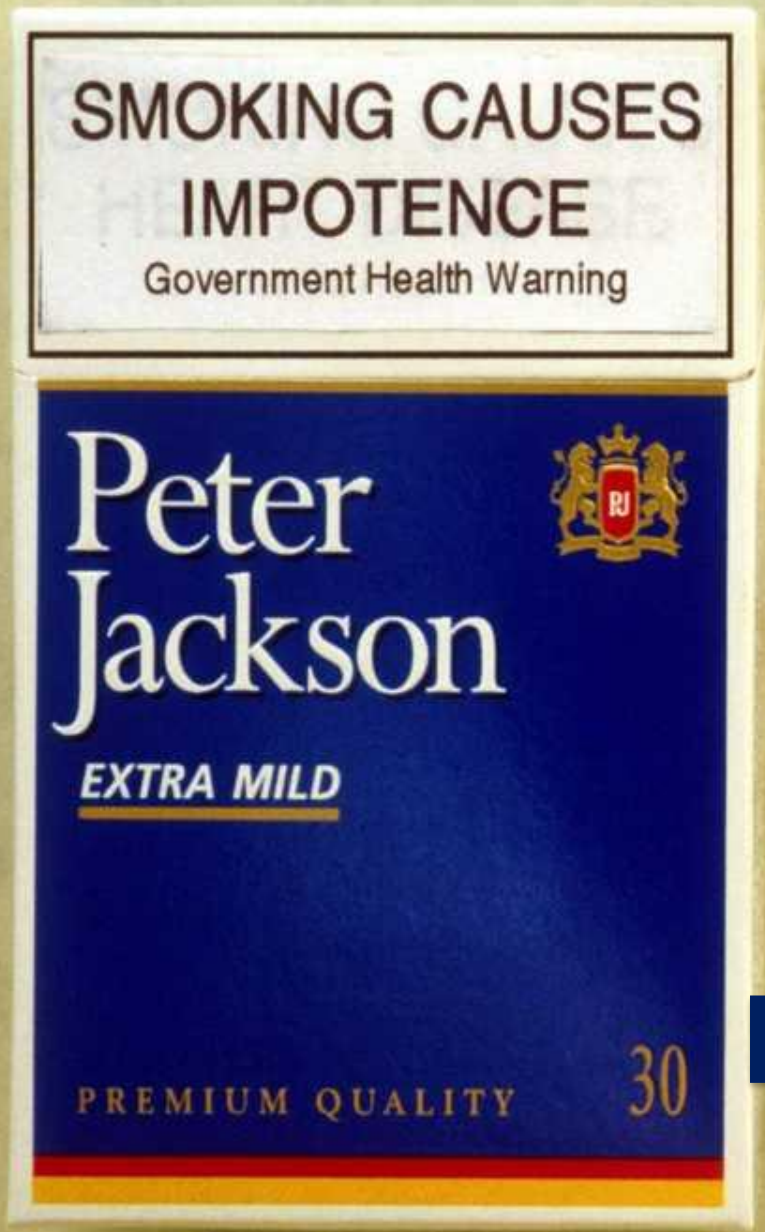
- **caused by the physician/treatment and damage sexuality/intimacy**

  - surgery
  - medication
  - chemotherapy
  - radiotherapy
  - admission
  - wrong information
  - lack of proper information / attention


Vas deferens
Vasal ampula
Bladder
Seminal vesicle
Ejaculatory duct
Verumontanum
Prostatic urethra
Ejaculatory ducts


Before
Prostate
After


Bladder
Prostate
Sphincter
Urethra
+




# Thank you

# Peyman Salehi
# Urologist

# EVALUATION OF THE COMPLEX PATIENT

Generally accepted indications for specialized evaluation are:

**failure of initial treatment,**

**Peyronie's disease, primary ED, history of pelvic/perineal trauma, cases requiring vascular or neurosurgical intervention, complicated endocrinopathy, complicated psychiatric disorder, complex relationship problems, and medicolegal concerns.**

# Vascular Evaluation

-arterial and veno-occlusive dysfunction

-combined intracavernous injection and stimulation (CIS),

-duplex ultrasound,

-dynamic infusion cavernosometry and cavernosography (DICC),

-selective penile angiography.

# Ist-Line Evaluation of Penile Blood Flow

-Combined Intracavernous Injection and Stimulation (CIS test)

IC injection of a vasodilator or a combination of two or three vasodilators, genital or audiovisual sexual stimulation, and assessment of the erection by an observer

to bypass neurologic and hormonal influences and to evaluate the vascular status of the penis directly and objectively.

# CIS

-alprostadil alone (Caverject or Edex, 10 to 20 μg),

-a combination of papaverine and phentolamine (Bimix, 0.3 mL),

-or a mixture of all three of these agents Trimix, 0.3 mL) (

-needle (27 to 29 gauge)

-normal CIS response is associated with normal venous occlusion

- **In summary, NPTR monitoring is an attractive approach for objectively evaluating the somatic basis of erectile ability, theoretically devoid of psychological interference. However, it has several apparent shortcomings, which limit its routine use for diagnostic purposes (Jannini et al, 2009).**

- A change to a no-nose saddle from a conventional saddle was shown to recover erectile function, presumably by alleviating perineal trauma, in a short-term interventional study of men with ED associated with occupational
- bicycle riding (Schrader et al, 2008).

- **Testosterone circulates in three fractions: free (0.5% to 3%),**
- **tightly bound to sex hormone–binding globulin (SHBG) (~30%),**
- **and loosely bound to albumin and other serum proteins (~67%)**
- (Basaria and Dobs, 2001; Freeman et al, 2001). **Free testosterone**
- **and albumin-bound portions comprise the bioavailable testosterone**
- **fraction. The relative concentrations of the carrier proteins**
- **(SHBG and albumin) serve to modulate androgen function.**

- Yohimbine hydrochloride (Yocon), an indolalkylamine alkaloid derived from the bark of the yohimbe tree, reportedly exerts central effects on the mediation of penile erection operating as an **α2- adrenoreceptor antagonist**
- (Clark, 1991; Giuliano and Rampin,.(٢٠٠٠)
- 5.4 mg three times daily

- **(decrease or absence of hormonal secretion from the gonads), hyperthyroidism (excessive thyroid hormone release), and diabetes (altered modulation of androgen function (Wang**
- et al, 2011; Maggi et al, 2013).

# Thank You

## Dr Peyman Salehi
## Urologist