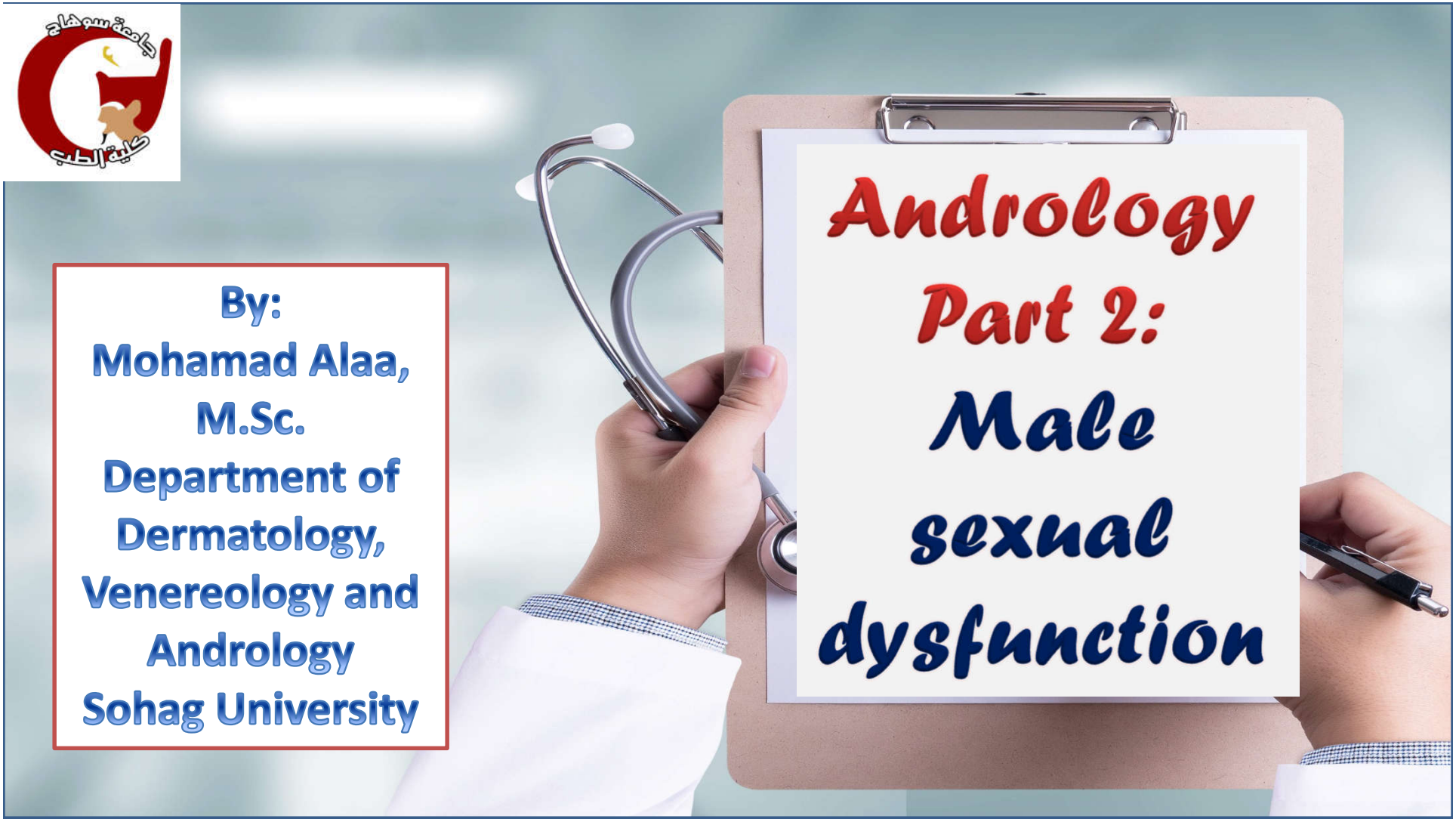


By:
Mohamad Alaa,
M.Sc.
Department of Dermatology, Venereology and Andrology
Sohag University

Topic outlines

1. Sexual function and dysfunction.

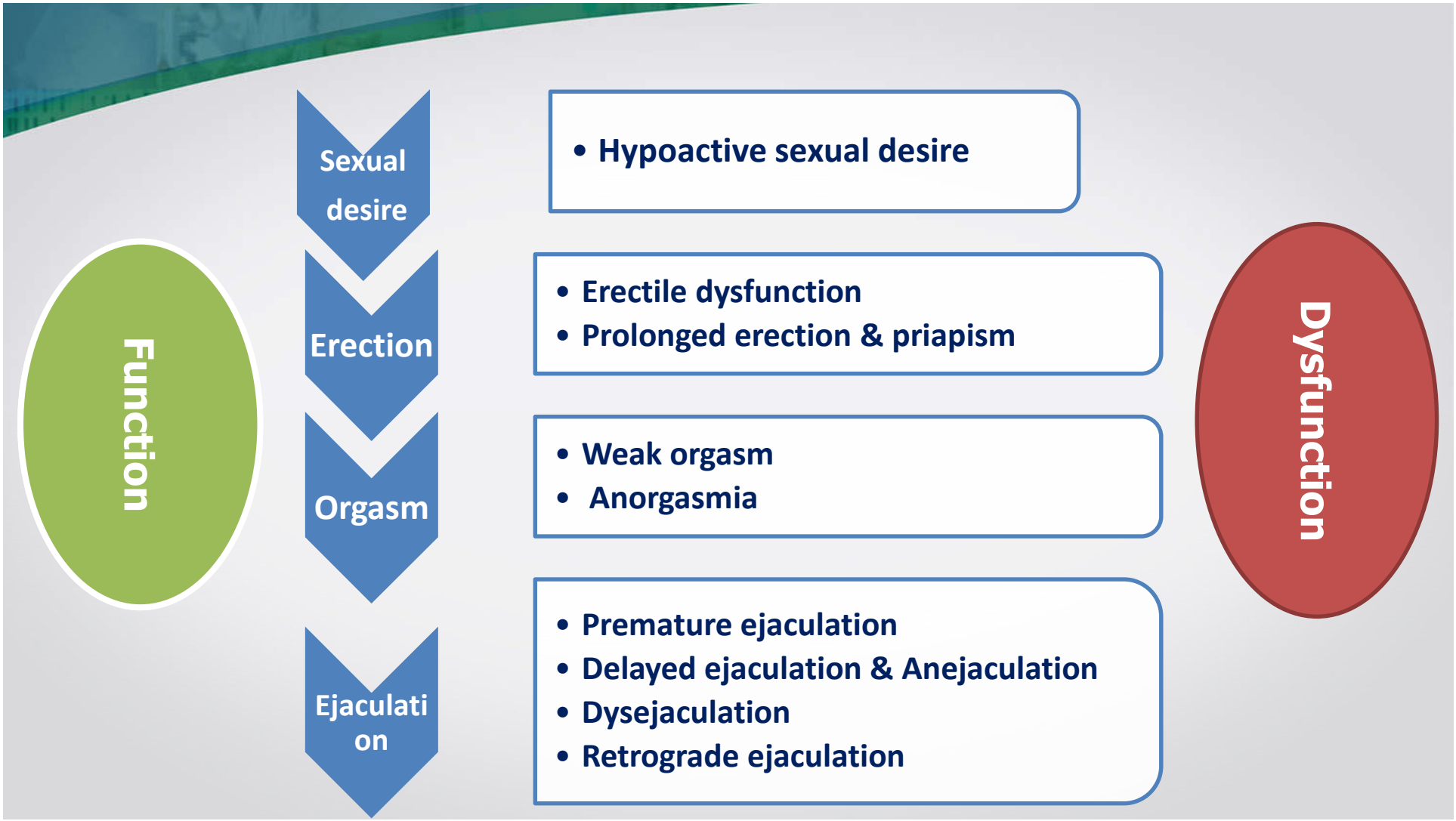
2. Anatomy and physiology.

3. Erectile dysfunction:

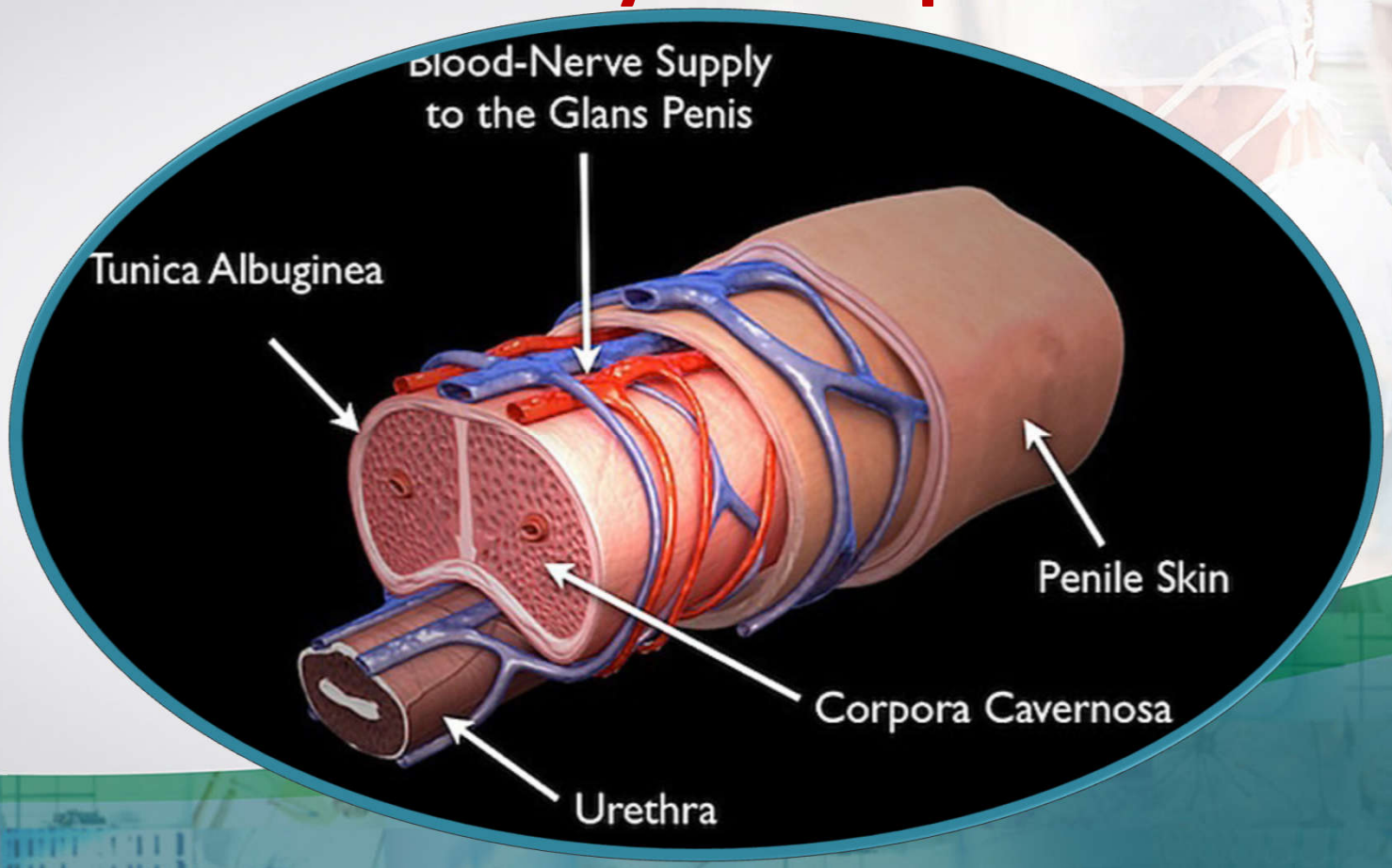
- Definition - Prevalence - Etiology -Diagnosis - Treatment

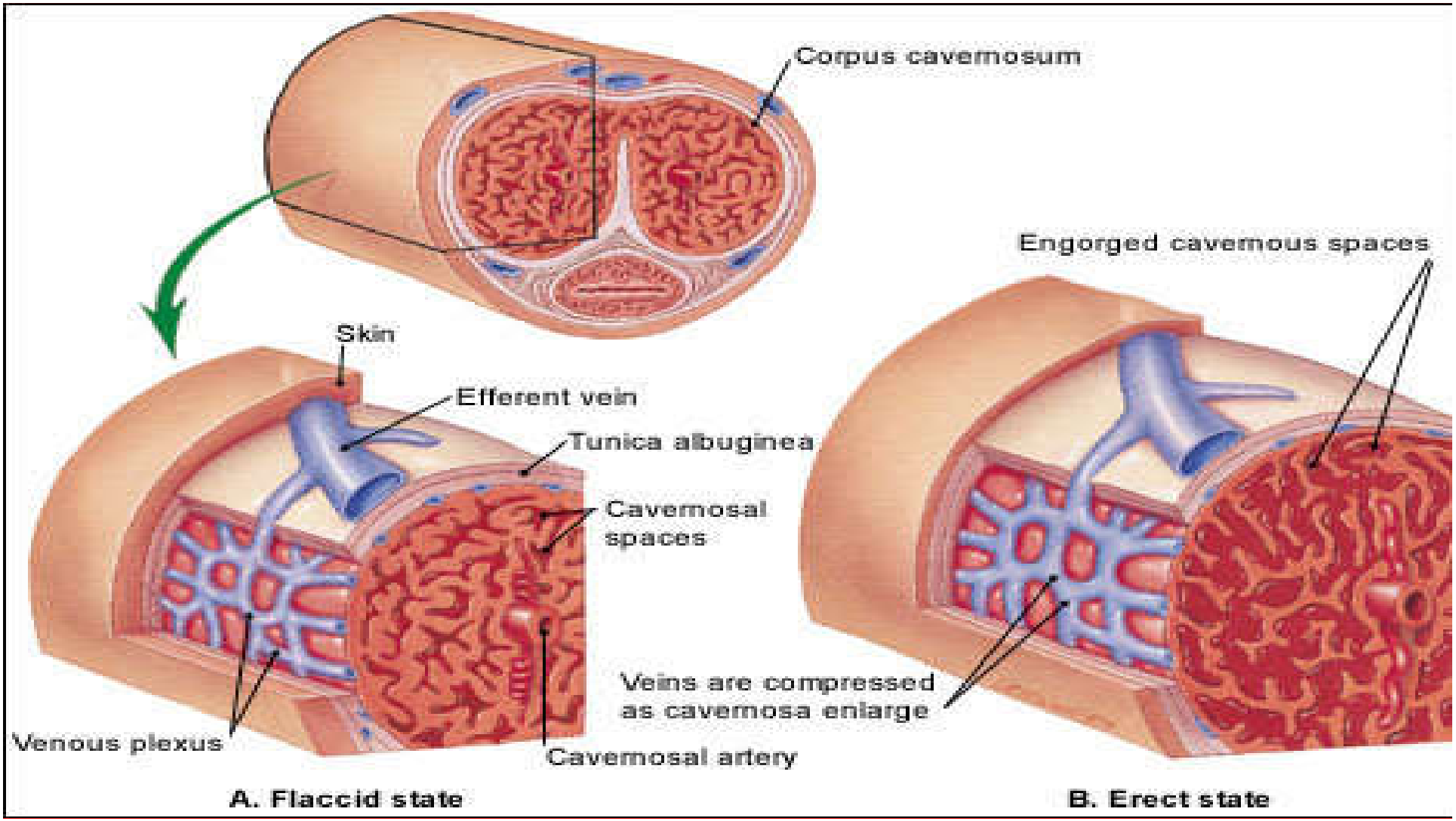
4. Premature ejaculation:

- Definition - Prevalence - Etiology -Diagnosis - Treatment


Function
Sexual desire
Erection
Orgasm
Ejaculation
• Hypoactive sexual desire
• Erectile dysfunction
• Prolonged erection & priapism
• Weak orgasm
• Anorgasmia
• Premature ejaculation
• Delayed ejaculation & Anejaculation
• Dysejaculation
• Retrograde ejaculation
Dysfunction

Anatomy of the penis




Corpus cavernosum
Skin
Efferent vein
Tunica albuginea
Cavernosal spaces
Venous plexus
Cavernosal artery
A. Flaccid state
Engorged cavernous spaces
Veins are compressed as cavernosa enlarge
B. Erect state

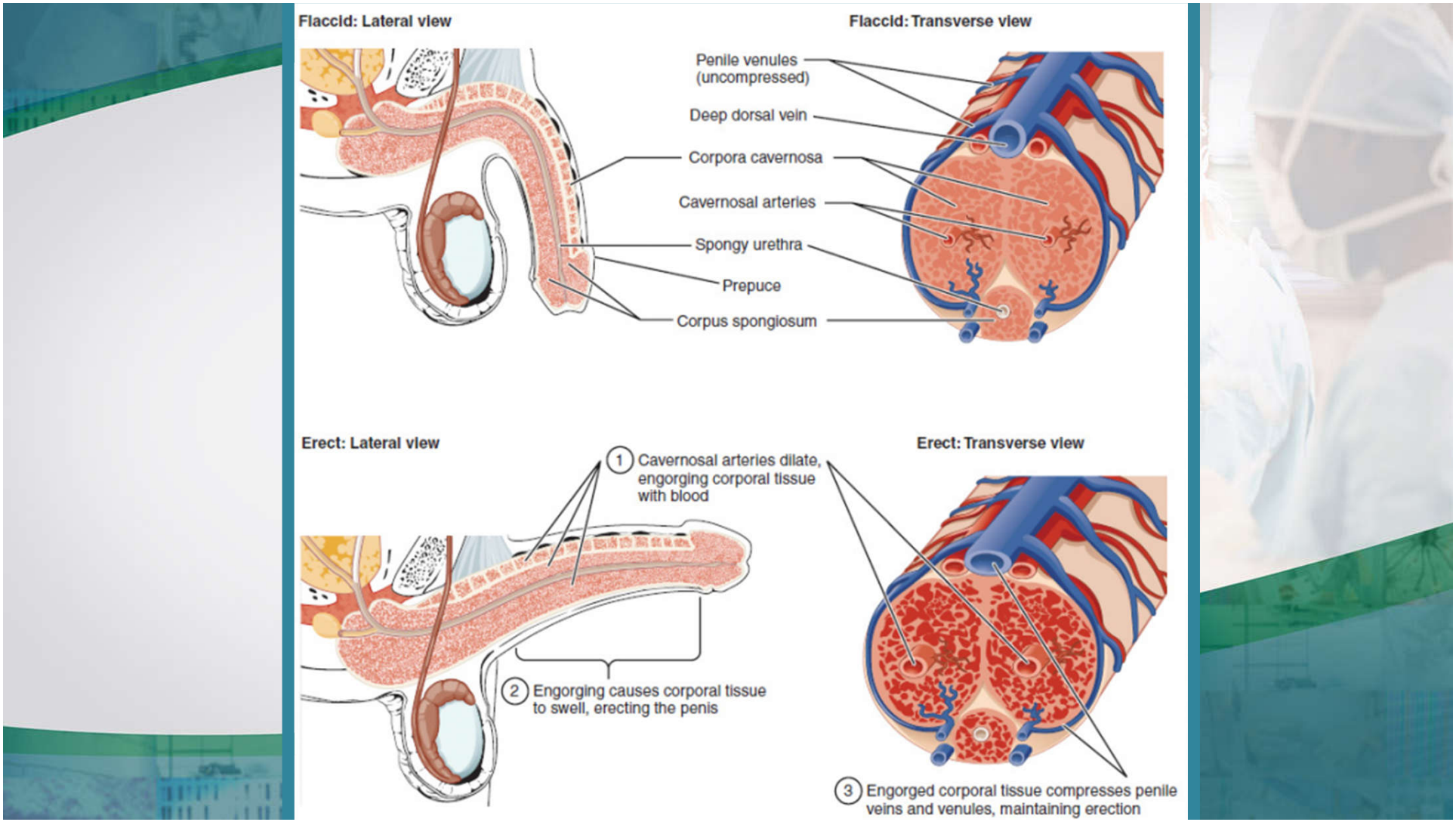
Physiology of erection

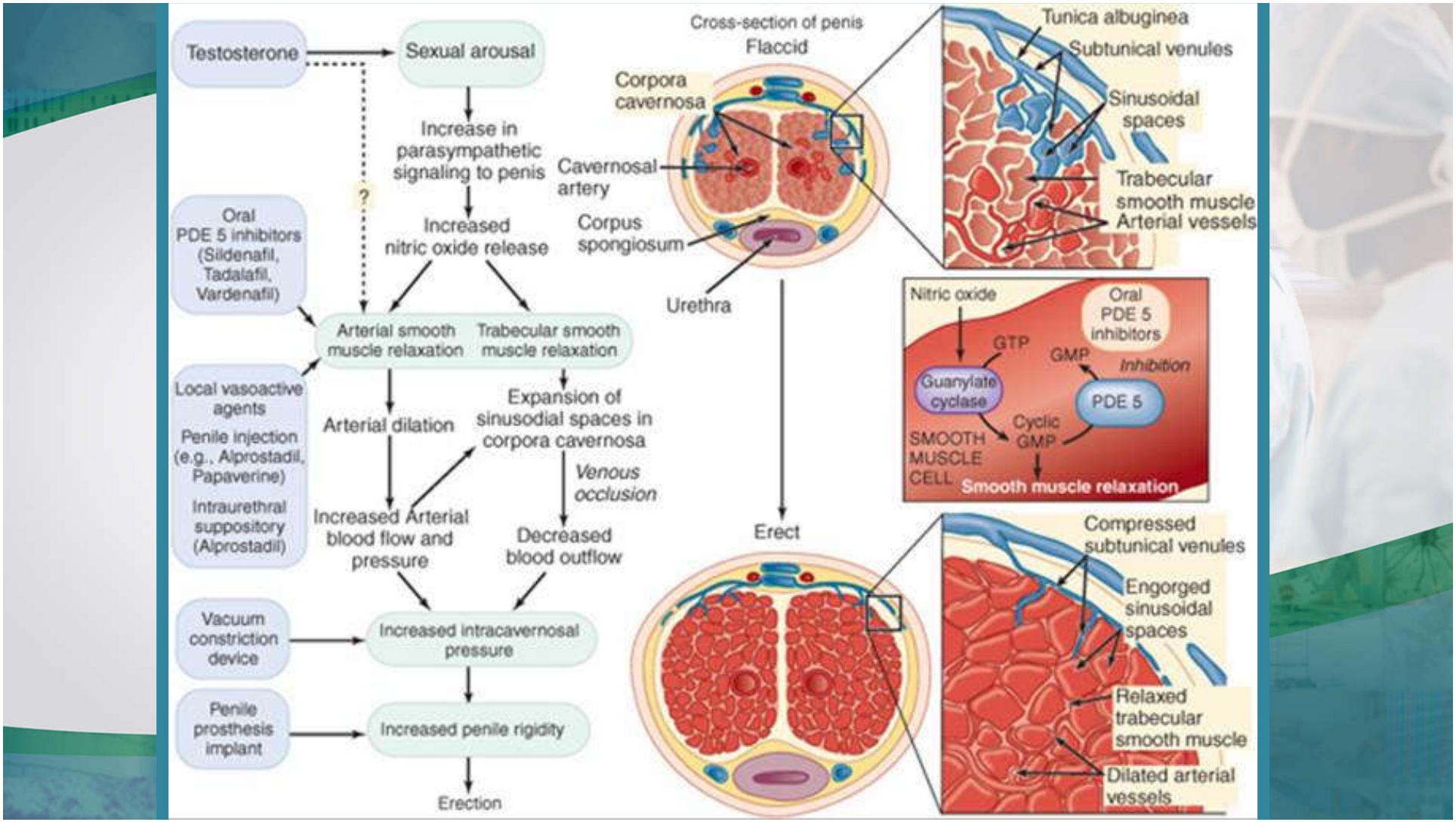
✓ Erection:

Tumescence and rigidity of the penis.

✓ Mechanism:

A) Neuromuscular
B) Vascular
C) Hormonal


Flaccid: Lateral view
Flaccid: Transverse view
Penile venules (uncompressed)
Deep dorsal vein
Corpora cavernosa
Cavernosal arteries
Spongy urethra
Prepuce
Corpus spongiosum
Erect: Lateral view
Erect: Transverse view
1 Cavernosal arteries dilate, engorging corporal tissue with blood
2 Engorging causes corporal tissue to swell, erecting the penis
3 Engorged corporal tissue compresses penile veins and venules, maintaining erection


Testosterone
Sexual arousal
Increase in parasympathetic signaling to penis
Increased nitric oxide release
?
Oral PDE 5 inhibitors (Sildenafil, Tadalafil, Vardenafil)
Arterial smooth muscle relaxation
Trabecular smooth muscle relaxation
Local vasoactive agents
Penile injection (e.g., Alprostadil, Papaverine)
Intraurethral suppository (Alprostadil)
Arterial dilation
Expansion of sinusodial spaces in corpora cavernosa
Venous occlusion
Increased Arterial blood flow and pressure
Decreased blood outflow
Vacuum constriction device
Increased intracavernosal pressure
Penile prosthesis implant
Increased penile rigidity
Erection
Cross-section of penis
Flaccid
Corpora cavernosa
Cavernosal artery
Corpus spongiosum
Urethra
Erect
Tunica albuginea
Subtunical venules
Sinusoidal spaces
Trabecular smooth muscle
Arterial vessels
Nitric oxide
Oral PDE 5 inhibitors
GTP
GMP
Inhibition
Guanylate cyclase
PDE 5
Cyclic GMP
SMOOTH MUSCLE CELL
Smooth muscle relaxation
Compressed subtunical venules
Engorged sinusoidal spaces
Relaxed trabecular smooth muscle
Dilated arterial vessels

Definition:

ED is the recurrent or consistent inability to obtain or maintain an erection for satisfactory sexual intercourse.

Q: Why it is important to study Erectile dysfunction?

Etiology:

1) Psychogenic E.D.

2) Organic E.D.

3) Mixed psychogenic and organic E.D.

Psychogenic E.D.

Etiology:

1) Master's and Johnson's classification

- Developmental
- Cognitive
- Interpersonal
- Neurotic

2) Lue's classification

- Anxiety
- Depression
- Marrital disorders
- Misinformation
- Psychotic disorders

Organic E.D.

Etiology:

. Endocrinal

. Medical

. Neurogenic

. Vasculogenic

. Penile

Diagnosis of E.D:

A) Detailed history (medical & sexual)

B) Detailed examination (general & genital)

C) Differentiation between organic & psychogenic

* ICI test.

* Nocturnal erection monitoring.

D) Detection of underlying causes

Investigations:

* Hormonal assay and blood sugar
  * ICI (Papverine, Phentolamine and PGE1)
  * Color doppler sonography
  * RigiScan
  * Cavernosometery and Cavernosography

Treatment of E.D.

A) Medical therapy:

1) Oral therapy:

a) Centrally acting drugs:

. Adrenergic antagonists:
(Yohimbine, Phentolamine)

. Serotoninergic agonists:
(Trazodone)

. Dopaminergic agonists:
(Apomorphine)

b) Peripherally acting drugs :

. Selective phosphodiesterase inhibitors:

(Sildenafil citrate - Others)

. Non selective phosphodiesterase inhibitors:

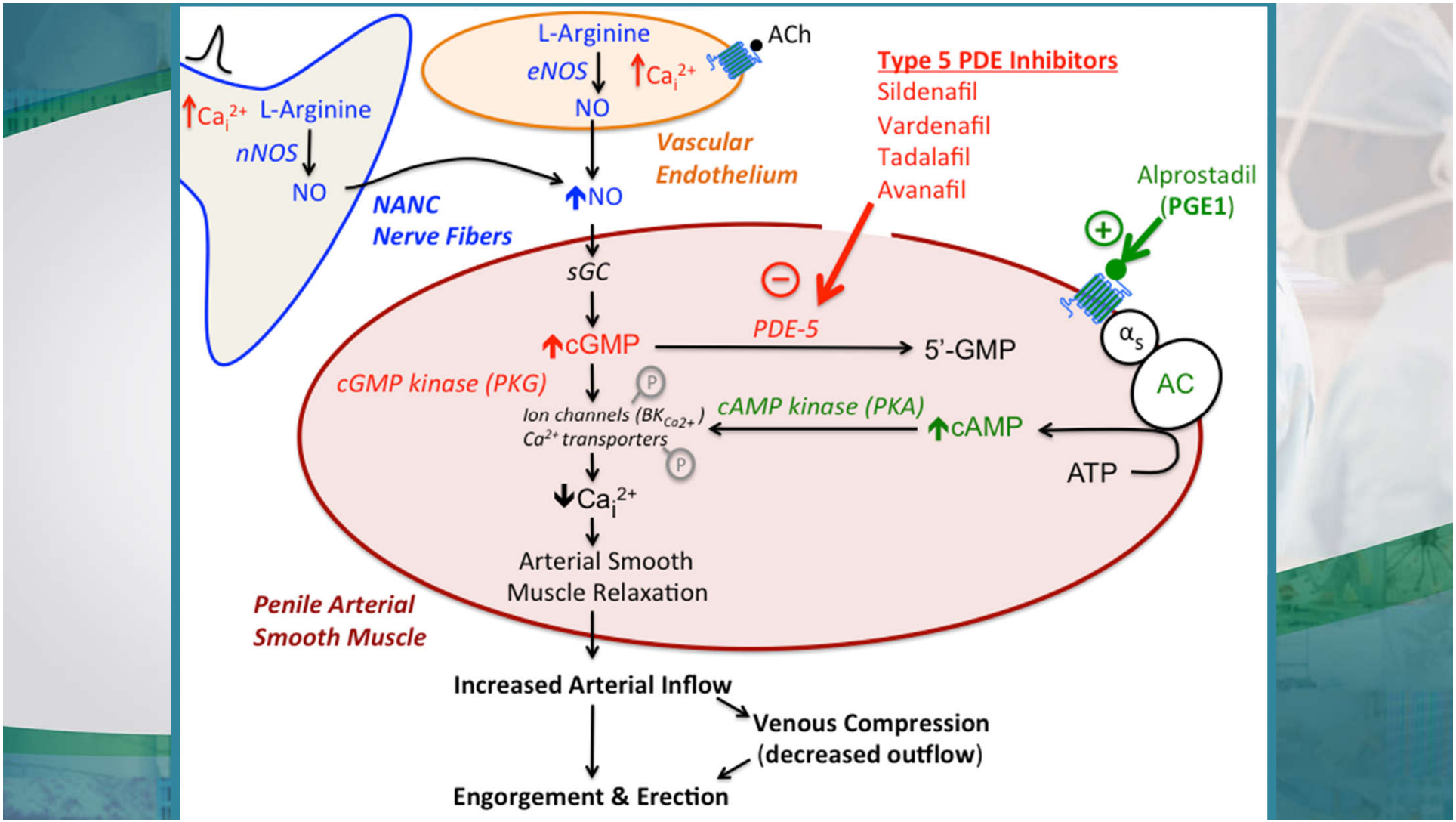
(Pentoxifylline)

. Nitric oxide donners:

(L.arginine)

PDE5is

1) Mechanism of action
2) Members
3) Indications
4) Side effects and contraindication
5) Administration


L-Arginine
eNOS
↑Ca$_i^{2+}$
NO
ACh
Vascular Endothelium
↑Ca$_i^{2+}$ L-Arginine
nNOS
NO
NANC Nerve Fibers
↑NO
Type 5 PDE Inhibitors
Sildenafil
Vardenafil
Tadalafil
Avanafil
Alprostadil (PGE1)
sGC
PDE-5
↑cGMP
5'-GMP
cGMP kinase (PKG)
cAMP kinase (PKA)
Ion channels (BK$_{Ca2+}$)
Ca^{2+} transporters
↑cAMP
AC
ATP
↓Ca$_i^{2+}$
Arterial Smooth Muscle Relaxation
Penile Arterial Smooth Muscle
Increased Arterial Inflow
Venous Compression (decreased outflow)
Engorgement & Erection

Adverse event (%)
Headache
Flushing
Nasal congestion
Dyspepsia
Abnormal vision
Sinusitis
‘Flu syndrome
Diarrhoea
Myalgia

2) Local therapy:

a) Transdermal therapy

(Nitroglycerine, Minoxidil, Papavarine gel)

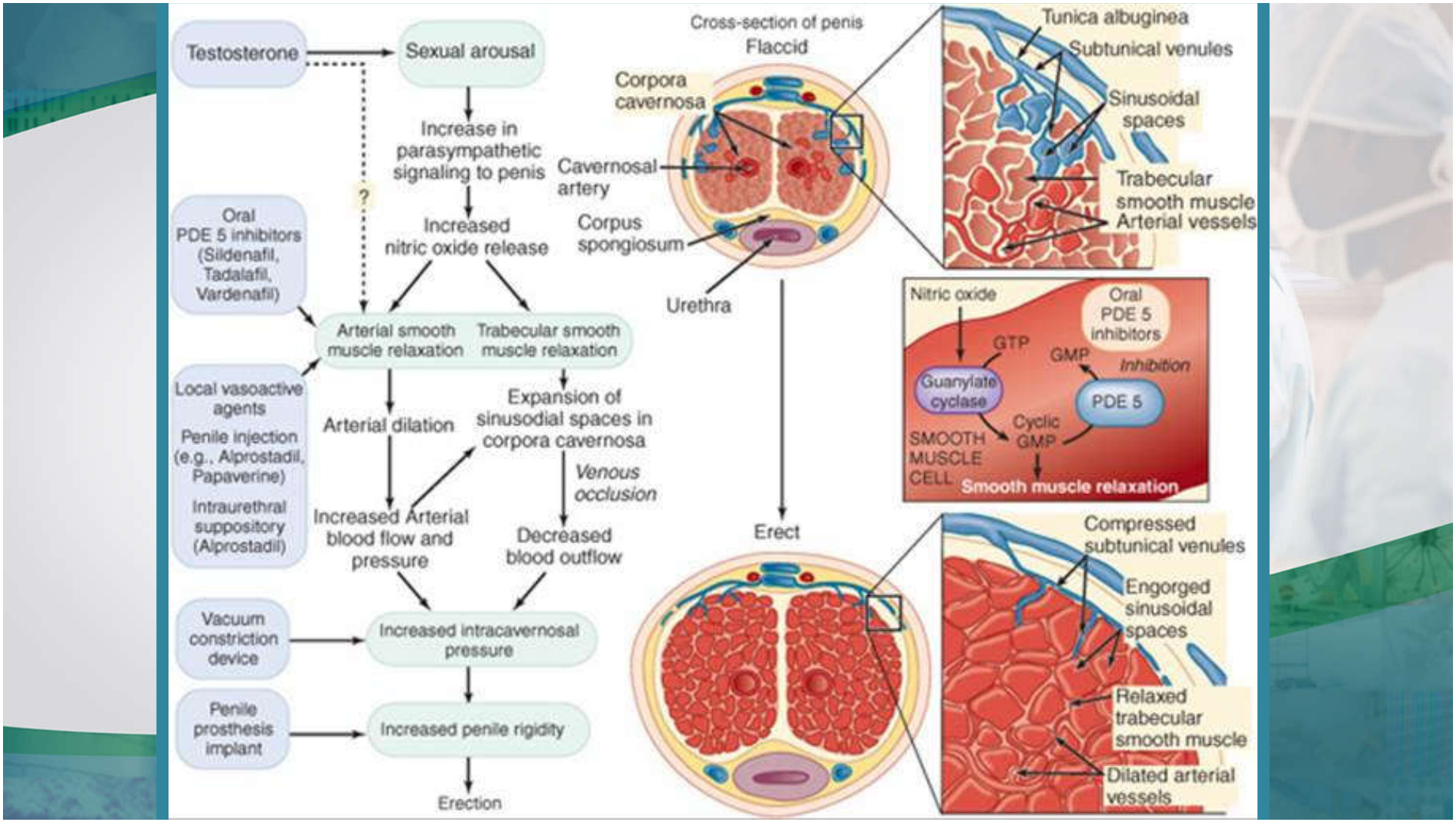
b) Intraurethral therapy

3) ICI

(Papverine, Phentolamine, PGE1)

B- Vaccum constriction devices

C- Surgical therapy


Testosterone
Sexual arousal
Increase in parasympathetic signaling to penis
Increased nitric oxide release
?
Oral PDE 5 inhibitors (Sildenafil, Tadalafil, Vardenafil)
Arterial smooth muscle relaxation
Trabecular smooth muscle relaxation
Local vasoactive agents
Penile injection (e.g., Alprostadil, Papaverine)
Intraurethral suppository (Alprostadil)
Arterial dilation
Expansion of sinusodial spaces in corpora cavernosa
Venous occlusion
Increased Arterial blood flow and pressure
Decreased blood outflow
Vacuum constriction device
Increased intracavernosal pressure
Penile prosthesis implant
Increased penile rigidity
Erection
Cross-section of penis
Flaccid
Corpora cavernosa
Cavernosal artery
Corpus spongiosum
Urethra
Erect
Tunica albuginea
Subtunical venules
Sinusoidal spaces
Trabecular smooth muscle
Arterial vessels
Nitric oxide
Oral PDE 5 inhibitors
GTP
GMP
Inhibition
Guanylate cyclase
PDE 5
Cyclic GMP
SMOOTH MUSCLE CELL
Smooth muscle relaxation
Compressed subtunical venules
Engorged sinusoidal spaces
Relaxed trabecular smooth muscle
Dilated arterial vessels

Premature ejaculation

- **Definition**
- **Clinical types**
- **IELT**
- **Causes**
- **Treatment**


THANK
YOU