



Pre-Operative Services Teaching Rounds 7 Feb 2011

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- **Pseudo-cholinesterase deficiency**
 - Clinical presentation
 - Diagnosis
 - Management
 - Contra-indicated drugs
- **Minor gynaecological procedures**
 - Positioning
 - Anesthesia
 - Procedures
 - D&C
 - Endometrial ablation
 - Essure
 - Incontinence procedures

Case

- **52 year old lady with stress urinary incontinence for TVT procedure in ASC**
- **Family history of ‘not breathing’ after anesthesia**
- **Patient never tested**
- **Otherwise healthy, active, no meds, no surgeries and no allergies.**

Pseudocholinesterase enzyme

(plasma or butrylcholinesterase)

- produced by the liver
- circulates in plasma
- hydrolyzes exogenous choline esters
- no known physiologic function
- clinically significant if >75% reduction in enzyme activity

(True or acetylcholinesterase – acetylcholine metabolism and nerve function.)

- Acquired abnormal pseudocholinesterase activity
 - Liver disease
 - Pregnancy
 - Neonates/elderly
 - Malnutrition
 - Extensive burns
 - Organophosphate poisoning
 - Medications
 - echothiopate

Inherited plasma enzyme deficiency or decreased activity

- ‘BCHE’ gene that codes for the pseudocholinesterase enzyme
 - E1 locus on the long arm of chromosome 3
 - 96% of the population is homozygous for the normal pseudocholinesterase genotype - EuEu.
 - Remaining 4% of the population carries one or more of the atypical gene alleles for the pseudocholinesterase gene in either a heterozygous or homozygous fashion.
 - <0.1% are homozygous for the abnormal gene

- **Eu normal**
- **Ea Atypical dibucaine-resistant variant**
- **Ef Fluoride-resistant variant**
- **Es Silent variant (absent enzyme)**

These alleles may occur either in the homozygous form or in any heterozygous combination with each other, with the normal Eu allele, or with a number of additional rare variant abnormal alleles

C5 variant – increased activity – shortened succinylcholine time

More common in Europeans than Asians

Hindu Arya Vysya community in India

Clinical presentation

Family/personal history “scoline apnea”

No physical exam findings

- Prolonged paralysis after administration of succinylcholine
 - Depolarizing muscle relaxant
 - Rapid onset (<1 minute)
 - Short duration of action (< 10 minutes)
 - Rapid sequence induction
 - Rapid insertion of ETT
 - Short procedures
- Decreased or absent twitch height on nerve stimulator

Clinical presentation

- Signs and symptoms of awareness
 - Movement
 - Tachycardia
 - Hypertension
 - Sweating
 - Lacrimation
- Movement
 - Diaphragm
 - Limb twitching ‘floppy fish’

Fig 1: Acholest test paper

Reaction Time	Pseudochoolinesterase Enzyme Activity
<5 min	Above normal
5-20 min	Normal
20-30 min	Borderline low
>30 min	Below normal

Diagnosis

- Clinical setting
- Nerve stimulator
- a)Pseudochoolinesterase level
 - Not accurate after succinylcholine
 - Decreased in organophosphate poisoning
- b)Dibucaine number (Salt Lake City – batches – 10 days)
 - Different genes
 - Varying penetrance
 - 80% inhibition = normal genes
 - 20% inhibition = inherited pseudochoolinesterase activity
- (Also fluoride inhibition 60%=normal /36%= defic)

Treatment

Acute event

- **Supportive**
 - Ventilate
 - Anesthetize
 - Consider FFP
 - Usually reverse by 8 hrs

Preoperative

- Alert anesthesia staff
- Avoid specific drugs
- Reassure patient
- Dibucaine number

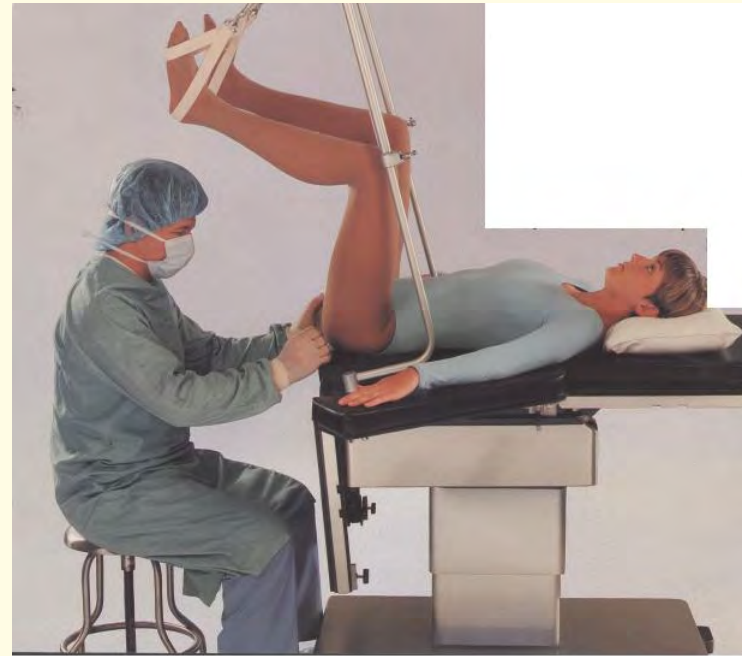
Drugs to avoid

- Succinylcholine
- Mivacurium
- Ester local anesthetics
 - procaine
 - cocaine

Minor Gynaecological Procedures

Positioning:

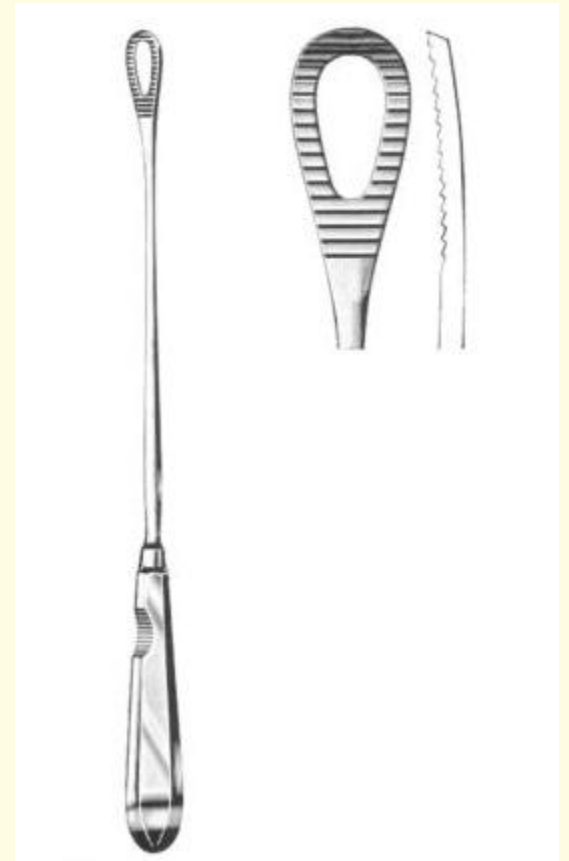
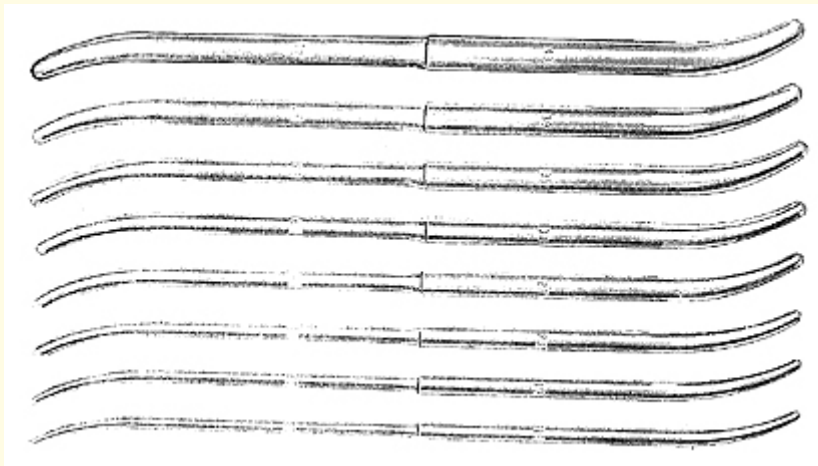
- Obesity
- Respiratory
- GERD
- Injury
- Orthopnea



Anesthesia

- General – mask/LMA/ETT
- Spinal (or epidural)
- Caudal
- Sedation
 - Remember: this is a continuum with general anesthesia
- Local

Dilatation & Curettage

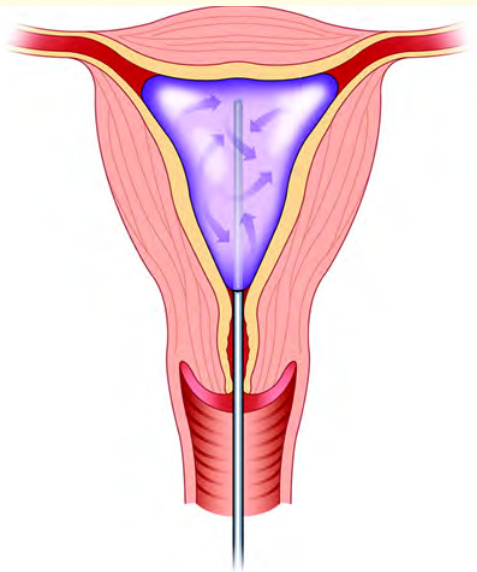


Complications:

- Bradycardia
- Perforation/false track
- Infertility
- Loss of pregnancy
- Bleeding
- Infection
- Cervical incompetence

Endometrial ablation

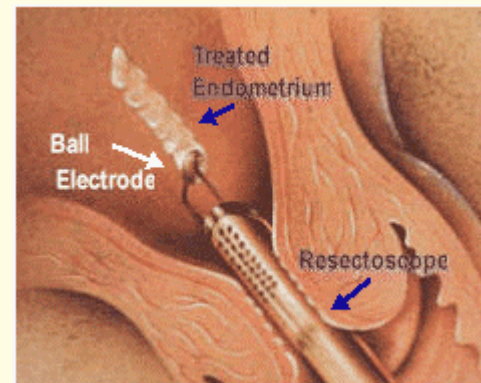
- 1979 NdYAG laser via hysteroscopy



Balloon – Thermachoice™

Adv: simple

Disadv – may miss cornual
areas



Resectoscope – heated wire loop (electrical)

Adv: can remove
polyps/some
fibroids

Disadv: skill level

HTA Hydrothermablator

Hot water in cavity for 10 minutes

Concern of retrograde through fallopian tubes with intestinal burns (not reported)

Novasure System™ Radiofrequency



Endometrial ablation risks:

Short term:

- perforation of the uterus
- bleeding
- infection
- TURP like syndrome due to fluids used to distend the uterus.

Long term:

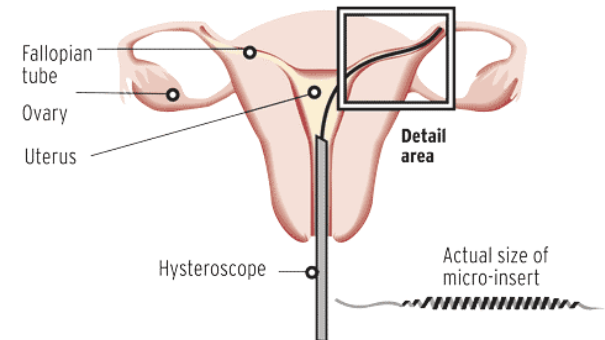
- Infertility is frequent result

Essure™ Permanent sterilization

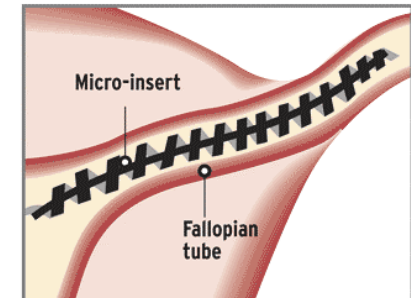
- >5 years experience
- Minor procedure
- 10 minutes – office or ASC
- Minimal anesthesia
- No hormones
 - No effects on cycle
 - Side effects
- Permanent
- 99.7+ % effective
- 3 month HSG to confirm
- Need contraceptive in meantime

Blocking the tubes

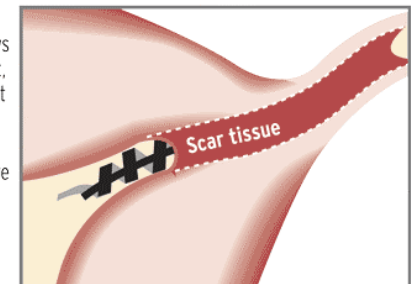
Essure is a procedure where a doctor inserts spring-like coils, called micro-insert, through the vagina, cervix and uterus and into the fallopian tubes. The procedure is permanent. It is an outpatient operation that requires no incisions or anesthesia.



Using a hysteroscope, a doctor places a micro-insert into the fallopian tube. The corkscrew device expands, filling the tube. Doctor removes hysteroscope, leaving micro-insert in place.



During the next three months, scar tissue grows around the micro-insert, creating a blockage that sperm can't penetrate.



After three months, a dye is injected in the uterus and a special type of x-ray confirms that the tubes are blocked.

Source: www.essure.com

The Register

Urinary Incontinence

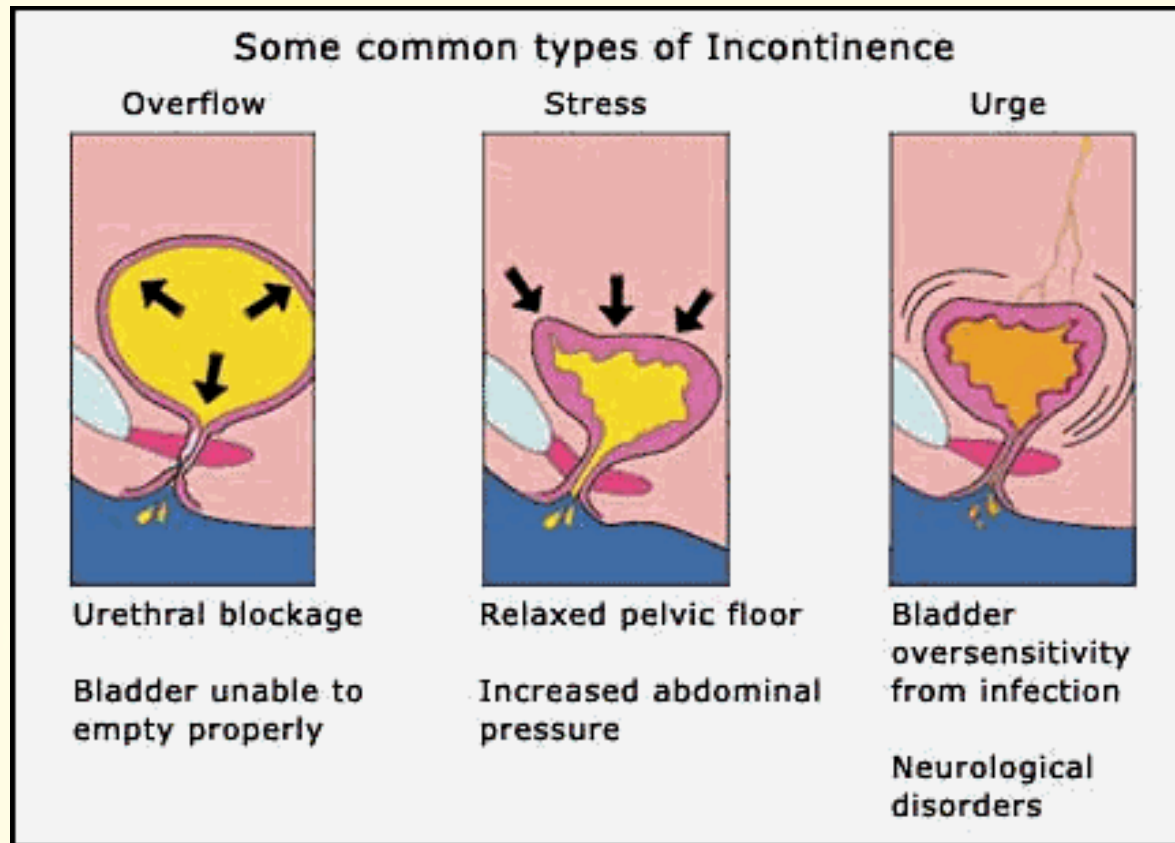
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Four Types of urinary incontinence

- **Stress Urinary Incontinence:** the unintentional leakage of urine during sudden movements such as coughing, sneezing, laughing and exercising.
- **Urge Incontinence:** the sudden, intense urge to urinate, followed by urine leakage. You may feel like you never get to the bathroom fast enough, you may wake several times a night with the strong urge to urinate.

Four Types of urinary incontinence

- **Mixed Incontinence:** occurs when women have symptoms of both stress and urge incontinence.
- **Overflow Incontinence:** occurs when the bladder doesn't completely empty. It may be caused by dysfunctional nerves or a blockage in the urethra that prevents the flow of urine.

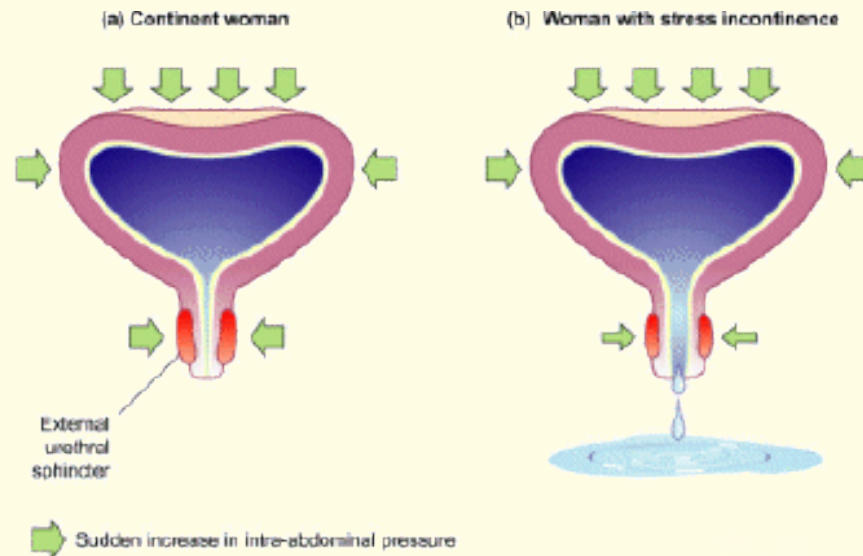


What is stress urinary incontinence?

- **Stress urinary incontinence, or SUI, is the sudden, unintentional release of urine during normal, everyday activities. You may have SUI if you lose urine when you:**
 - **Cough, sneeze or laugh**
 - **Walk, exercise or lift something**
 - **Get up from a seated or lying position**

Anatomically

- stress urinary incontinence means your urethra (the tube from the bladder through which urine exits the body) does not stay closed until it's time to urinate.



Common Causes

- Pelvic muscles supporting the bladder and urethra have been damaged or weakened, so that they may not hold the urethra in its correct position.
- Sudden movements, like sneezing or jumping, put stress on the bladder, causing urine to leak out involuntarily.

Causes

- The weakening of the pelvic floor, connective tissues and muscle can happen as a result of:
 - • Pregnancy and childbirth
 - • Chronic heavy lifting or straining
 - • Menopause
 - • Obesity
 - • Smoking

Diagnosis

- Pelvic exam focused on your pelvic support
- Special tests (such as urodynamics) to evaluate your bladder and urethral function. These tests measure bladder and urethral activity.

Treatments

- **Behavioral/Muscle Therapy:** Therapy often starts with Kegel exercises to help strengthen the pelvic floor muscles.
- **Biofeedback:** In this method, the patient exercises the pelvic floor muscles while connected to an electrical sensing device. The device provides “feedback” to help you learn how to better control these muscles.

Treatments

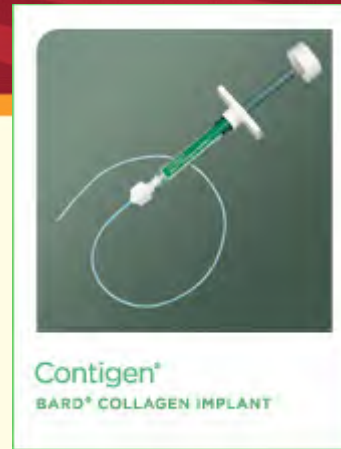
- **Electrical stimulation:** This approach aids pelvic floor exercises by isolating the muscles involved.
- **Medication:** no medication approved to treat SUI in the U.S.

Contigen® injection

- **Contigen® Bard® Collagen Implant**
- **least invasive implant option for the treatment of Stress Urinary Incontinence (SUI).**
- **Natural collagen protein (cow) adds bulk to surrounding urethral tissue to aid defective internal sphincter.**
- **injected just under the urethral or bladder neck mucosa (inside lining)**
- **soft network of fibers**
- **inducing new tissue growth at injection site**
- **Disadv: – allergy – skin testing recommended first**

Contigen

- Short minor procedure
- Office or ASC
- Via rigid cystoscope or
- Peri-urethral →
- Burning on injection
- Urinary retention



Surgery

- The suburethral **sling** procedure uses ancillary material to aid in closure of the sphincter.
 - has many forms / advances in the types of material
 - Some popular types of sling material are Teflon (polytetrafluoroethylene), Gore-Tex[®], and rectus fascia
- Done via vagina / abdomen or laparoscopically.
- **Newer** the Tension-Free Vaginal Tape Sling Procedure (TVT), has gained popularity and early research indicates high success rates and few postoperative complications.

Can be done under local anesthetic.

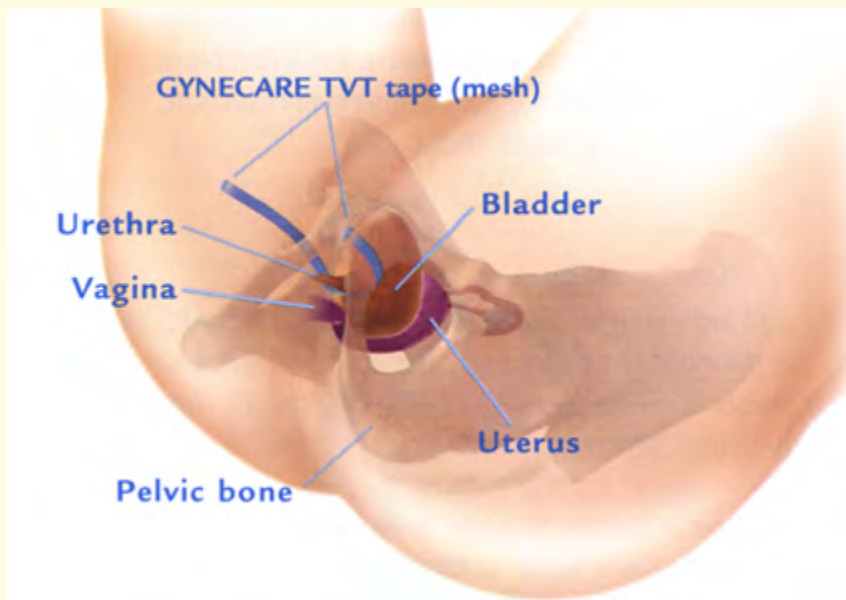
- Long term outcome not established yet



Midurethral sling

Surgery

- **GYNECARE TVT™ Tension-free Support**
- **A ribbon-like strip of mesh is inserted through a very small incisions in the abdomen or vagina to support the urethra. The mesh acts like a supportive sling, allowing the urethra to stay closed when appropriate preventing urine leakage.**



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**This procedure is short; it usually takes just 30 minutes.
Performed in outpatient procedure under local, regional or
general anesthesia.**

What to expect when you return home

- Usually return home the same day
- Complications is low and most patients expect a short recovery period.
- Should be able to resume most daily activities quickly
- Avoid heavy lifting and sexual intercourse for 4-6 weeks.

What are the risks?

- injury to blood vessels of the pelvis,
- difficulty urinating,
- pain, scarring,
- pain with intercourse, bladder and bowel injury.

Contraindications

- anti-coagulation therapy.
- urinary tract infection
- Pregnancy

GYNECARE TVT ABBREVO™

- To replace the Gynecare TVT Secure
- Will decrease use of Gynecare TVTO

Results

- **Significantly less post-operative pain***
- **36% fewer patients experienced groin pain immediately after surgery as seen in the Modified GYNECARE TVT™ Obturator System group§³**
- **Significantly lower incidence and intensity of groin pain on day 0 and day 1 as seen in the Modified GYNECARE TVT™ Obturator System groups**
- **No severe groin pain was reported in either group at 1 year||⁴**

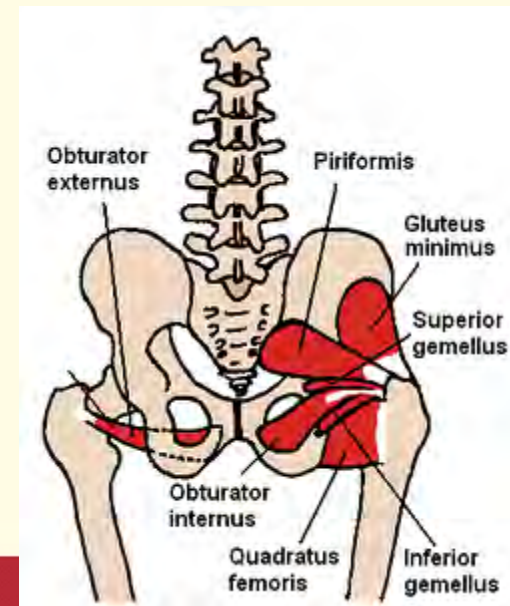
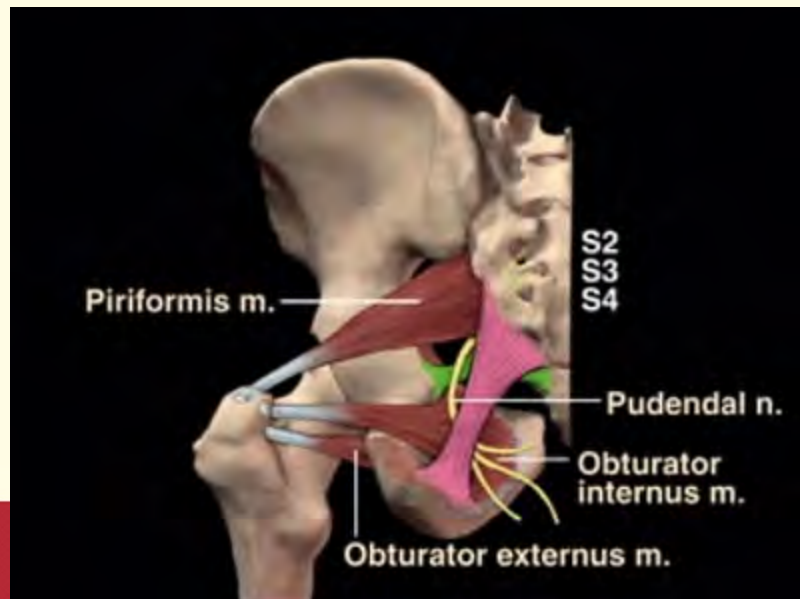
Results

- randomized, controlled trial delivered the same consistent efficacy as GYNECARE TVT™ Obturator System Tension-free Support for Incontinence
- 91 % cure rate and 98 % overall success rate
- Less mesh in thigh muscle may help reduce pain¹
 - 32% less mesh overall
 - 83% less mesh placed in adductor muscles

Results

- Mesh reaches 3 key anatomical structures: obturator, internus, obturator membrane and obturator externus¹

Similar initial fixation with a 12-cm mesh compared to a full length obturator mesh¹



Summary

- **Pseudocholinesterase deficiency**
 - Family history
 - Send out test/don't delay surgery
 - Reassure patient
 - Notify booking
- **Minor gyn procedures**
 - Minimal workup
 - Lithotomy
 - Individual procedures as described