

# Anterior Lumbar Spine Exposures

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# Anterior Lumbar Spine Expsures

- DISCLOSURES

NONE

# Anterior Lumbar Spine Exposure

- Anterior Lumbar Interbody Fusion ( ALIF)
- Anterior Lumbar Artificial Disc Implantation

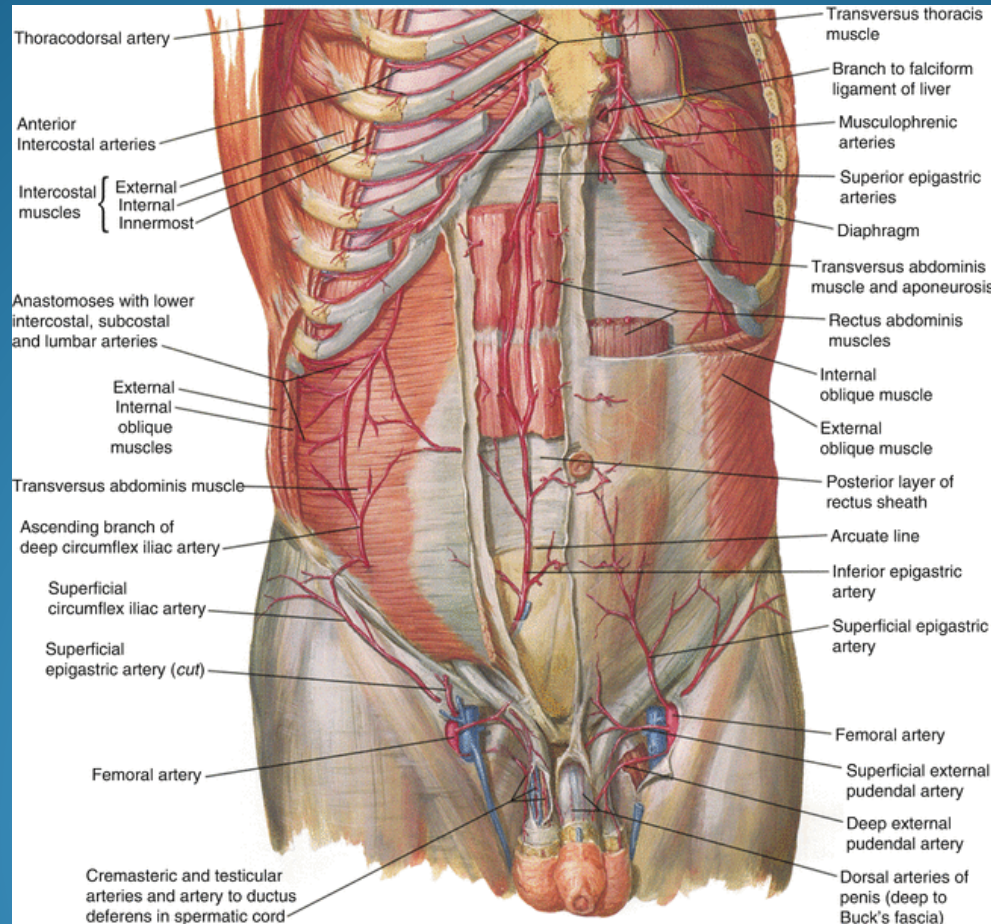
# Anterior Lumbar Spine Exposure

- Anatomic Considerations
  - Anterior Abdominal Wall Structures
  - Retroperitoneal Space Mobilization

# Anterior Lumbar Spine Exposure

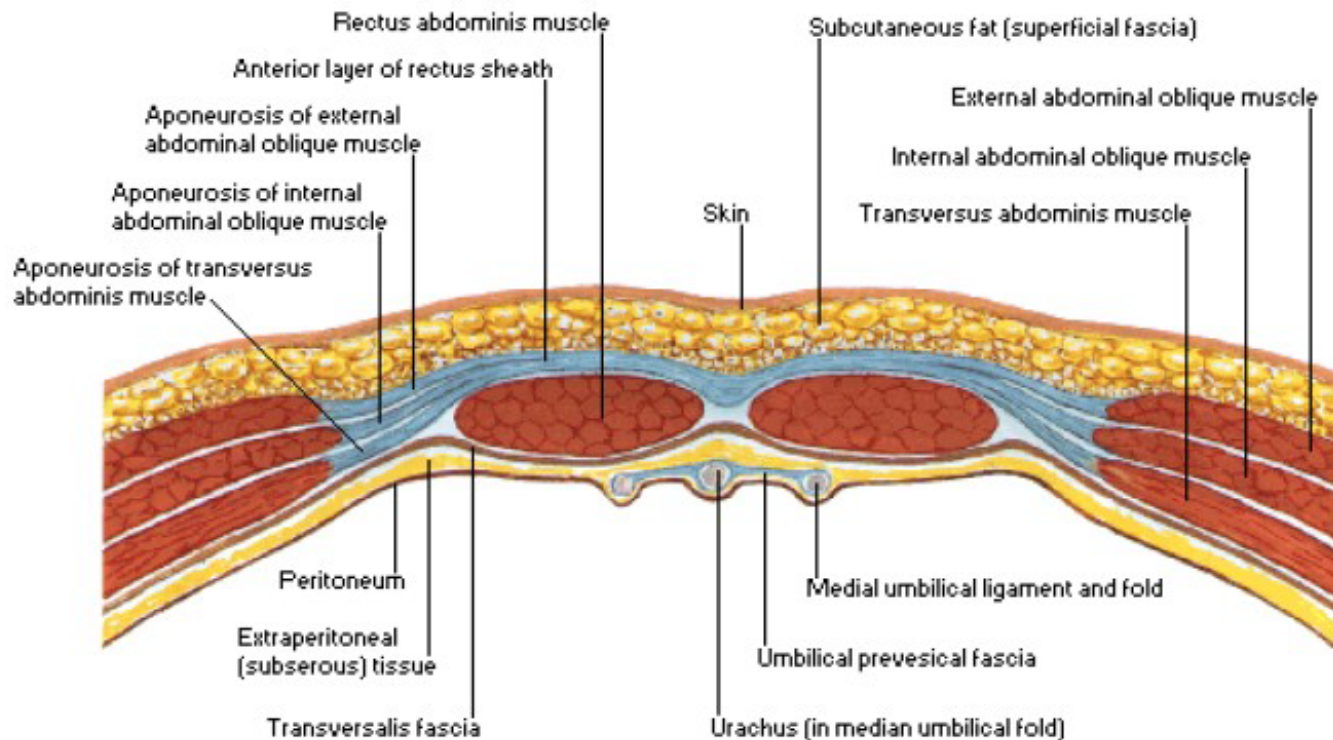
- Improvement in Incision Size
- Transabdominal vs. Retroperitoneal Approach
  - Improved Post op Recovery/Discharge

# Anterior Lumbar Spine Exposure

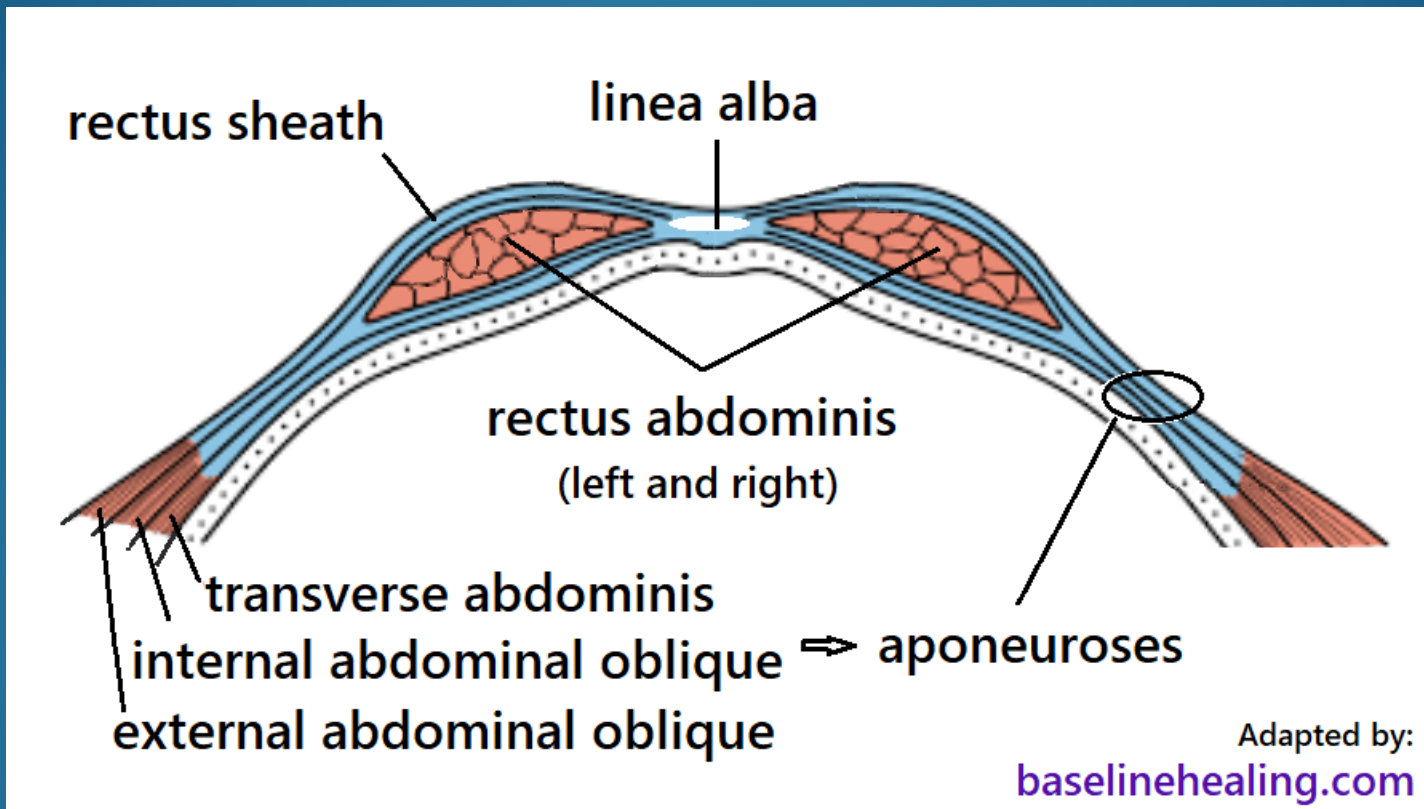


# Anterior Lumbar Spine Exposure

## Cross Section Below Arcuate Line

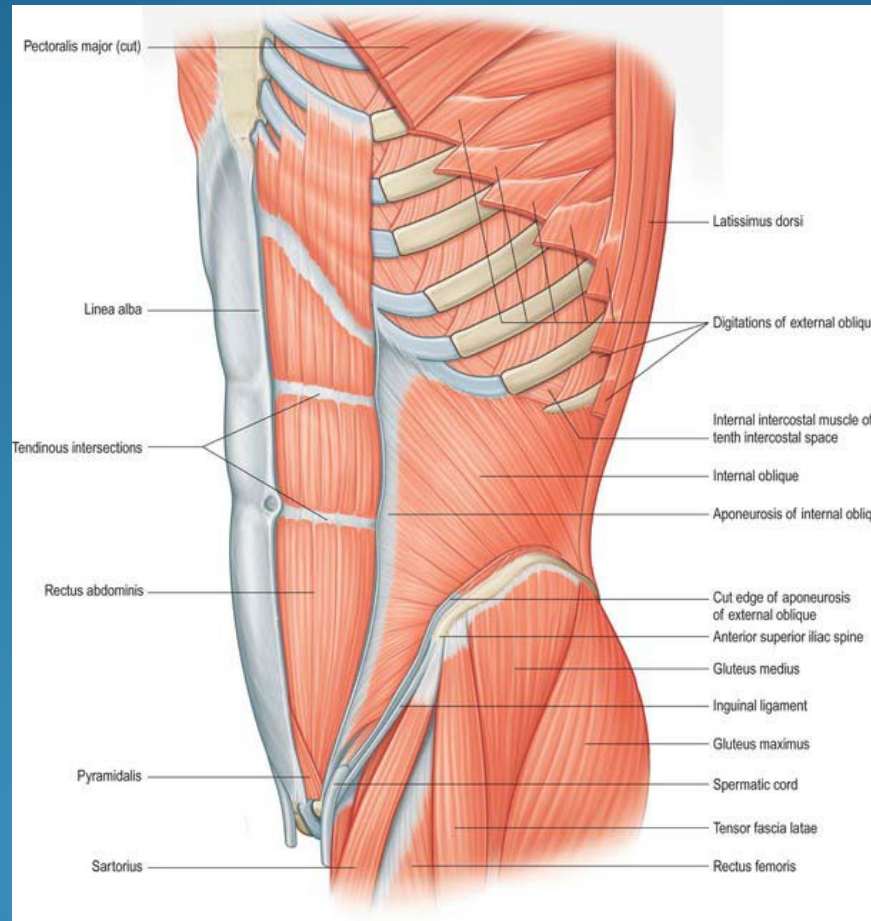


# Anterior Lumbar Spine Exposure

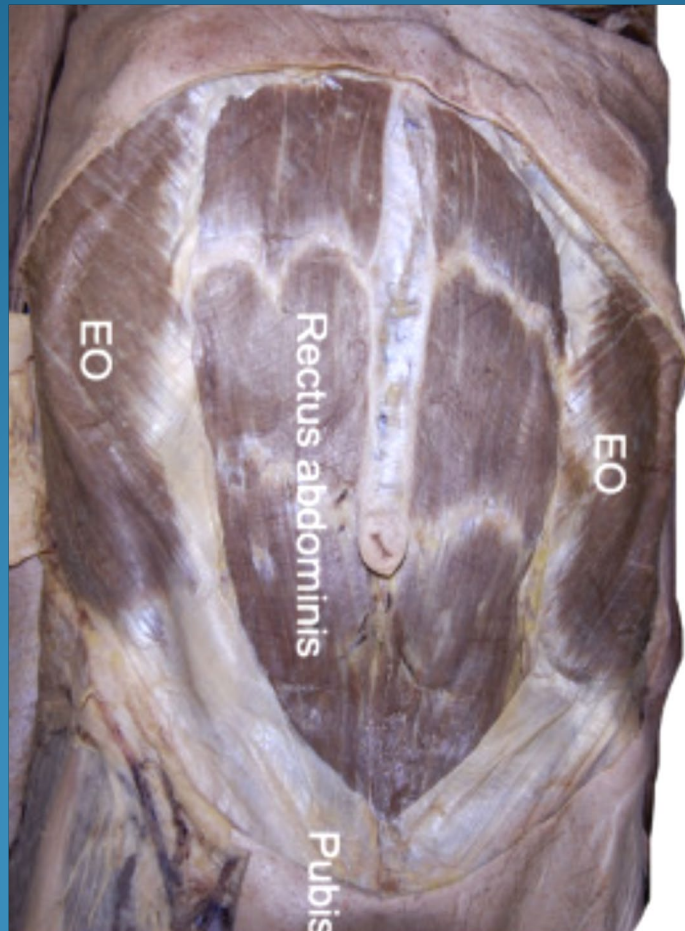




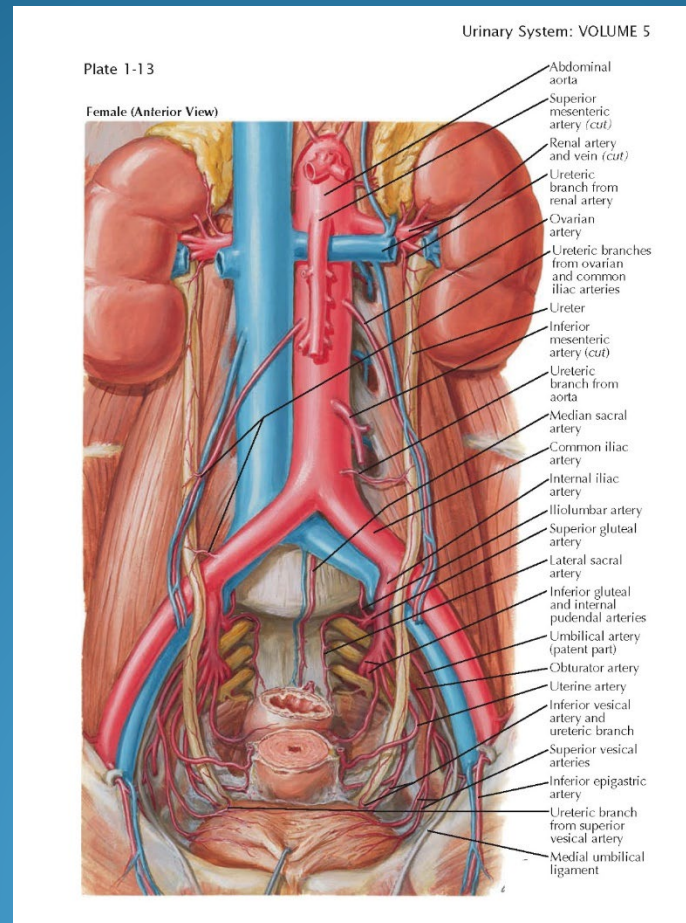
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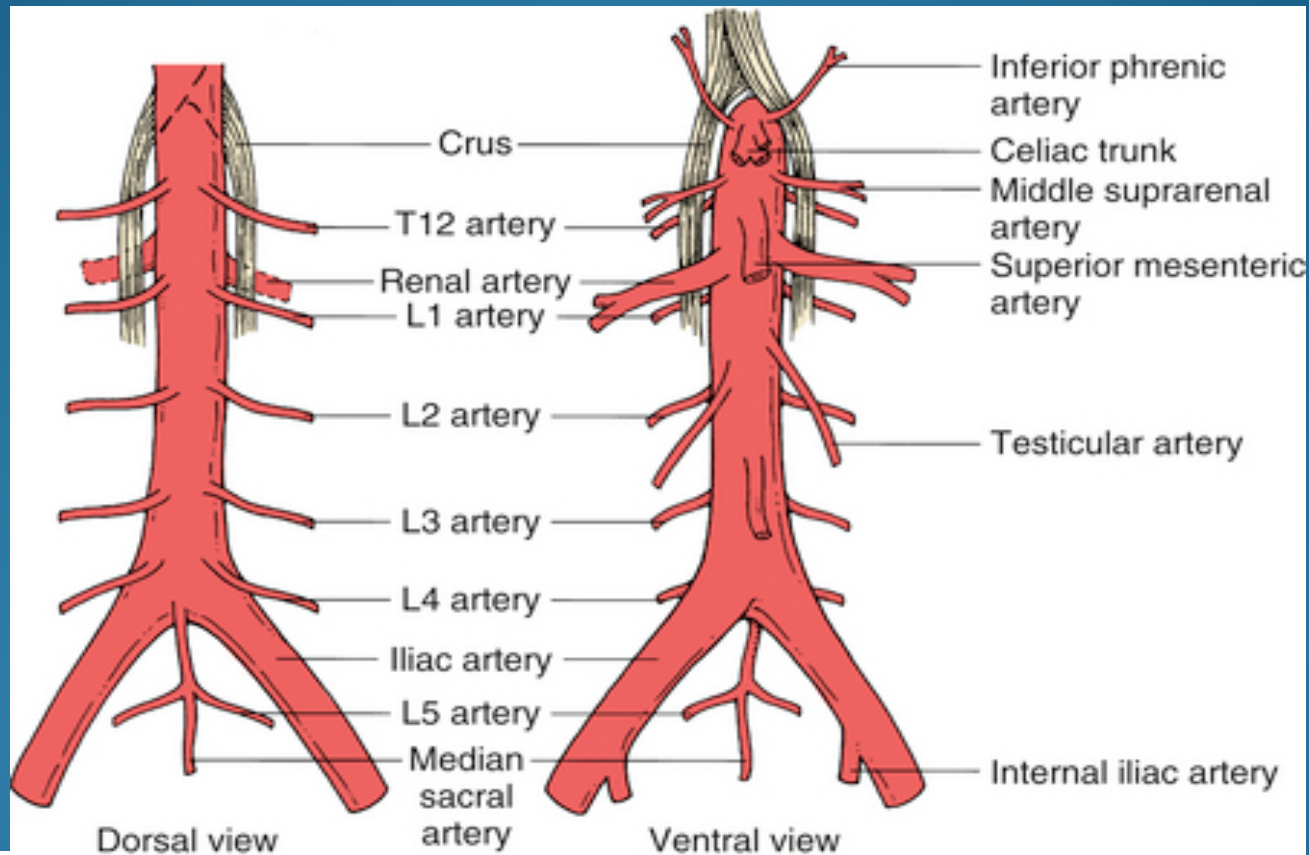
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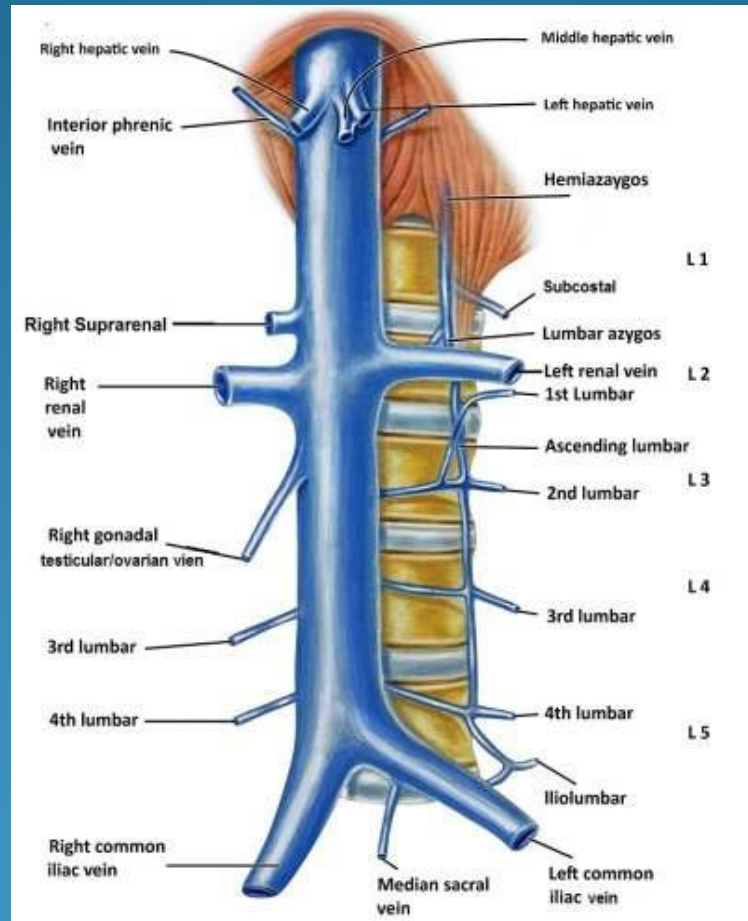
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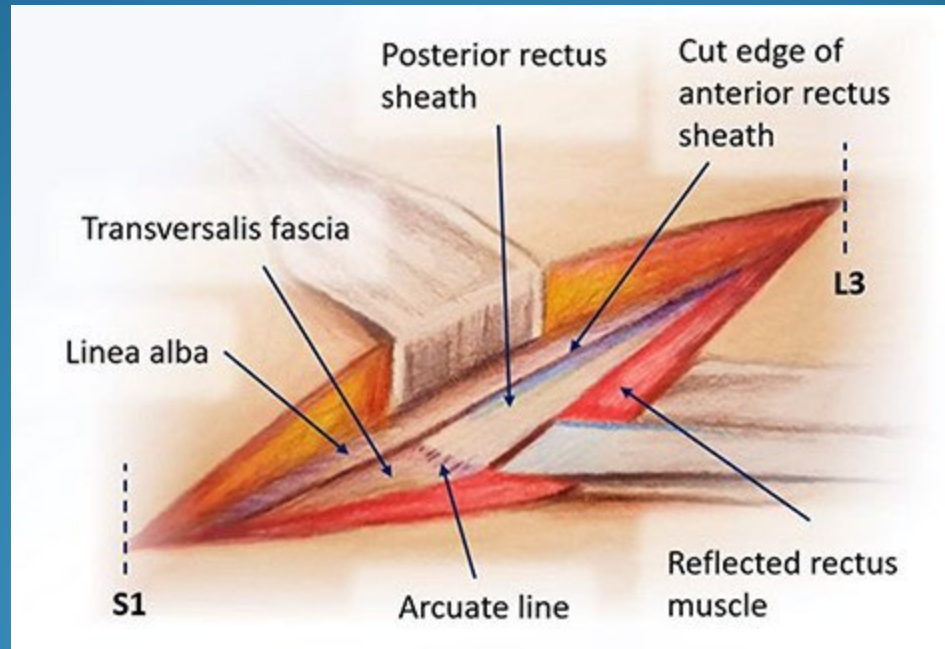
# Anterior Lumbar Spine Exposure



# Anterior Lumbar Spine Exposure

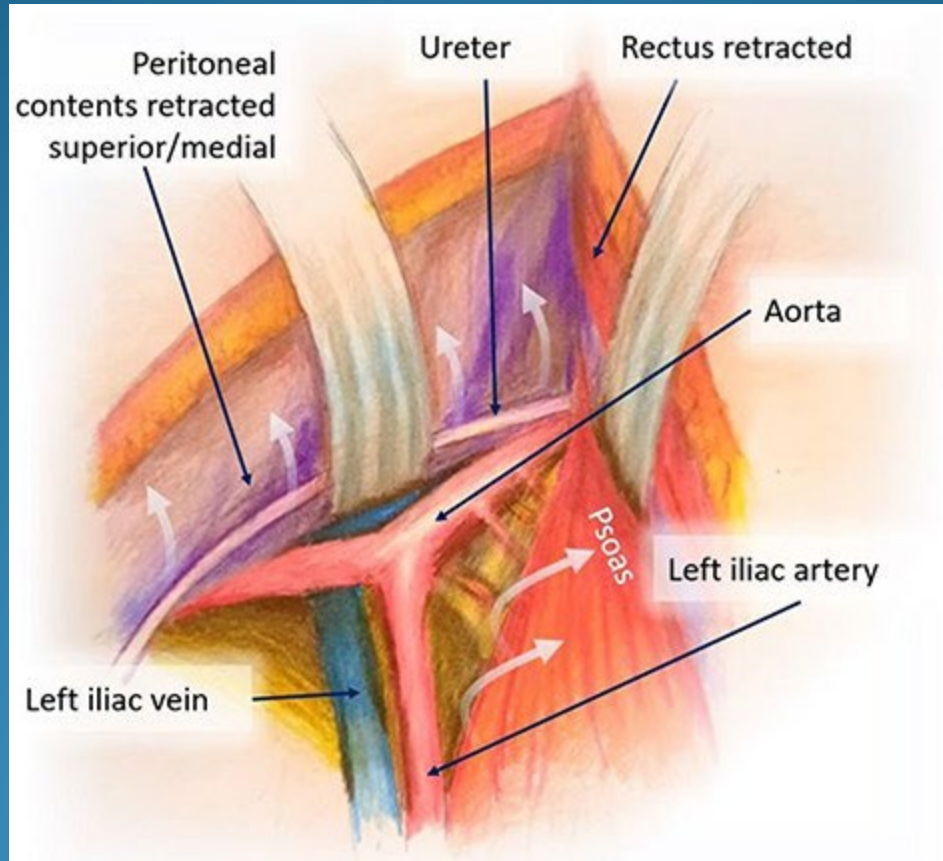


# Anterior Lumbar Spine Exposure



Posterior rectus sheath exposure through a midline approach

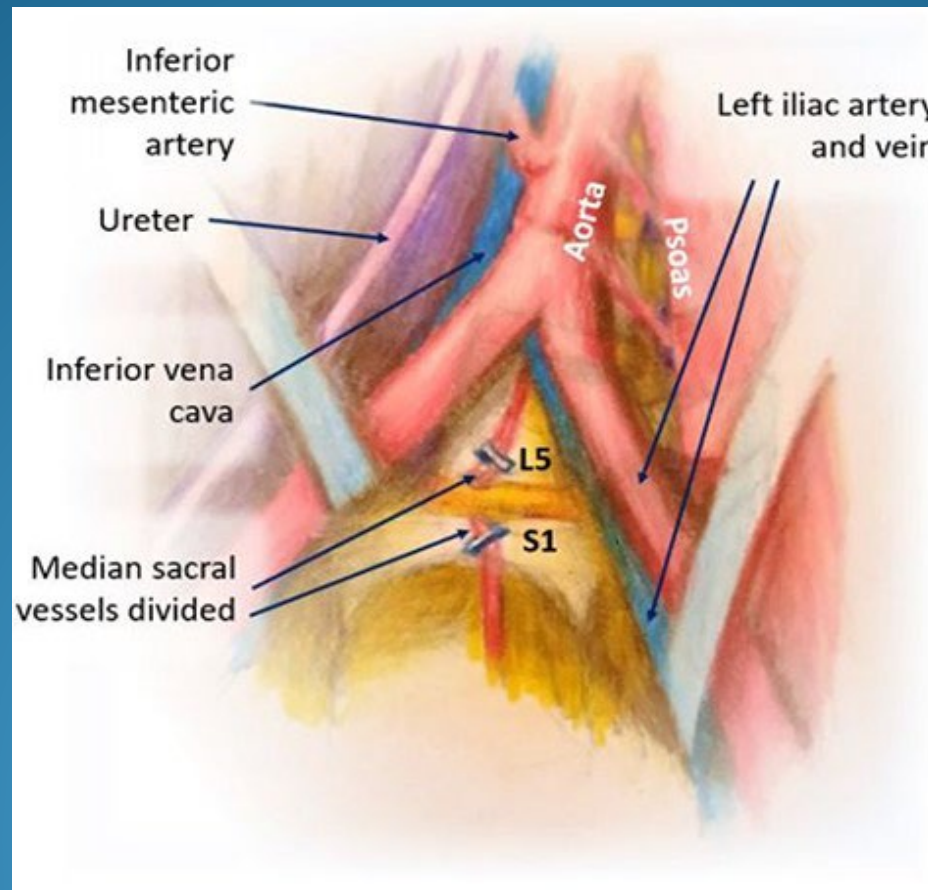
# Anterior Lumbar Spine Exposure



Mobilization of the peritoneal cavity and  
accessing the retroperitoneum

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# Anterior Lumbar Spine Exposure

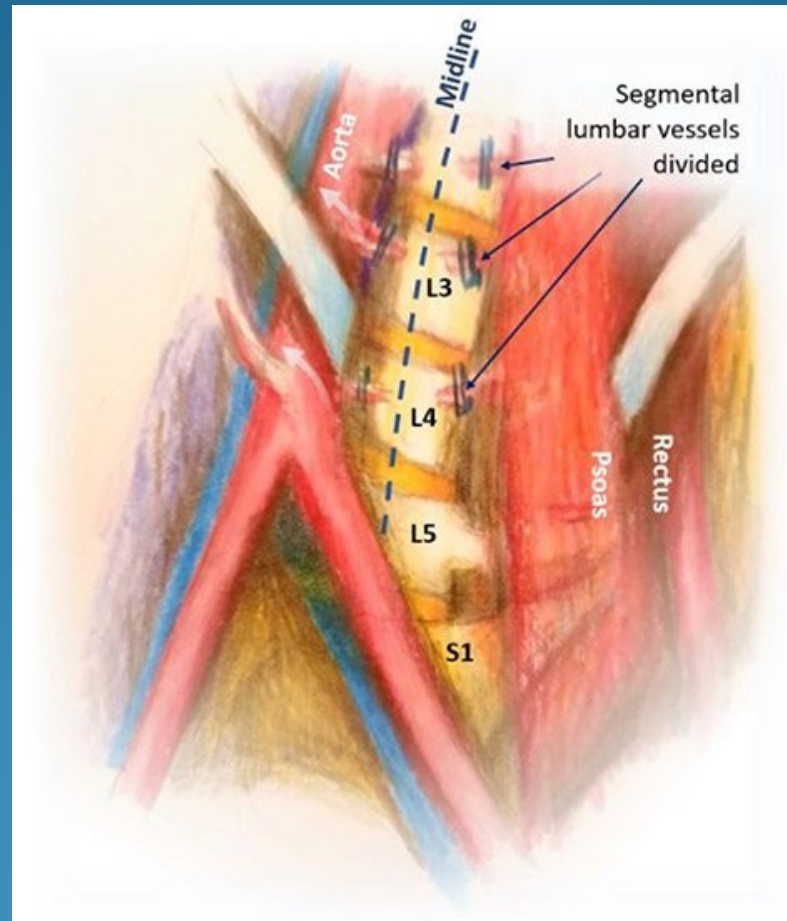


Division of iliolumbar, lumbar and median sacral vessels; exposure of L5-S1

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# Anterior Lumbar Spine Exposure



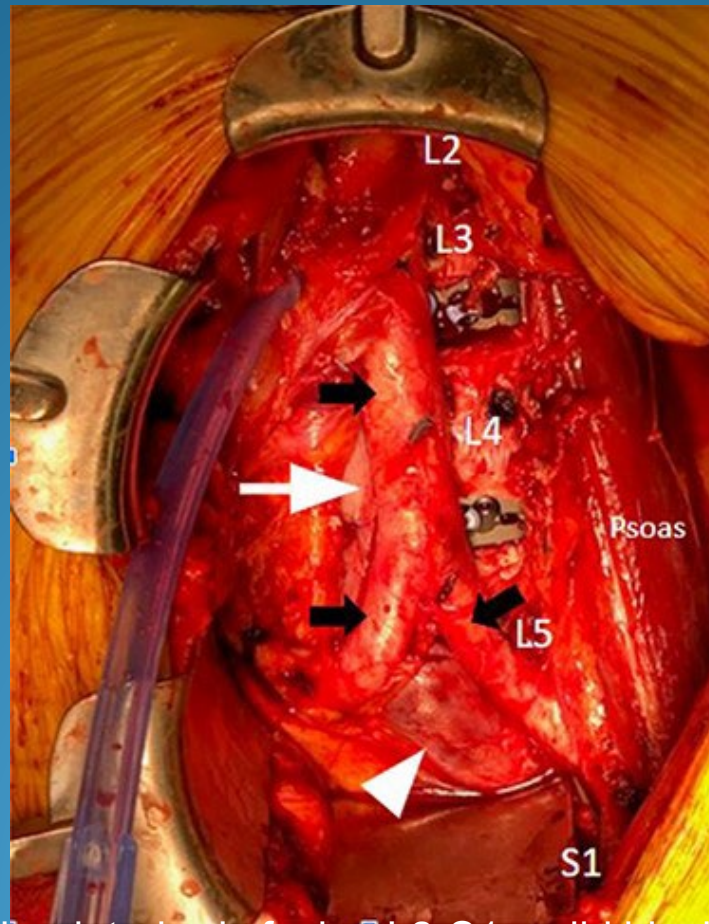
Mobilization of the aorta and IVC with exposure of the spine.

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# Anterior Lumbar Spine Exposure

- INSERT VIDEO HERE

# Anterior Lumbar Spine Exposure



anterior lumbar interbody fusion L2-S1; solid black arrow, top: aorta; solid

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# Anterior Lumbar Spine Exposure

- Complications
- Ileus ( 2%)
- Wound Infection (1%)
- Retrograde Ejaculation/Delayed Ejaculation ( 1% )
- Neurologic Problems/pain/numbness etc. (1%)

# Anterior Lumbar Spine Exposure

- Complications
- Surgical site infection
- Venous thromboembolism
- Ureteral Injury/bowel injury
- Durotomy
- Misplaced screws
- Hardware malfunctions

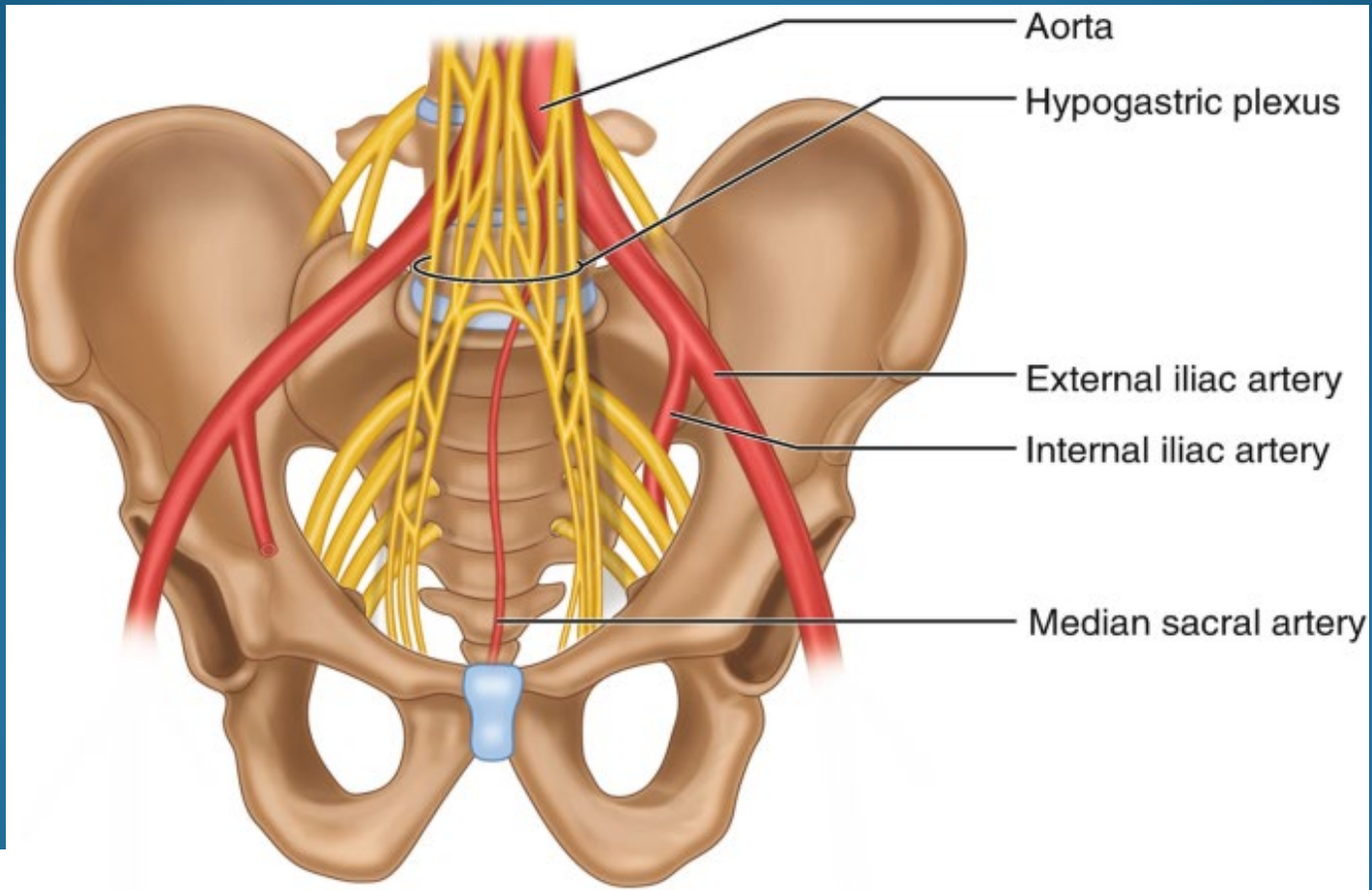
# Anterior Lumbar Spine Exposure

- Retrograde Ejaculation(RE):
- Semen enters bladder instead of emerging through the penis during orgasm
- Patients may reach sexual climax but might ejaculate very little or not produce any semen from the penis

# Anterior Lumbar Spine Exposure

- Delayed Ejaculation (DE):
  - DE ( Delayed Ejaculation) following ALIF/LLIF higher than that of any other lumbar spine surgeries
  - DE estimated to affect 1% of males after ALIF
  - L4-L5 and L5-S1 are the most common levels
  - 2 phases of ejaculation( emmision and expulsion)-both receive input from the sympathetic and parasympathetic systems in the lumbosacral regions via the hypogastric plexus

# Anterior Lumbar Spine Exposure





# Anterior Lumbar Spine Exposure

- Retrograde Ejaculation(RE)/Delayed Ejaculation(DE):
- Pathophysiology thought to be due to injury of the superior hypogastric plexus which lies along the anterior spine at L5 just anterior and inferior to the aortic bifurcation
- Hypogastric plexus is routinely manipulated during an anterior approach to the lower lumbar region

# Anterior Lumbar Spine Exposure

## Medications Used to Treat RE:

- Imipramine (Antidepressant)
- Midodrine (alpha-adrenergic activity)
- Chlorpheniramine and Brompheniramine
- Pseudoephedrine (Sudafed)- converts 25% to antegrade ejaculation; stimulates alpha-adrenergic bladder neck activity

# Anterior Lumbar Spine Exposure

- Medications Used to Treat DE:
- Cabergoline- dopamine agonist; pro-sexual neurotransmitter; study data is limited
- Bupropion- dopamine and NE reuptake inhibitor; study data shows some beneficial effects
- Alpha<sub>1</sub>-adrenergic receptor agonists (pseudoephedrine, ephedrine, midodrine, imipramine)- widely used to treat DE and anejaculation; limited success (12%-50%)
- Yohimbine: alpha<sub>2</sub>-adrenergic receptor antagonist; may be useful but double blind studies needed
- Buspirone: mixed agonist/antagonist at both 5HT<sub>1a</sub> and DA<sub>2</sub> receptor sites; small numbers of studies with no definitive conclusion
- Oxytocin: CNS neuropeptide produced by the posterior pituitary gland; wide variety of functions including sexual activity and penile erection and ejaculation; no conclusive studies
- Bethanecol: muscarinic receptor agonist; case reports exist and one randomized double-blind study; doses of 10-20 mg PRN or 30-100mg BID have shown effect

The drug treatment of delayed ejaculation; *Transl Androl Urol* 2016 .Aug;5(4):576-591. Ibrahim A. Abdel-Hamid, Moustafa A. Elsaied, Taymour Mostafa

# Anterior Lumbar Spine Exposure

Table 1

Drug treatment for delayed ejaculation

Drug	Proposed mechanism	Dose	Timing	Common side effects
Testosterone	Correct hypogonadism	T solution 2%	Applied once a day, at the same time each morning	Pain, redness, swelling, gum or mouth irritation, breast pain, cough
Cabergoline	Dopamine agonist on D2 receptors; activate the 5-HT <sub>2B</sub> receptors	0.5 mg twice/week	at bedtime	Nausea, drowsiness, cardiac valve regurgitation and heart failure
Bupropion	Dopamine (DA) and norepinephrine (NE) reuptake inhibitor	150–300 mg/day	In the morning	Palpitations, urinary frequency, blurred vision, chest pain, agitation, psychosis
Amantadine	Facilitates presynaptic dopamine release and inhibits dopamine reuptake post-synaptically	As needed 100–400 mg; daily 75–100 mg	For 2 days before sex; twice or TID	Nausea, dizziness, depression, anorexia, hallucinations, compulsivity, hypotension, abnormal dreams, headache, constipation/diarrhea, arrhythmias
Cyproheptadine	Antiserotonergic properties	2–16 mg	1–2 hours before sex; daily at bedtime	Sedation, impaired concentration, nausea, dizziness, urinary retention, photosensitivity, rash, abdominal pain, fatigue
Midodrine	$\alpha_1$ -adrenergic receptor agonists	7.5–30 mg	As needed 30–120 min before sex; daily TID	Dysuria, paresthesia, rigors, pruritus, piloerection, rash
Imipramine	$\alpha_1$ -adrenergic receptor agonists	25–75 mg	Daily at bedtime	Dry mouth, constipation, abdominal pain, blurred vision
Ephedrine	$\alpha_1$ -adrenergic receptor agonists	15–60 mg	1 hour before sex	Nausea, headache, dizziness, insomnia, hypertension,

The drug treatment of delayed ejaculation; Transl Androl Urol. Aug; 2016 5(4):576-591. Ibrahim A. Abdel-Hamid, Moustafa A. Elsaied, Taymour Mostafa

# Anterior Lumbar Spine Exposure

- We know that performing anterior spinal surgery in men leads to certain difficulties, such as retrograde ejaculation. What we do not understand is the impact that such surgery can have specifically on women.
- Preliminary results have shown that up to 40% of our patients have changes in their menstrual cycle, and roughly 30% have changes in their sexual activity after anterior spinal surgery.
- Placement of incisions on the abdomen has a far higher impact on women's body image and sexual health

# Anterior Lumbar Spine Exposure

- QUESTIONS...