الجهاز الحركي الهيكلي

THE MUSCULOSKELETAL SYSTEM

منسق المساق
د. امجد الشطرات

15/02/2014

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Hip & femur bones

Lumber plexus

First week

Second week

The front of the thigh

Medial compartment of the thigh
sixth practical
Joints of the lower limbs

Fifth practical
The leg 1

Fourth practical
The bones of the leg and foot

Third practical
The gluteal region

First practical
The leg 2

Joints of the lower limbs

The end of the lower limbs practicals

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THERE WILL BE ONE PRACTICLE FOR THE UPPER LIMBS
seventh practical  The skull & scalp
Eighth practical  The skull & face
Ninth practical  The Cranial cavity

End of head practicals

Tenth practical  The neck 1
Eleventh practical  The neck 2

End of neck practicals

Twelfth practical  The eye 1
Thirteenth practical  The eye 2

The end of eye practicals

Fourteenth practical  Vertebral column, muscles of the back, intercostal muscles and diaphragm
ANATOMY OF THE LOWER LIMBS

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Blood supply of the lower limbs

1- The abdominal aorta divides at the level of L4 into Right and left common iliac arteries

2- Each common iliac artery divides into external and internal iliac arteries

3- The external iliac artery becomes the femoral artery (as it passes behind the inguinal ligament) which will be the main blood supply to the whole lower limb

4- The internal iliac artery shares in the blood supply of the lower limb through its branches, for example, the superior and inferior gluteal arteries and obturator artery (to be discussed later)
5- **THE FEMORAL ARTERY** (to be discussed later) begins midinguinal point and ends at the **opining in the adductor magnus** where it becomes **THE POPLITEAL ARTERY**

6- **The popliteal artery**
Ends at the lower border of the popliteus muscle by dividing into **ANTERIOR AND POSTERIOR TIBIAL ARTERIES**

7- **The anterior tibial artery** supplies the anterior compartment of the leg and terminates in front of the ankle joint by becoming **THE DORSALIS PEDIS ARTERY**

8- **The posterior tibial artery** supplies the posterior and the lateral compartments of the leg ends deep to the flexor retinaculum by dividing Into **MEDIAL AND LATERAL PLANTER ARTERIES** which supply the sole
NERVES OF THE LOWER LIMB

LUMBER PLEXUS
The structure of the spinal nerves

*Posterior horn*
*Anterior horn*
*Lateral horn (autonomic)*

**Somatic afferent root**
**Visceral efferent fibers (Autonomic)**

**Posterior root (Sensory)**
**Dorsal root ganglion**
**Cell body (unipolar)**

**Posterior ramus (mixed)**
1. Muscles of trunk
2. Overlying skin

**Anterior ramus (mixed)**
1. Voluntary muscles of body wall,
2. Limbs and their overlying skin
3. Parietal pleura and peritoneum.

**Spinal nerve (mixed) ~ 1cm long**
The lumbar plexus is formed by the anterior primary rami of the upper four lumber nerves in the substance of psoas major muscle. It also receives a contribution from the T12 (subcostal) nerve. Four small nerves (+2) main nerves.

**Nerves**

- Ilio-hypogastric
- Ilio-inguinal
- Genitofemoral
- Lateral cutaneous nerve of the thigh

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L1 gives
1- Ilio-hypogastric nerve
2- Ilio-inguinal
3- The first root of the genito-femoral

What is the key to memorize the lumber plexus?

L2 gives (four branches)
1- The second root of the genito-femoral nerve
2- The first root of the lateral cutaneous nerve of the thigh
3- The first root of the femoral nerve
4- The first root of the obturator nerve

L3 gives
1- The second root of the lateral cutaneous nerve of the thigh
2- The second root of the femoral nerve
3- The first root of the obturator nerve

L4 gives
1- The third root of the femoral nerve
2- The third root of the obturator nerve
3- The upper root of the lumbo-sacral trunk
Each nerve of the lumbar **plexus emerges** (exits) from the substance of the **psoas major muscle** as follows:

- **Genitofemoral nerve** from the **anterior surface**.
- **Obturator nerve and lumbosacral trunk** from the **medial side**.
- **The Iliohypogastric**
- **The Ilioinguinal**
- **The Lateral cutaneous nerve of the thigh**
- **Femoral nerve** exit from the **lateral side of the psoas major muscle**
The ilio-hypogastric and ilio-inguinal nerves arise as a **single trunk** from the anterior ramus of L1.

Either before or soon after emerging from the lateral border of the psoas major muscle, this single trunk divides into:

**the iliohypogastric and the ilio-inguinal nerves**

**Note**

1- The iliohypogastric nerve is larger than the ilio-inguinal nerve
2- The iliohypogastric nerve runs superior to the ilio-inguinal nerve
Iliohypogastric nerve supplies the posterolateral gluteal skin and just above the superficial inguinal ring, after piercing the aponeurosis of the external oblique, it distributes to the skin in the pubic region.
The surgeon should be very careful to the Ilio-inguinal nerve while giving incision and hernia repair as it could be injured during these procedures.

Ilio-inguinal nerve enters the inguinal canal

Then emerges through the superficial inguinal ring, along with the spermatic cord, and provides cutaneous innervation to the upper medial thigh, the root of the penis, and the anterior surface of the scrotum in men, or the mons pubis and labium majus in women.
Genitofemoral nerve (L1 and L2)
The genitofemoral nerve arises from the anterior rami of the nerves L1 and L2 emerges on the anterior surface of psoas major.

It eventually divides into genital and femoral branches.
The **genital branch** continues downward and enters the inguinal canal through the deep inguinal ring. It continues through the canal and:

- **in men**, innervates the **cremasteric** muscle and terminates on the skin in the upper anterior part of the scrotum;
- **in women**, accompanies the round ligament of the uterus and terminates on the skin of the mons pubis and labium majus.
The lateral cutaneous nerve of thigh arises from the anterior rami of nerves L2 and L3. It emerges from the lateral border of the psoas major muscle, passes posterior to the inguinal ligament, and enters the thigh. The lateral cutaneous nerve of thigh supplies the skin on the anterior and lateral thigh to the level of the knee.

**Intrapelvic** causes include pregnancy, abdominal tumors. **Extrapelvic** causes include trauma to the region of the ASIS (e.g., from a seatbelt in a motor vehicle accident), tight garments, belts, girdles, or stretch from obesity. **Mechanical** factors include prolonged sitting or standing. **Diabetes** can also cause this neuropathy in isolation or in the clinical setting of a polyneuropathy.
Now you should be able to name the nerves and the areas that they supply.
SACRAL PLEXUS
The sacral plexus is formed by the union of lumbosacral trunk and anterior primary rami of the S1, S2, S3 and the upper part of S4 in the pelvis in front of sacrum

The lumbosacral trunk is a thick nerve formed by the union of lower part of anterior primary ramus of L4 (nervus furcalis ?) with the anterior primary ramus of L5

1. Nerve to quadratus femoris (and inferior gemellus)
2. Nerve to obturator internus (and superior gemellus)
3. Superior gluteal nerve
4. Inferior gluteal nerve
5. Nerve to piriformis
6. Pudendal nerve
7. Sciatic nerve

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THANK YOU