



Tikrit University
College of Veterinary Medicine

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Subject name: Myology

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Lecturers link

Lect.8

Myology

Smooth Muscles

Smooth muscle is also called as non-striated or involuntary muscle, because the contraction of the muscle is not controlled by the will of the animal. The muscle fibers don't show cross striations under microscope. Hence, they get the name smooth muscle. They make the bulk of the walls of the visceral organs and are also named as visceral muscles.

Smooth muscles are composed of **fusiform or spindle** shaped cells with a **single nucleus** at the **centre**. The muscle fibers are generally arranged parallel to each other.

Cardiac Muscles

Cardiac muscle is found only in the heart, the immediate proximal ends of aorta, pulmonary artery and pulmonary veins. It is also known as involuntary and striated muscle. Since the contraction is not under the control of the animal and the muscle fibers also show the cross striations under microscope as the skeletal muscle fibers, they can be called as **involuntary and striated**.

Unlike the skeletal muscle fibers they are **single nucleated**, smaller in size and often have **multiple branches**. They are attached to the adjacent cells to form a branching network.

The firm end-to-end attachments between cardiac muscle cells are visible under the microscope as dark, transverse lines between the cells. These attachment sites are called **intercalated discs**.

The description of the muscles arranged under the following heads;

- 1- Name
- 2- Shape and position
- 3- Direction
- 4- Attachment
- 5- Action
- 6- Structure
- 7- Relations
- 8- Blood and nerve supply

The name; Is determined by various consideration ; example the action , attachments, shape, position.....etc. In some cases two or more of these are combined to produce the name ; example (e.g) flexor carpi radialis, longus colli, oblique external abdomens.

The Shape; example triangular, fan- shaped, fusiform, some muscles are characterized as long, broad, short.....etc. orbicular or ring-like muscles, since form contraction when the muscle closes an orifice, it is often termed a sphincter.

The attachments; are in most cases to bone; but many muscles are attached to cartilage, ligaments, fascia or to the skin. Also a term called to origin is applied to the attachment and also insertion. In all cases the attachment is made by fibrous tissue and the term (tendinous attachment) referred to the insertion of the muscle.

The action ; In some times the action is simple; In others is complex muscles which concur in action are termed synergists; those have opposite actions are antagonists.

Structure; Include the direction of the muscular fibers, the arrangement of the tendon, the synovial membrane and any other accessory structure.

The term fleshy is indicative to terms fleshy and tendinous for relative amounts of muscular and fibrous tissue.

Some muscle have an two heads **Biceps muscle** or three heads **Triceps muscle**.

The relations; Constitute a very important part of anatomical topography.

The blood and nerve supply; are important part on clinical grounds, the nerve supply is often of value in the determination of homologies. As might be expected , the muscle have a large blood supply. The nerves to the muscles are motor , sensory and vasomotor in function.

The accessory structures ; associated with the muscles and the synovial membranes and the fascia.

The synovial membrane; are thin membrane of the joints and having a similar function. Two forms are recognized a synovial bursa which present between a tendon or muscle and some underlying structure. A synovial sheath is a membrane , folded around the tendon.

Fascia; Are sheets of connective tissue composed mainly of bundles of collagen fibers mixed with elastic fibers , These fascia are arranged into;

- 1- **Superficial fascia;** is subcutaneous and is composed of loose connective tissue which usually contains more or less fat.
- 2- **The deep fascia;** Is composed of one or more layers of fibrous tissue , its deepest part adherent to the underlying structures , but in many places it is attached to the skeleton, ligaments and tendons.

