

6. *Amphioxus* : T.S. Passing Through Pharynx

Comments :

- (1) Pharynx is a large elongated, sac-like respiratory and digestive organ, extending from behind velum upto the intestine. T.S. passing through **anterior pharynx** shows **body wall layers, dorsal fin ray, nerve cord, notochord, large cut pharynx** with **endostyle** and **metapleural folds**.
- (2) Body wall is composed of **cuticle, epidermis, dermis** and **muscle layer**.
- (3) **Cuticle** and epidermis are thin-layered and indistinguishable. Below epidermis the dermis is also thin-layered.
- (4) More than three-fourth of the section from dorsal side contains thick; cut, segmental muscle bundles or **myotomes** separated by transverse **myosepta**. The first three myotomes have side muscle fibres while in posterior, half the muscle fibers are backwardly directed.
- (5) Dorsally, just beneath epidermis, is the **dorsal fin ray**.
- (6) Below dorsal fin ray is **nerve cord** and beneath **nerve cord** is **notochord**. Notochord is surrounded by notochordal sheath and filled with vacuolated notochordal cells.

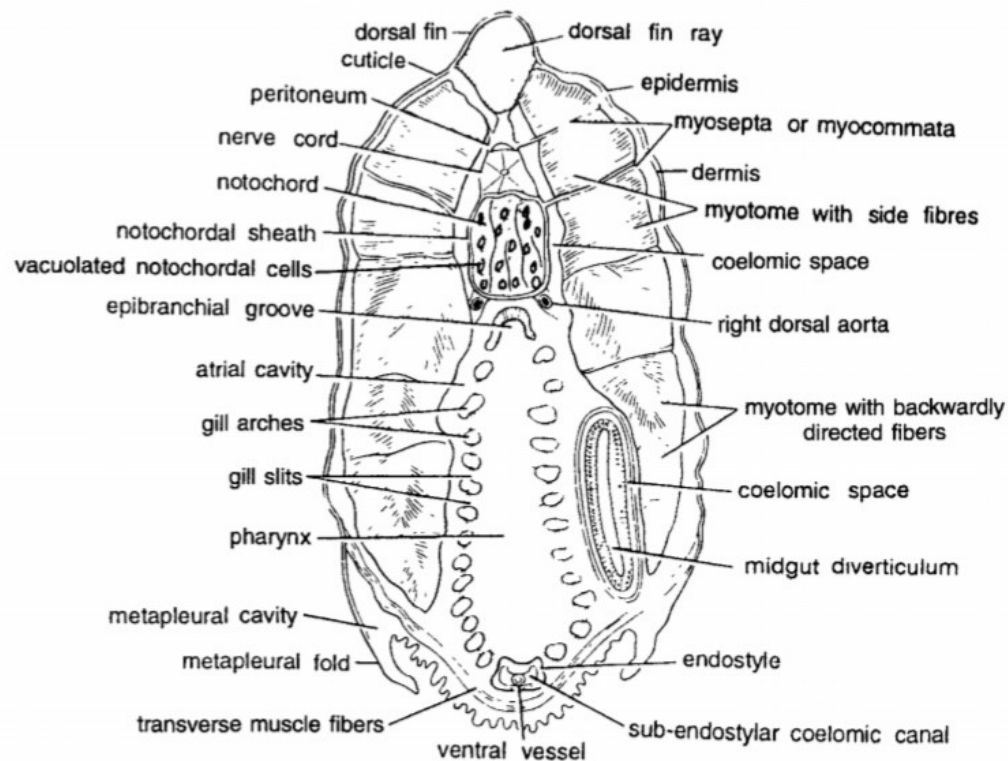


Fig. 6. *Amphioxus* : T. S. passing through pharynx under low magnification.

- (7) Ventral half of the section contains the large pharynx surrounded by **atrial cavity** and perforated by **gill slits**. It contains longitudinal rows of cilia in the form of an **epipharyngeal groove** mid-dorsally and an **endostyle** enclosing an **endostylar canal**, midventrally. The **ciliated grooves** direct food material towards **oesophagus**. The sides of the pharyngeal cavity contain several **gill arches**. **Pharynx** is adapted for ciliary feeding.
- (8) Two **metapleural folds** with **metapleural cavity** are seen posteriorly.
- (9) In some sections through **pharynx**, midgut diverticulum or liver is also seen. Other structures seen are **dorsal aorta**, coelomic spaces, gill arches, ventral vessel and transverse muscle fibers.

Identification : Since this section shows epipharyngeal groove, gill slits and all above features, hence it is T.S. *Amphioxus* through **pharynx**.

5. *Amphioxus* : T.S. Passing Through Oral Hood

Comments :

A. Under low magnification : (10 X eye-piece; 4 X objective).

- (1) At the anterior end of *Amphioxus* is a mid-ventral opening encircled by frilled membrane, called oral hood. The T.S. Passing through the oral hood shows body wall, dorsal fin ray, nerve cord, notochord, vestibule and oral hood, etc.
- (2) Body wall is composed of **epidermis**, **dermis** or **cutis** and **muscle layer**.
- (3) **Epidermis** is covered by a non-pigmented and **iridescent cuticle**. Unlike other chordates, the *Amphioxus* epidermis is very thin. **Dermis** is indistinct.
- (4) Below epidermis and dermis is a thick longitudinal muscle layer. The cut segmental blocks or **myotomes** are very distinct, separated by **myosepta**. The muscle fibers in anterior half section are directed upwards while in posterior half, backwards. Below muscle layer is coelom.
- (5) Dorsally below the epidermis is a **dorsal fin ray**.
- (6) Dorsal tubulated glandular **nerve cord** having a central canal or neurocoel and below it notochord are clearly seen. The notochord is composed of chordal or fibrous sheath, which encloses vacuolated notochordal cells filled with homogeneous liquid.

(Z-21)

(7) Ventrally, section shows a large stomodaeum, oral hood and cut part of buccal cirri in a circular manner. Oral hood contains lymph spaces.

(8) Dorsal wall of buccal cavity has a sensory **Hatscheck's groove**.

B. Under high magnification : (10 X eye-piece; 40 X objective).

- (1) **Epidermis** is very clearly seen under this magnification. It is composed of single layered **rounded epithelial cells** with some chemoreceptor cells and unicellular gland cells covered by thin **cuticle**.
- (2) The **myosepta** are continuous with epidermis and visceral layer. Myotome muscles and myoseptum are seen.

Identification : Since the section has **buccal cirri** and all above features, hence it is T.S. passing through **oral hood of *Amphioxus***.

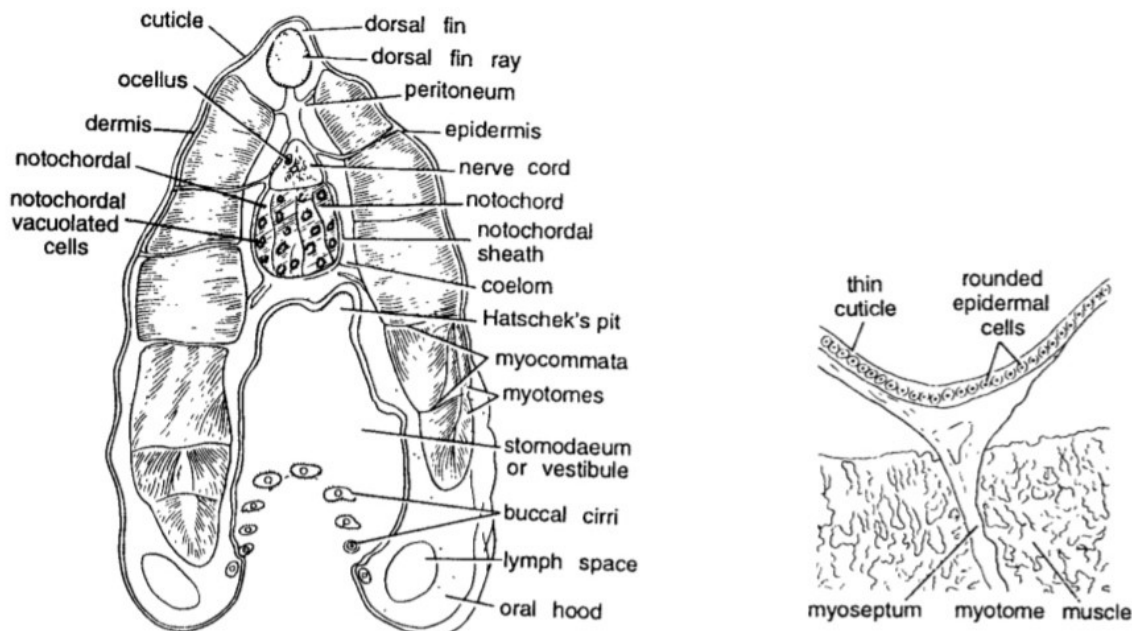


Fig. 5. *Amphioxus* : A. T. S. passing through oral hood (under low magnification), B. Epidermis under high magnification.

12. *Amphioxus* : T.S. Passing Through Caudal Region

Comments :

- (1) Section through caudal region is somewhat smaller in size and without any opening.
- (2) **Body wall** is composed of thin **cuticle**, **single-layered epidermis**, **dermis** and **myotomes** alternating with **myocommata**. Three upper **myotomes** have side muscle fibres while 2 posterior ones have backwardly directed fibers. Myotomes are separated by myosepta.
- (3) **Dorsal fin ray** found at the base of dorsal fin below epidermis.
- (4) **Nerve cord** with neurocoel lies below **dorsal fin ray**.
- (5) **Notochord** with vacuolated chordal cells is found below the nerve cord.
- (6) **Caudal artery** and **vein** appear below notochord.
- (7) Alimentary canal, atrial cavity, coelom and metapleural folds are absent in this section.
- (8) Caudal fin with **fin ray** is present posteriorly.

Identification : Since there is no opening, it is T.S. passing through the **caudal region of *Amphioxus***

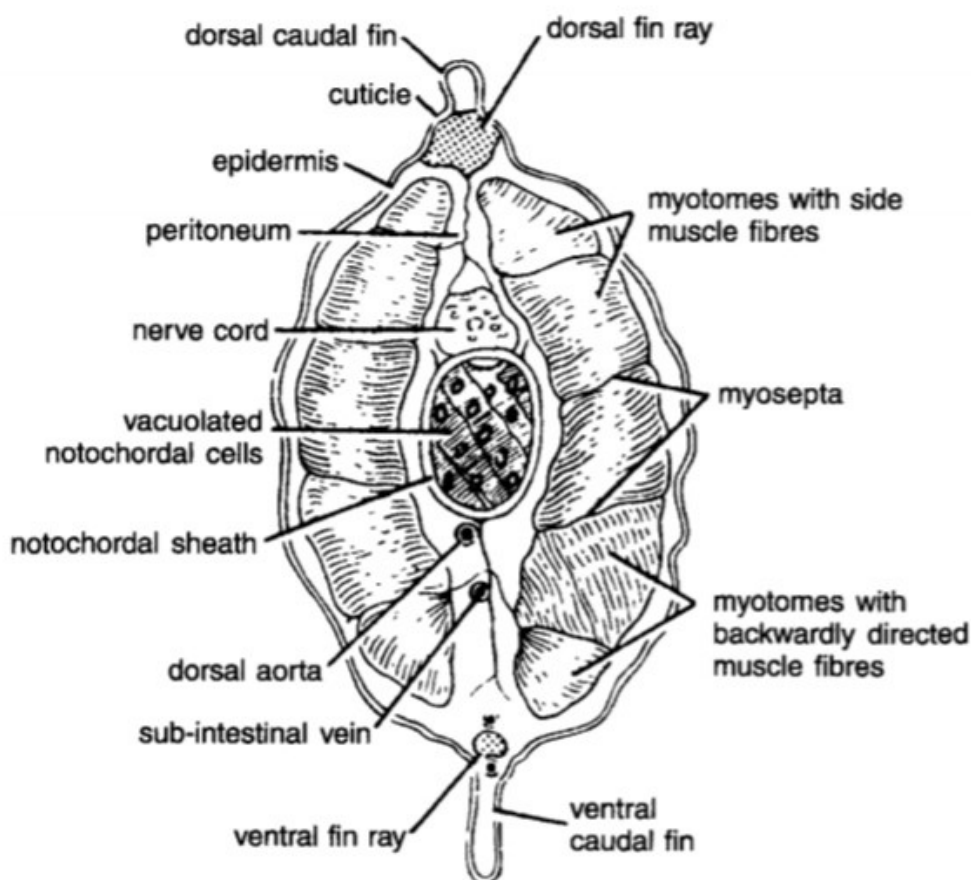


Fig. 12. *Amphioxus* : T. S. passing through caudal region.