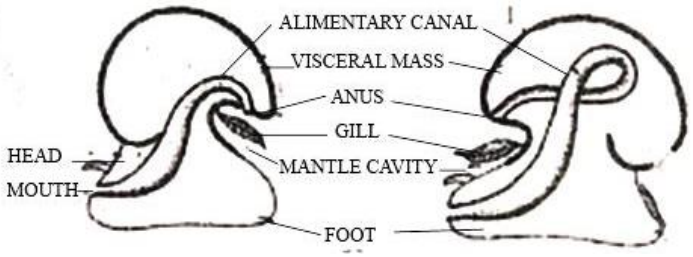
TORSION IN MOLLUSCA

Torsion is defined as the rotation of the visceral organs to an angle of 180° in the anticlockwise direction. It occurs in the larva of gastropods. It converts the symmetrical larva into an asymmetrical adult. Torsion occurs in majority of gastropods. Eg. *Pila*.

Process of Torsion

The larva of gastropod is symmetrical. The symmetrical larva has the following features:

1. The alimentary canal is straight with the mouth at the anterior end and the anus at the posterior end.
2. The mantle cavity is located on the posterior side.
3. The ctenidia are located posteriorly.
4. The nervous system is bilaterally symmetrical.



Before torsion After torsion

The larva develops torsion in order to become the adult. Torsion occurs in the following ways:

1. Ventral flexure: First of all a ventral flexure appears in the larva. It converts the straight alimentary canal into a loop.

2. Differential growth: On the right side of the larva, the growth retarded; but on the left side it is accelerated.

3. Anti-clockwise rotation: The mantle and the pollial complex rotated to an angle of 180° in the anticlockwise direction. This process shifts the organs from the left side to the right side.

Events in Torsion

Torsion produces the following changes:

1. **Looping of alimentary canal:** The alimentary canal becomes loop-like. The anus is brought forward near the mouth.
2. **Twisting of nervous system:** The pleuro-visceral connectives become twisted.
3. **Displacement of mantle cavity**: The mantle cavity is shifted forward.
4. **Change in the position of Ctenidia:** The ctenidia are brought and directed forward.
5. **Displacement of auricles**: The auricles are shifted to the front of ventricle.
6. **Coiling of shell and visceral mass**: The shell and the visceral mass are coiled.
7. **Degeneration of structures on the left side**: The organs located on the left side of the larva degenerate.
8. **Loss of symmetry**: The bilateral symmetry of the larva is lost as a result of torsion.

Advantages of Torsion

Torsion provides the following advantages to the animals:

1. Respiration: Before torsion the gills and anus are situated posteriorly. As the animals move forward, the faecal matter is released behind. Hence the water becomes turbid and impure. This impure water is inhaled into the mantle cavity for respiration. But after torsion, the gills are brought forward. Hence the respiratory water is taken in from ahead of the animal. Hence, by torsion, the animal gets the

previlege of using pure water for respiration.

3. Sensation: Before torsion the osphradium is situated backward. But after torsion, the osphradium is brought forward. This anteriorly placed osphradium helps the animal to test the suitability of the water lying ahead.

4. Protection: Before torsion the foot is withdrawn into the body first. Only after the foot is drawn in, the more sensitive parts like the head and ctenidia are taken in. But after torsion the head and ctenidia are withdrawn first. Only, lastly the foot is withdrawn. This gives protection from enemies.

Disadvantages

Torsion produces the following disadvantages

1. Sanitation: Torsion brings the anus close to the mouth. The faeces released from the anus gives rise sanitation problems.

2. Respiration: The faecal matter is released forward. It makes the water lying ahead impure. The same impure water is inhaled for respiration.