

DI(14) 2 DI (2/8)

## TORSION AND DETORSION IN GASTROPODA

TORSION:- Torsion or twisting is a process, during larval development of gastropods, which rotates the visceropallium anticlockwise through  $180^\circ$  from its initial position, so that mantle cavity, with its pallial complex, is brought in front of the body, in adult.

SITE OF TORSION:- In larval gastropods, only visceral mass undergoes rotation through  $180^\circ$ , whereas head and foot remain, fixed. Actual site of torsion is neck, behind the head-foot, through which oesophagus, retorta, visceral nerve loop and shell muscles pass. Thus, actual twisting involves the neck tissue and structures within it.

How Torsion Occurs? Torsion is not merely an evolutionary hypothesis. Its occurrence can be seen in the embryology of living gastropods. Before torsion, larva is quite symmetrical, the mantle cavity faces backwards and downwards, alimentary canal is straight and anus opens posteriorly in ~~mantle~~ middle line.

A ventral flexure of the body results in looping of alimentary canal and approximation of mouth and anus. Shell and visceral mass, originally saucer-shaped become first cone-shaped and latter spirally coiled. Shell lies dorsally and forms a coil on the anterior side, such a shell is called exogastric.

Ventral flexure is followed by a lateral torsion, so that dorsal or exogastric shell becomes ventral or endogastric. Lateral torsion is probably due to arrest of growth on one side and active extension on the other. Generally, growth of the right side becomes retarded so that mantle cavity and pallial complex gradually pass round to right side, and so to the anterior side, on account of greater growth of the visceral sac towards the left. But the whole process completes in 2 or 3 minutes in *Panopeus*, so that it can be not be regarded ~~side~~ due to differential growth. On the contrary, it is due to muscular contractions. Actual mechanism of torsion is supposed to be the symmetrical position

and pull of the larval retractor muscles mainly from the yelaw lobes to the shell. They are present only on the right side, there being no related ones on the left side. Connection of larval retractor muscles brings about the rotation or torsion. Only narrow neck of the larva is actually twisted. Consequently, everything between the head and anus undergoes an anticlockwise rotation or torsion through an angle of  $180^\circ$  around a vertical axis passing in a dorso-ventral direction.

#### Effect of Torsion

1. Displacement of mental cavity. ② change in relative position. ③ looping of alimentary canal.
- ④ chiastoneury ⑤ Endogastric cell ⑥ Loss of symmetry and atrophy.