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Detorsion in Gastropoda

All the living molluscs are typically bilaterally symmetrical animals with mantle cavity lying posteriorly or laterally, but this symmetry is lost in Gastropods due to two processes called coiling and torsion. **Partial or complete** reversion of torsion is known as **detorsion**. Which takes place when during evolution shell is lost or a type of shell evolves that has openings on the opposite sides. Hence, detorsion takes place during the larval stage and the animal again becomes bilaterally symmetrical. It is very characteristic of the whole group of the **Euthyneura**. As a result, pallial complex travels back towards the posterior end along the right side, ctenidia point backwards, auricles move behind the ventricle, and the visceral loop becomes untwisted and symmetrical.

In this way, a secondary external symmetry is re-established. Torsion must be disadvantageous to adult snails, as many of them have undergone detorsion processes. Various degrees of detorsion are met within the Euthyneura. In the least specialized Opisthobranchia and Pulmonata (*Acteon, ·Bulla, etc.*), detorsion is not complete, so that the visceral loop remains partly twisted and the anus and ctenidium are directed laterally, instead of anteriorly. Formerly, this condition was looked upon as an arrested stage in the torsion, but there is the same reduction of the paired

parts of the pallial complex as in the specialized **Streptoneura**. Total detorsion, as shown by the typical **Opisthobranchia** (*Aplysia*), is accompanied by a reduction of disappearance of the shell. In extreme cases, as in ***Pterotrachea***, the mantle and the visceral sac also disappear and the body elongates to become worm-like. The mantle cavity, visceral hump, external shell and even ctenidia may be lost, as in **Nudibranchia** (***Eolis, Doris,*** etc.).

The phenomenon of detorsion can thus be elaborated as follows :

(l) In some cases the right ctenidium (originally left) and the osphradium are absent.

(2) In ***Eolis***, there is veliger larva with a coiled visceral hump that undergoes torsion but adults do not show any sign and the pallial complex is posteriorly placed in adult. Naturally, the detorsion must have occurred during the course of further development.

(3) In **pulmonata**, the pallial complex is shifted but there is no chiastoneury as a result of shortening of visceral commissures. The pleurovisceral mass and so the chiastoneury is secondarily lost.
