Digestive System of Pila

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- **Pila is herbivorous** and it lives primarily on aquatic vegetation.
- **The digestive system of Pila Globosa comprises:**

  1. A tubular alimentary canal
  2. A pair of salivary glands
  3. A large digestive gland

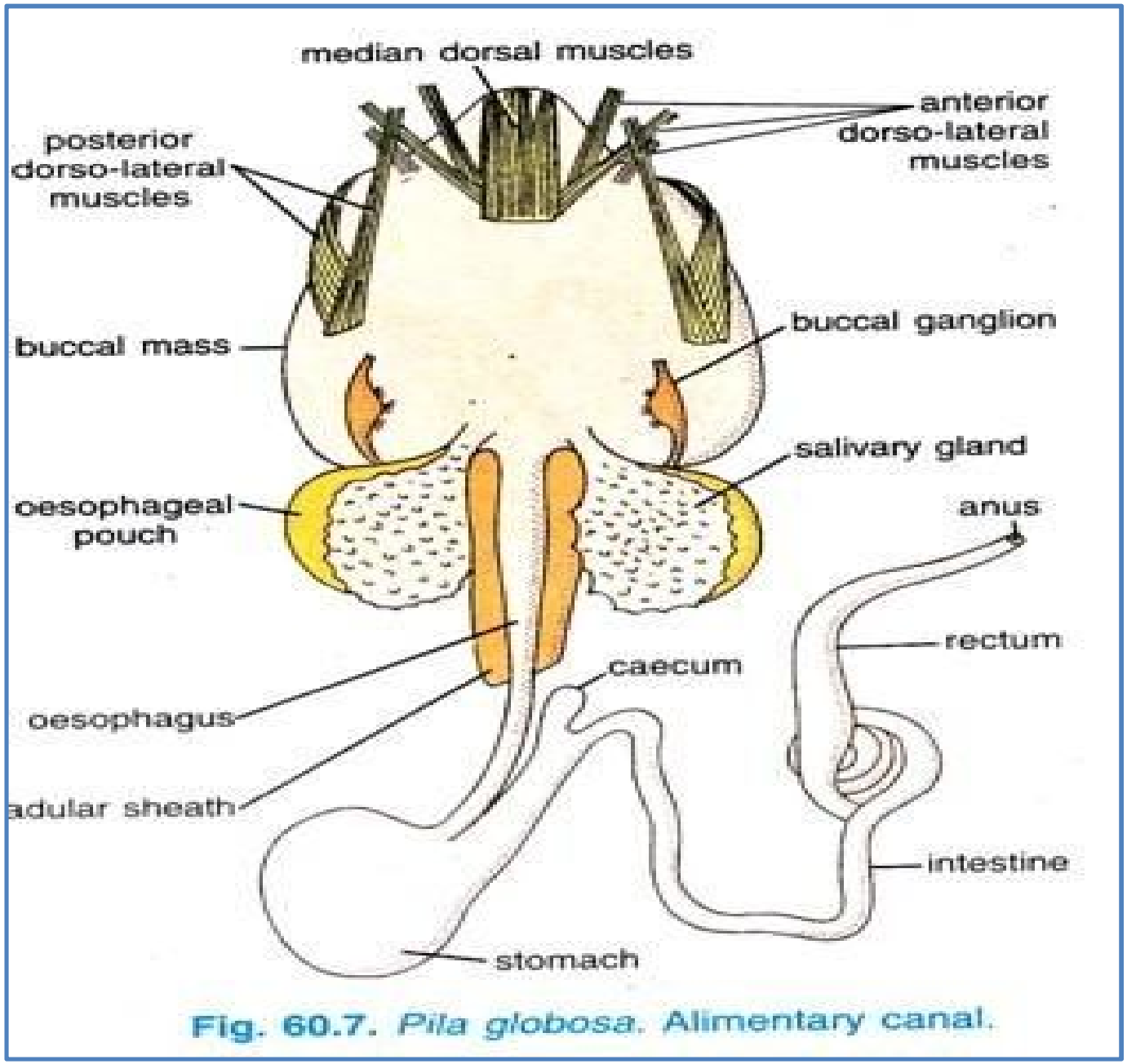

Fig. 60.7. *Pila globosa*. Alimentary canal.

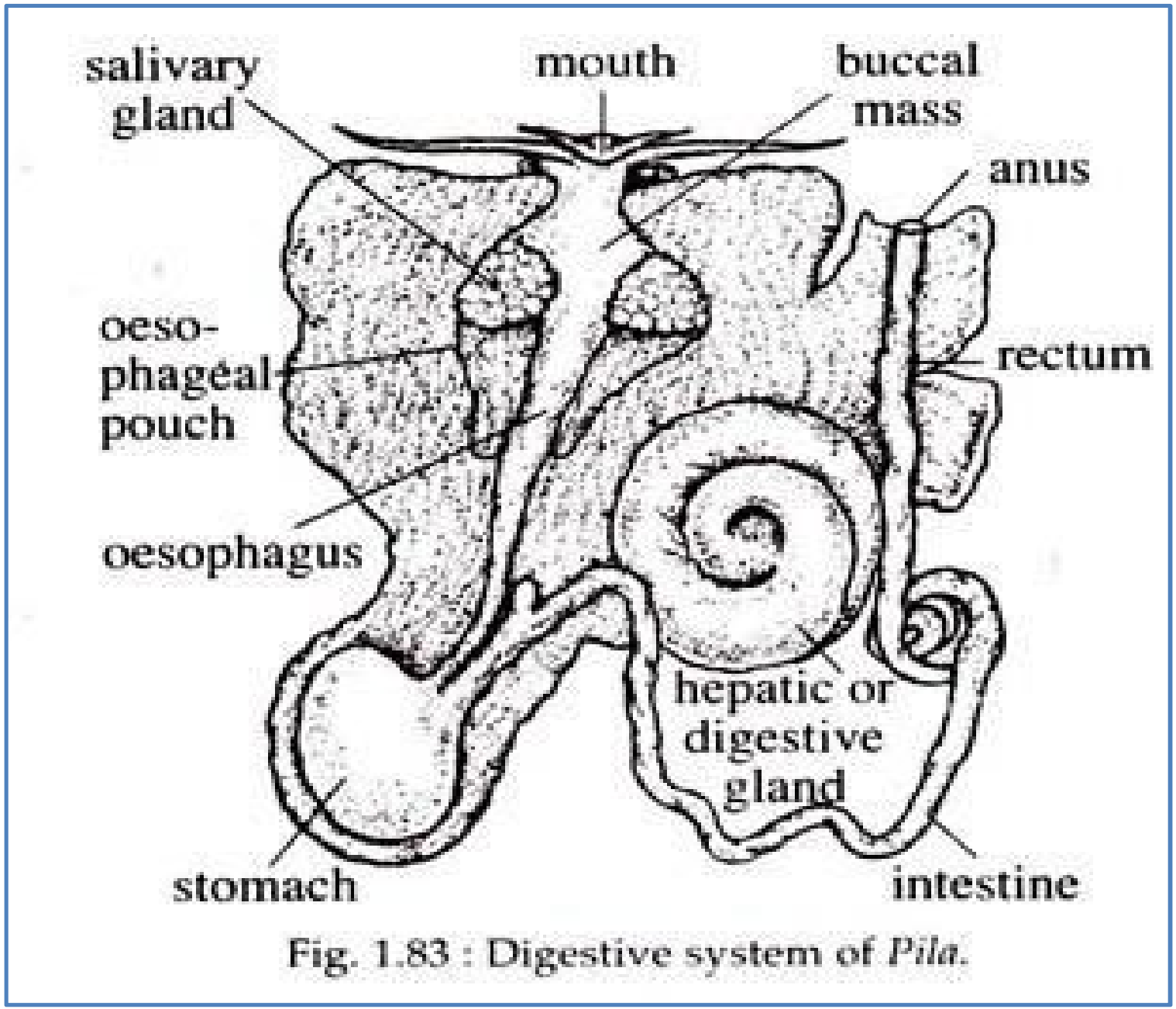

Fig. 1.83 : Digestive system of *Pila*.

The alimentary canal is distinguished into three regions, viz:

1. The **foregut** or stomodaeum including the buccal mass and oesophagus,
2. The **midgut** or mesenteron consisting of stomach and intestine, and
3. The **hindgut** or proctodaeum comprising the rectum.

The midgut alone is lined by endoderm, while the other two are lined by ectoderm.

1. Foregut:

The foregut includes the mouth, buccal mass and oesophagus.

Radula:

- Above and behind the odontophore is **a bag-like radular sac which is a diverticulum of the buccal cavity.**
- The radular sac has transverse rows of cells called adontoblasts.
- **Inside the radular sac is a radula which is characteristic of Mollusca.**
- The radula is made of **many transverse rows of horny teeth**.
- Each row has seven teeth, **two marginal and one lateral tooth** on each side and a central or rachidian tooth in the middle, thus, giving a formula **2, 1, 1, 1, 2.**

- The radula moves forward and backward on the odontophore **for rasping food particles**; these movements of radula are called **chain saw movements**.

structure of Radula

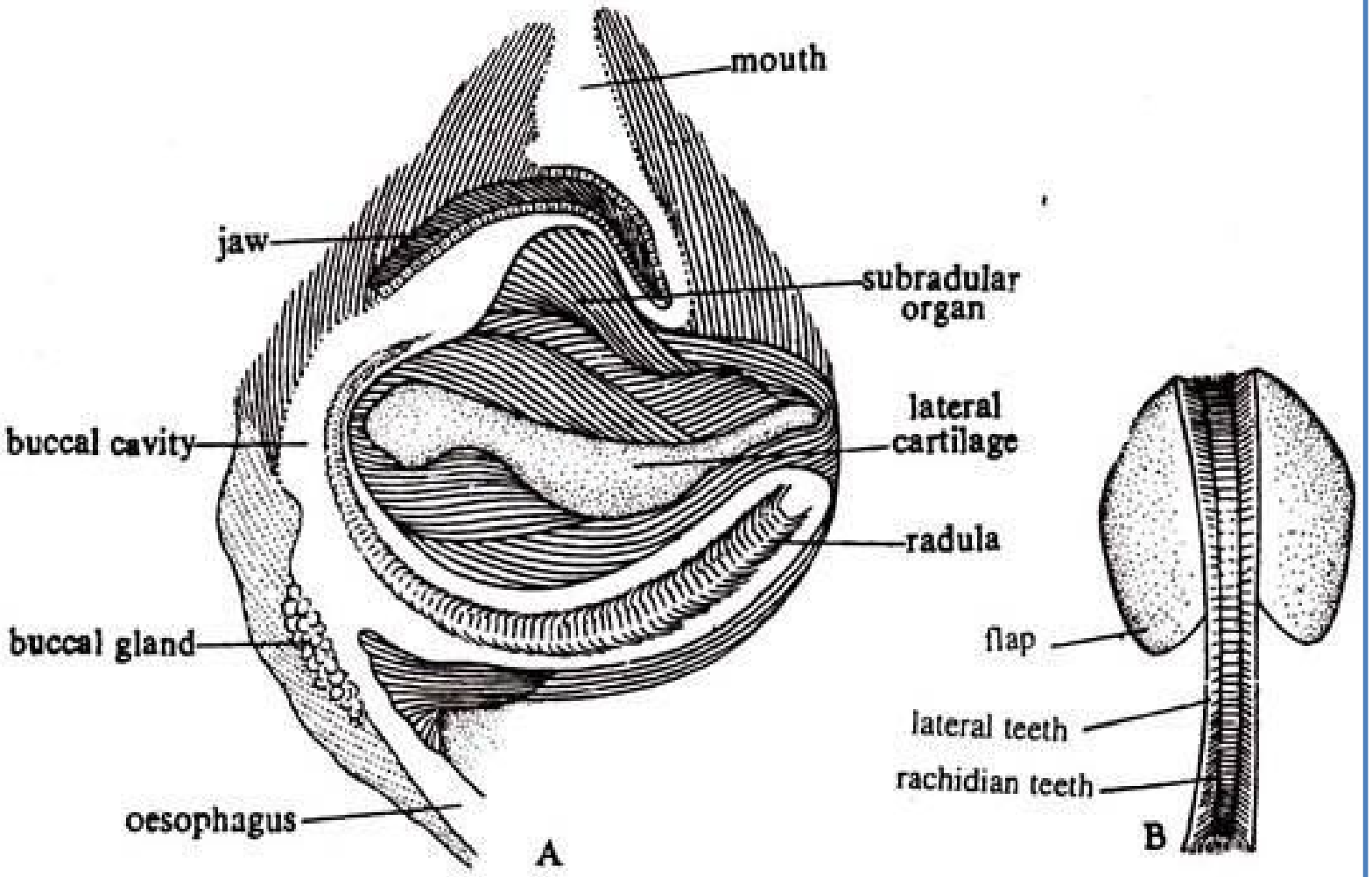

Fig. 1.84 : A. Sectional view of buccal mass of *Pila*. B. Radula of *Pilla*.

- The teeth are **made of chitin** which is reinforced by hardened protein, they have sharp cutting projections which act like a file and **rasp vegetable food.**
- The teeth of the radula are worn off in front and new teeth are formed all the time by odontoblasts.
- On the roof of buccal cavity, above the radula, is a pair of **grooved buccal glands which are digestive.**

Midgut:

The midgut includes the **stomach and intestine**.

Hindgut:

The rectum or terminal part of the alimentary canal is a thick-walled tube. It enters the mantle cavity and passes downwards to open by an anus on the right of the head.

Salivary Glands:

- The **two salivary glands lying one on each side of the posterior** limit of the buccal mass and partially cover the oesophagus.
- The duct of each gland begins near its internal anterior corner and immediately enters the **muscles of the buccal mass and opens into the buccal cavity.**
- The secretion of salivary glands **contains mucus and an enzyme which digests starch.**
- The **mucus lubricates the radula and helps in the transport of food.**

Digestive Glands:

- The digestive gland, often referred to as **liver or hepatopancreas, o**f *Pila globosa* is a somewhat **triangular plate or cone** with a very **convex outer** and **more or less flattened inner surface.**

Digestion

- The salivary glands pour their secretion by means of their ducts into the buccal cavity where it mixes with the food.
- It helps in digesting the starch by converting it into sugar. In the stomach the food is digested by the secretion of digestive gland.
- Secretion of digestive gland digests various kinds of food but **cellulose is digested inside the resorptive cells** only.
- Thus, both **extracellular and intercellular digestion occur.**
- The stomach is **the site of extracellular digestion** and the **digestive gland is the site of intracellular digestion** and absorption, this is characteristic of Mollusca.
- Absorption of digested food takes place mainly in the **digestive gland and some in the intestine**.

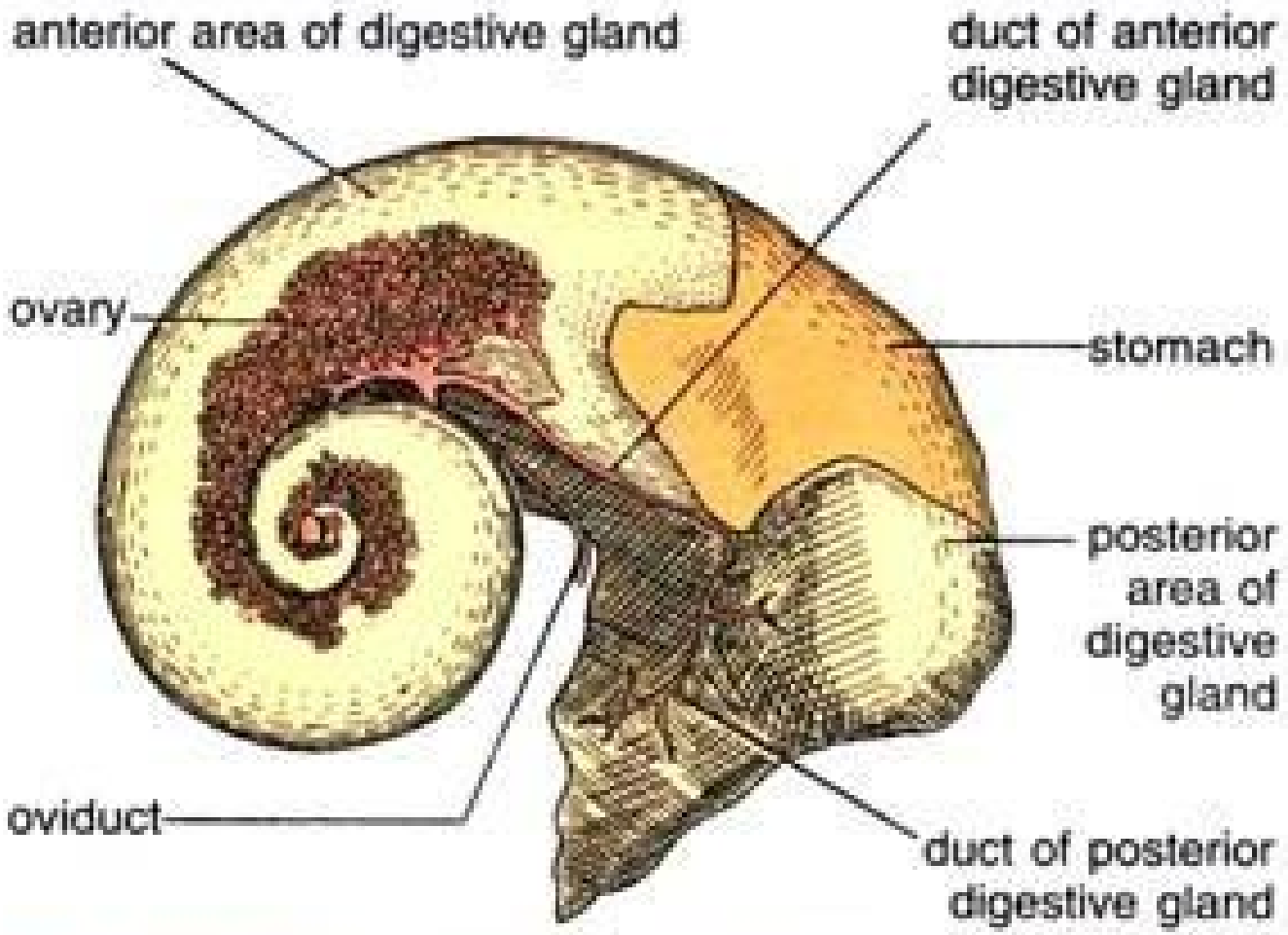

Fig. 60.13. *Pila globosa*. Digestive gland and associated structures seen from inner side.