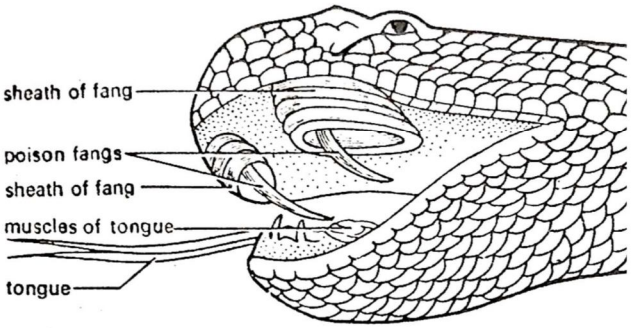
Biting Mechanism in Snakes

Snakes are not only harmful but also useful. Harmful in the sense that poisonous snakes takes the lives of numerous people by biting them. Poisons are hemotoxic and neutotoxic. In India, Krait is known to take the lives of more people as compared to other poisonous snakes as it lives in enters the houses in search of rats and bites people in sleep.



The poison apparatus of poisonous snakes consists of poison glands, ducts and fangs. They are associated with specialized bands of three types of muscles, viz.

(1) Diagastric muscles
(2) Sphenopterygoid or Protractor-pterygoid and
(3) Anterior and posterior temporalis

1. Digastric muscle: is attached to the squamosal of the skull at one end and the articular of the lower jaw.

2. Sphenopterygoid:

It is attached anteriorly to the sphenoidal and posteriorly to the dorsal surface of the pterygoid. It assists in pulling the pterygoid forward.

3. Anterior and posterior temporalis muscles:

The temporalis muscles are attached to the sidewalls of cranium and lower jaw. They help in closing of the lower jaw.

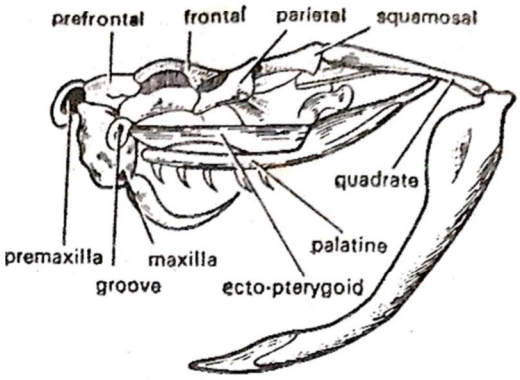


Figure 1 Skull of rattle snake with jaw partly open

Biting Mechanism

The biting mechanism is a very complicated process. It can be dealt in following three steps:

(i) Opening of the mouth:

Opening of mouth is done by the contraction of digastric muscles.

(ii) Rotation of maxilla:

With opening of the mouth, lower jaw moves forward causing a rotation of the squamosal, quadrate and mandible in relation to each other. Now, the sphenopterygoid muscles contract which results in forward movement of pterygoid and up-pushing of the ectopterygoid. Upward movement of ectopterygoid causes rotation of maxilla on its own axis round the lacrymal which results in the raising of fang and the fang becomes directed forward. The fang is nearly horizontal when the mouth remains closed but during biting, it takes almost vertical position.

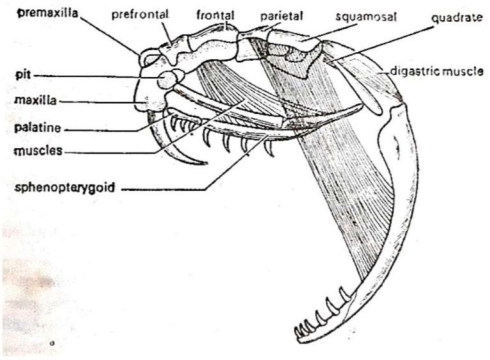


Figure 2Skull of rattle snakes with jaw fully extended

(iii) Closing of month:

It is brought about by the contraction of temporalis and sphenop-terygoid muscles. When mouth is closed, the point of fang is directed backward. It takes more time to open the mouth than to close it.

Transference of Venom

When the digastric muscle contracts, the posterior ligament is relaxed and when the squamosal bone rotates, fan-shaped ligaments are stretched to squeeze the wall of the poison gland. This causes the poison to come out of the poison gland through poison duct and fang.

References: Vertebrates by R.L.Kotpal

Chordate Zoology by Jordan & Verma