Welcome to this video lecture. This is Miss Andrea D'Souza. In this video lecture we will learn about Jaw suspension. This video lecture is a part of the unit on skeletal system module number 25.

In this video we will learn about the jaw suspension the types of jaw suspension at the end of this video you will be able to understand the term jaw suspension and describe the different types of jaw suspension

Probably one of the biggest advances in the evolution of the skull has been the formation of jaws from the gill ach. The interior visceral arches they come to border the mouth and support the soft tissue and bear the teeth

Jaw suspension or suspensory is a method by which the upper jaw and the lower jaw are suspended or attached from the chondrocranium for efficient biting and chewing

The first fully functional arch of the jaw is the mandibular arch; it is the largest and the most interior set of the modified series of arches. The mandible arch is composed of two components the palatoquadrate dorsally forms the upper jaw and the meckel's cartilage that is the mandibular cartilage which is present ventrally it forms the lower jaw

As seen in the picture here we can see the three embryonic components of the skull we can see the dermatocranium we can see the chondrocranium. The chondrocranium has been indicated here in a greenish column and this planche no cranium is indicated in a brownish color. As you can see the arches here the first arch is the mandibular arch the mandibular arch is the largest of the arches and it forms the upper jaw dorsally and the lower jaw ventrally the second arch is called the hyoid arch and the other arches are the branchial arches so these are the arches which support the gills

As i mentioned earlier the second arch is called the hyoid arch it consists of the dorsal hyomandibular also basilhya. Hyoid arch specially it supports and suspends the jaws with the cranium and a ventral hyoid is present which follows the hyomandibular arch, the remaining visceral arches they support the gill and therefore they are called as the branchial arches

The splanchnocranium it forms the jaws and therefore it suspends it from the condrocranum

Talking about the types of jaw suspension or suspensoria there are several types of these attachments seen in organisms and they are achieved by modification of the visceral arches in different vertebrates

The following are the types there are about five types of jaw suspension or jaw suspensorium. The first type of jaw suspension is called as the autodistylic type of jaw suspension the jaws here are attached by ligaments that is the interior and posterior ligaments to the chondrocranium the hyoid arch does not support the jaws but it remains completely free as the other posterior arches the other posterior branchial arches the gilt cleft is present in front of the hyoid arch and it does not form a spiracle but it forms a complete gill such kind of jaw suspension is seen in early bony fishes as seen in the diagram here we can see the condo cranium which is indicated in a yellow color you can also see the first arch which is composed of the dorsal palette quadrat marked in a blue color and the lower jaw that is the metals cartilage so as you can see here we can we have the upper jaw which is the palatoquadrate which is suspended to the condo cranium wire ligaments the interior ligament and the posterior ligaments and you can see here this is the second arch which is the hyoid arch there are different components of the hyoid arch indicated in front of the hyoid arch we have a gill cleft which is seen so this is the first type of jaw suspension coming to the second type of jaw suspension it is called as empty styling jaw suspension in this kind of jaw suspension the upper jaw has a basal and aortic processes which are attached by ligaments to the chondrogram here the hyoid arch is

unchanged the higher mandibular is also attached to the chondrocranium and the upper the other ends of both the jaws they remain suspended from it in therefore it is also called as double suspension such kind of jaw suspension is found in crossover eye and also some primitive sharks such as heptankers and hexanecus so as seen in the diagram here we can see the condo cranium which is marked in a la it is indicated in a light brownish color and we can see the upper jaw which is indicated here and the lower jaw so as you can see we have these processes and they the basal process and the posterior optic process these processes they articulate with the brain with the help of these ligaments and as you can see here the higher mandibular arch the higher mandibular of the hyoid arch it is also helping in the jaw suspension so therefore this is called as double suspension coming to the third kind of jaw suspension the third type is called as high styling jaw suspension here the upper jaw that is the palette or quadrat is loosely articulated with the cranium with the help of the interior ethmopalatine ligament and the posterior spiracular ligament the both the jaws are suspended from the higher mandibular which is attached to the aortic region of the skull so here only the hyoid arch binds both the jaws and the with the cranium and hence such type of jaw suspension is called as hyostylic so as you can see here we have the cranium and the upper jaw is indicated here the palatoquadrate you can see that the upper jaw is loosely articulated with the cranium it is articulated with the help of these ligaments we have the interior ethmopalatine ligament and on the posterior we have the spiracular ligament and the higher mandibular and basically which is a component of the hyoid arch we can see here the hyomandibular ceratohyal, basihyal so in this kind of jaw suspension we see that the hyoid arch it plays an important role in the jaw suspension and here it suspends the jaws so that is why this kind of jaw suspension is called as hyostylic type of jaw suspension such kind of draw suspension is seen in most elastomer branch and bony fishes so the use of this higher mandibular in anchoring the jaws the upper jaw and the lower jaw it makes it possible for the mouth to open much larger and wider than it otherwise could and therefore because of this kind of arrangement of the jaws these fish these fishes are able to swallow large sprays so the extension of the jaws backward is also brought about by the reduction of the first guilt cleft to a spiracle which is seen in case of sharks

So students at the end of this video we have learned about three kinds of jaw suspension, we have the auto diastolic type of jaw suspension mp styling jaw suspension and the hyostylic jaw suspension The other types of jaw suspension will be dealt in the next module

Here are some references indicated so these can be used for further reading

Thank you for your attention