

i'm vinita diessa from carmel college of arts science and commerce for women the name of my module is visceral arches part one the outline of my module is introduction to visceral skeleton origin of visceral arches basic pattern of visceral arches and overview of visceral arches in fishes the learning outcome of the module the students will understand the origin of the visceral skeleton the students will be able to explain the general plan of the visceral arches they will get an insight into the primitives plano cranium and they will be able to differentiate between the visceral arches in urgent athens cartilaginous and bony fishes visceral arches also known as pharyngeal arches or gill arches are a part of the visceral skeleton called splanchnocranium visceral arches a horseshoe shaped structures that encircle the pharynx all around except dorsally these are pieces of cartilage or bone that support the pharyngeal region of vertebrates and also help to attach the jaws with the skull in other words it was originally the support of the gills but it also forms the jaws and suspends sodium in nato stones the visceral arches arise from the splenic mesoderm in the walls of the pharynx between the gill clefts for their support in addition cells of the neural crest also depart from the sides of the neural tube and move into the walls of the pharynx between the gill clefts to differentiate into the respective pharyngeal arches or gill arches or visceral arches typically there are seven pairs of visceral arches the first visceral arch is known as the mandibular arch mandibular arch is composed of two pieces of cartilage the palato-quadrate cartilage or the tergo quadrate or palatoquadrate in short the palato-quadrate cartilage forms the upper jaw whereas the meckel's cartilage forms the lower jaw the second arch hyoid arch is made up of five cartilages there is a basal ventral portion serato hilis laterally and higher mandibular cartilages dorsally the third to the seventh arches are termed as branchial arches and a typical branchial arch is composed of nine pieces of cartilage the lower median rod known as basic branchial to which are attached on either side paired hypobranchials serato branches epibranchials and pharyngobranchial cartilages this is the primitive splanchnocranium the seven visceral arches are designated with roman numerals the first visceral arch is the mandibular arch composed of palatoquadrate dorsally and meckel's cartilage ventrally the hyoid is the second visceral arch and third to the seventh are the branchial arches because they originally supply the gill region in the vertebrate series there is much variation in the visceral arches coming to agnathan's first cyclostomes are the only living agnathans here the usual cartilages are not identifiable there is no resemblance with the typical pattern in petromyzon which is an example of a cyclostome the entire branchial skeleton forms or the pharyngeal skeleton forms a branchial basket to support the gills and this branch basket is composed of nine irregularly curved vertical bars of cartilage on each side the posterior part of the branchial basket is extended to form a cup like pericardial cavity which houses the heart the entire branchial basket is outside the gill pouches and the branchial arteries not like the typical visceral arches in the walls of the pharynx coming to fishes in elasmobranchs to start with examples are scoliodon laticaudus and squalus acanthus the skeleton here is all cartilaginous brings a full set of visceral arches all the seven visceral arches conform to a basic pattern all the seven pairs of visceral arches conform to a basic pattern the mandibular and hyoid cartilages are modified for feeding the first arch is the mandibular arch it forms the upper and the lower jaw the upper jaw has two palatoquadrate cartilages joined in front and the lower jaw has two meckel's cartilages also known as mandibular cartilages joined in front in the angles of the jaws of elasmobranchs there are two or four labial cartilages their origin may be from a pre mandibular arch or a mandibular arch but they re-enforce the walls of the mouth cavity the second visceral arch is composed of five cartilages there is a lower median basal serato hilis laterally and two higher mandibular cartilages dorsally the jaw suspension in elasmobranchs is hyostylic jaw suspension the two serato hilis and the lower median basal supports a gill the remaining five visceral arches are termed as branchial arches and they are composed of the usual nine pieces of cartilages the mandibular arch forms the upper and the lower jaw the hyoid arch is mainly for jaw suspension and gill support and the branchial arches support the gills the five branchial arches have

the nine pieces of cartilage in this is the ventral view of visceral skeleton of shark from the second to the seventh arches and in shark some of the arches are fused some of them are lost all the 5 busy branches are fused into a single cartilage the hypo branchials are small in the first branchial arch but absent in the fifth the all the serratus branches are present but the fifth one is the largest there are four epi branches the fifth one is lost and there are four pharyngo branches the fourth and the fifth are fused into a single piece coming to body fishes in bony fishes the visceral skeleton resembles that of shark except that bone is added the mandibular arch forms the two jaws the cordal end of the cartilaginous tergo quadrate cartilage is replaced by the quadrate bone and the posterior tip of the mekel's cartilage becomes articular the remainder of the meckel's cartilage is invested by dermal bones coming to the second arch the hyoid arch the hyoid arch shows extensive ossification besides the higher mandibular and symplectic bone there are three other bones the epihyal the serato hyal and hypohyal these three are attached to a lower base hyal which supports the tongue there are five branchial arches which becomes smaller posteriorly the busy branchial the hypobranchial each of them has basibranchial hypobranchial serato branchial epibranchial and pharyngobranchial bones the last arch shows sign of degeneration so these are the branchial arches third to seventh each of them has a dorsal pharyngobranchial followed by epi hypobranchial and busy branches these are the reference books thank you