RELATION OF DIFFERENT DERMAL BONES WITH
THE LATERAL LINE CANALS IN THE HEAD
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Bones Associated with the Supraorbital Canal:

The supraorbital canal passes through the nasal and frontal bones throughout its length. After leaving the frontal it enters into the sphenotic bone where it joins the infraorbital and the temporal canals. The anterior portion of the canal with first two neuromast sense organs, is lodged in the nasal, which is a paired tubular bone. Each nasal is in the form of an elongated, slender bone. The two nasals, lie quite far from each other and not intimately connected with any other bone. Posteriorly the bone bifurcates into two limbs of which the inner one is smaller than the outer one. The anteriormost portion of the nasal reaches up to the middle of the rostral cartilage and the posterior, up to the anterior end of the frontal bone. It forms the dorsal roof of the nasal organ. The bone bears the first and second pores of the canal. After leaving the nasal the supraorbital canal passes into the frontal bone and runs throughout its length, along with its outer margin. During its course in the frontal the canal lodges four neuromast sense organs and four openings, of which last three are tubular. The frontals are paired elongated broad plate-like bones. The right one of which is overlapping
the left in its middle portion, but the two are quite far from each other in the posterior portion. It extends in between the nasal and the sphenotic bones. The canal throughout its length is enclosed within a bone tube. Just opposite to the fourth neuromast of the line, the canal gives off the frontal commissure, which connects the supraorbital canals of the two sides.

Bones Associated with the Infraorbital Canal:

The infraorbital canal throughout its length, remains associated with the lachrymal and a series of four infraorbital (sub-orbital and post-orbital) bones. It begins with a pore situated at the anterior end of the lachrymal bone, which is more or less a slightly curved plate-like bone. It is almost triangular in shape, broadest in its anterior end and tapering towards its posterior end. It lies on the ventro-lateral border of the nasal sac. The canal runs downwards and backwards, and after coming out of it, passes backwards into the series of infraorbital bones. During its course in the lachrymal the canal opens out by four pores, of which the first is terminal (half pore of Allis) and the other three are primary pores. Except the first terminal, each pore is placed at the end of a small tubular process directed downwards and outwards. There are four infraorbitals, of which the first, second and third are narrow tubular bones forming the ventral border of the
orbit. The fourth one is somewhat triangular in lateral view and it is smallest in size. They enclose the middle and the posterior portion of the canal. The canal during its course in the infraorbital ossicles lodges six neuromast sense organs and five openings, each opening is placed at the tip of the small canaliculus. Out of these four infraorbital ossicles the first and the second infraorbitals lodge two neuromasts each, while the third and the fourth one each. The pores are placed in between every two successive neuromast sense organs.

**Bones Associated with Preoperculo-Mandibular Canal:**

The preoperculo-mandibular canal starts with a terminal pore placed at the anterior end of the dentary and remains enclosed throughout its length in dentary, angular and the preopercular bones. After leaving the preopercular bone it joins the temporal canal. The canal is divisible into two portions, anterior mandibular and posterior preopercular portion. The mandibular portion of the canal is enclosed within the dentary and the angular bones. Its one third anterior portion is enclosed within the dentary with first three neuromast sense organs, and one fourth posterior portion is in the angular bone with fourth neuromast of the line. The dentary is a long and slightly curved bone, its hinder end is firmly interlocked with the anterior end of the angular, which is more or less a triangular bone with roughly concave
inner surface. Dentary forms the anterior part of the mandible. During the course in the dentary the canal communicates to the exterior by three pores. Leaving the dentary the canal enters into the triangular angular bone which forms the hinder part of the mandible. It extends up to the bluntly pointed retero-articular process of the Meckel's cartilage. During its course the canal opens out by two pores, one is placed where the canal enters into the bone after leaving the dentary and the other, where the canal joins the the preopercular canal. After making its exit from the angular the canal joins the ventral end of the preopercular canal. The preopercular canal is enclosed within the preopercular bone and it runs through the entire length of the outer ridged tubular margin of the preopercular bone. The canal, after making its exit from the preopercular bone, joins the temporal canal in the pterotic bone. During its course in the preopercular bone the canal lodges six neuromast sense organs and six pores, of which the last five pores are tubular.

Bones Associated with the Temporal Canal:

The supra- and infraorbital canals join each other in the anterior region of sphenotic bone and this junction is marked by a pore. From here the canal runs backwards as the temporal canal. It runs for a short distance through a gutter formed
by the outer margin of the sphenotic bone until it passes into the pterotic bone. Sphenotic is a small almost rectangular plate-like bone. It extends in between the frontal and pterotic; its anterior end reaches up to the posterior margin of the frontal and its posterior end reaches up to the anterior margin of the pterotic. It lodges a single neuromast sense organ, i.e. the first neuromast of the line. Now the canal runs further back and its remaining portion is enclosed within the pterotic, extra-scapular and the post-temporal bones. The pterotic lies in between the sphenotic and the lateral limb of the extra-scapular bone. It is a small plate-like bone. During its course the canal lodges a single, second neuromast and the single pore i.e. the second pore of the line. The extra-scapular is a bilimbed bone, there is a lateral and a median limb. It lies in between the pterotic and the post-temporal bones. The temporal canal after leaving the pterotic enters into the lateral limb of the bone. The canal after running for a short distance gives off mesially the supratemporal diverticulum, which remains enclosed within the median limb of the bone and during its course lodges two pores, of which one is terminal and the other is tubular. The main temporal canal also lodges two neuromasts during its course in the lateral limb of the bone and communicates to the exterior by two pores both of which are tubular. The canal now runs back along with the post-temporal bone,
which is a triangular bilimbed bone. The anterior broader portion reaches up to the posterior margin of the extra-scapular bone. During its course the canal lodges the fifth neuromast and the fifth pore of the line which is tubular. Coming out of it the canal is continued backward as the main lateral line canal of the trunk region.