

ON A FREAK EMBRYO OF THE GREY-SHARK, *CARCHARINUS LIMBATUS* MÜLLER AND HENLE

Structural peculiarities, sometimes unidentifiable and responsible for the creation of new species and even genera were occasionally met with among sharks and rays (Gill, 1896 ; Gudger, 1933 ; Bigelow and Schroder 1953). In the Indian species, Menon (1957) and Luther (1961) have described abnormalities in certain shark embryos and a ray respectively. On 12-2-1961, while examining a pregnant *Carcharinus limbatus* in the fish landing centre at Cannanore, an abnormal embryo was obtained and is briefly described in the present note. For a comparison of the body proportions of the abnormal embryo, a male, with those of a normal juvenile, also a male, reference may be made to Table I. The diagram of a normal specimen is given in Figure 1 and three different views of the abnormal embryo are sketched in Figs. 2, 3 and 4.

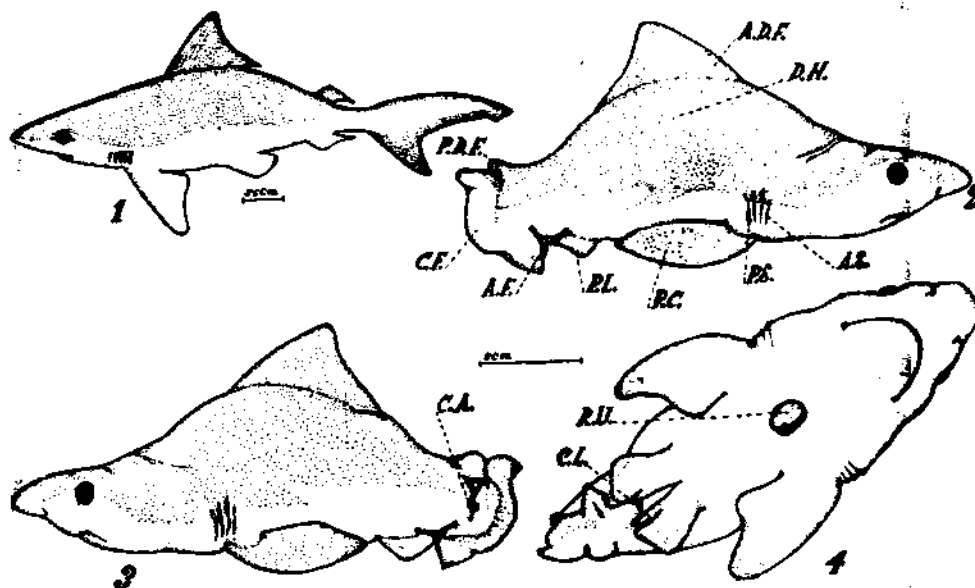
TABLE I

Measurements of the various parts of the abnormal embryo of *Carcharinus limbatus* Müller and Henle, and those of a normal juvenile (male)

Character	Measurements in cm.	
	Normal juvenile	Abnormal embryo
Total length	62	24.7
Snout length	7.6	3.2
Eye diameter	1.1	1.1
Tip of snout to :		
mouth	7.0	3.2
" first gill slit	16.4	9.9
" last gill slit	19.9	11.0
" origin of D1	25.3	10.6
" origin of D2	48.9	17.7
" origin of P1	19.5	10.3
" origin of P2	39.0	15.4
" anus	39.6	16.8
" base of caudal	56.0	19.8
Body depth at first gill slit	7.4	6.8
Greatest body depth	10.1	7.7
Distance between first and last gill slit	3.7	1.3
Anterior margin of D1	9.2	5.8
" D2	2.7	1.9
" P1	11.2	6.9
" P2	3.7	2.5
Base of D1	6.7	4.8
" D2	2.5	1.5
" P1	4.2	2.6
" P2	3.9	2.2

The head : The only peculiarity in the cephalic region is that the branchial openings are only four in number instead of the usual number of five. *The trunk* : It appears to have suffered a linear shortening, the upper region of which had become extraordinarily robust and appears as a hump-like structure on which is mounted the first dorsal fin. *The tail* : This is the mostly affected part of the embryo, has undergone considerable shortening and become stumpy carrying the modified caudal fin. *The paired fins* : The pectoral fins are peculiar in that the

curvature of their anterior and posterior margins are marked while in normal juveniles they are less so. *The unpaired fins*: The first dorsal fin is folded to the right side at its base. The anal fin is reduced to a small flap-like structure and is fused with the caudal an. The caudal fin along with the major portion of the aborted tail and the reduced anal fin has become an ear-shaped structure with an



FIGURES 1-4. Sketches of a normal specimen and the abnormal embryo of *C. limbatus*. FIG. 1 left side view of a normal specimen; FIGS. 2, 3 and 4 right, left and ventral views respectively of the abnormal embryo. A.F. anal fin, A.D.F. first dorsal fin, A.S. first gill slit, C.A. vestige of the tail, C.F. Caudal fin, C.L. clasper, D.H. dorsal hump, P.C. pectoral fin, P.D.F. second dorsal fin, P.L. pelvic fin, P.S. fourth gill slit, R.U. umbilical region.

upper crest. Perhaps the most interesting character of the abnormal embryo is the presence of an inverted comma-shaped structure located on the left side of the caudal region. In all probabilities it appears as the displaced tip of the reduced upper lobe of the caudal fin, although it is difficult to ascertain the true homology of this structure.

The causative factor for the abnormality is only a matter of conjecture. *C. limbatus* is a viviparous shark giving birth to 5-6 young ones. In the present case, in addition to the freak embryo, five normal embryos were present inside the mother. Setna and Sarangdhar (1949) have observed unfertilised eggs along with living embryos inside the uterus of this fish. It is likely that the freak embryo might have developed from an egg which was fertilized subsequent to the others and that the older sister fetuses might have exerted pressure on the post-cephalic region of the developing embryo, resulting in its malformation. It thus appears that the abnormality is owing to an external factor.

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