

OPERATIVE TECHNIQUE FOR THE STUDY OF POSTTRAUMATIC REGENERATION OF SOME INTERNAL ORGANS IN BIRDS

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A technique for operations on the thorax in hens is suggested. The incision is carried along the right border of the central process of the sternum as far as its base, followed by division of the lateral process at its junction with the sternum, thus facilitating widening of the wound. With a unilateral incision by this method up to 25% of the liver parenchyma can be resected and access gained to the spleen, the glandular and muscular parts of the stomach, and certain other organs in the thoraco-abdominal cavity; increased facilities for the study of posttraumatic regeneration of organs in birds are thereby obtained.

Regeneration of the internal organs in birds has received little study. This may partly be due to their anatomical features, for access is difficult to certain internal organs protected by the thoracic wall. Of these organs the liver occupies a topographically comparatively advantageous position, and it is therefore not by chance that most of the work has been done on regeneration of this organ [1-4]. Without describing the operative technique, some workers [2, 4] state that a very small part (one-eighth) of the liver parenchyma can be removed through a unilateral incision. Only in one paper does the author [3] state that up to three-quarters of the mobilized lobe of the organ can be removed through an incision between the last and next to the last ribs.

The object of the investigation described below was to develop an operative technique providing access to certain internal organs in birds which, if need be, would enable subtotal resection of the liver to be performed and which would allow a study of posttraumatic regeneration of the spleen, the glandular and muscular parts of the stomach, and other organs concealed behind the bony skeleton of the chest wall to be undertaken.

EXPERIMENTAL METHOD

Operations were carried out on 48 adult hens and 36 six-week-old chickens of the White Leghorn breed. The birds were fixed, unanesthetized, on the operating table in the supine position. After the usual preparation of the operation field an incision was made along the right border of the central process of the sternum as far as its base. The lateral process was divided at its junction with the sternum by means of scissors at its base, thereby allowing maximal retraction of the wound edges to a size of 5 × 3 cm.

At the end of resection of the organ to be studied, the wound was closed in layers. The first suture took in the peritoneum and abdominal muscles, the second the pectoralis major muscle, and the third the skin. The operation wound usually healed without complications by the 10th day.

EXPERIMENTAL RESULTS

The line of the incision at the operation lies above the right half of the liver, so that after retraction of the wound edges the right lobe of the organ can be freely mobilized, ligated, and resected. By contrast

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with results described by other workers [2, 4] who have described removal of up to one-eighth of the organ through a unilateral incision, with the technique described above it is possible to remove up to one-quarter of the liver. If the liver is slightly raised without withdrawing it from the abdomen, the spleen is revealed side by side with the gall bladder, and if necessary it can be drawn slightly into the wound. The glandular and muscular parts of the stomach are located in the same region, while the lungs lie deeper, toward the vertebral ends of the ribs.

The method described above thus provides advantageous conditions for access to several organs and thus facilitates the study of their posttraumatic regeneration in hens.

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