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BILATERAL ANTERIOR TRANSABDOMINAL ADRENALECTOMY

BY

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Bilateral adrenalectomy is probably not, destined to remain a standard operation even for advanced and hopeless cancer of the breast, but exposure of the adrenal glands, and some form of bilateral adrenalectomy, is likely to remain a standard procedure for at least some varieties of adrenal disease. In both circumstances an anterior approach has many advantages. In adrenalectomy for cancer it is often dangerous to turn the patient to the prone position if the cervical spine is the seat of advanced disease; a hemiplegia has sometimes been produced by this change in position. When a patient undergoing adrenalectomy for cancer has a pathological fracture of the femur, the prone position is sometimes, at least, awkward. When the adrenal glands are exposed for disorders of adrenal function or for the suspicion of adrenal tumour, it is extremely convenient to present both adrenals simultaneously to close inspection, and this is possible in all cases, even if the actual removal of the right adrenal gland from the front proves to be difficult, as it sometimes does. The left adrenal can always be removed with greater facility from the front than from the back, and even if the right adrenal, having been clearly inspected, proves impossible of removal from the front, as it has not done in our hands, nothing would be lost then in removing it, or the greater part of it if that were desired, from the back.

Route of Approach

When the operation is done for advanced cancer, bilateral oophorectomy is usually done at the same time, and it is then convenient to explore the upper abdomen directly without change of the patient's position. The left adrenal is exposed and removed; the right adrenal is explored also. Theoretically, if the removal of the right adrenal offered insurmountable difficulty there would be no objection to closing the abdominal wound, turning the patient over, and completing the operation on the right side from behind. We have not found it necessary to do this in 12 successive cases in which we have performed the bilateral operation from the front. This anterior approach has two particular advantages in cancer cases. The upper abdomen can be fully explored for metastases, and outlying islands of

adrenal tissue, separate from the main gland, may easily be recognized and removed. On two occasions we have found accessory adrenal tissue in a low position in the retroperitoneum, where it would not have been detected by a posterior approach. The anterior approach gives a clear view of the retroperitoneal space on both sides.

Having now had experience of the anterior route, the posterior route, and the postero-lateral route, we can say that any of these routes may on occasion prove difficult, and we have not had greater difficulty with the anterior abdominal approach than with the posterior and postero-lateral operations. Indeed, it has been possible, when the operation has been performed from the front, to be more certain of removing both adrenal glands intact, with their borders and surfaces unbroken, and this is always a great assurance that the adrenalectomy has been complete. Left anterior adrenalectomy is a simple abdominal operation. In most, though not in all, cases right anterior adrenalectomy is a simple abdominal operation also. The advantages of the anterior route compensate for the technical difficulties which are sometimes met on the right side.

When the operation is performed for adrenal dysfunction, bilateral subtotal adrenalectomy is always possible and usually easy by way of the abdomen, and it is satisfying in such circumstances to have both adrenal glands displayed at the same time. When any other approach is used one never knows, before performing subtotal adrenalectomy on one side, whether there may not be a tumour in the other gland still to be explored. The simultaneous exposure of the adrenal glands by two separate posterior incisions is awkward and dissatisfying. When an adrenal tumour is suspected, the advantage again of exposing both adrenal glands simultaneously is very substantial and the removal of a tumour from either gland is always easily possible through the abdomen.

There are two details of operative procedure which facilitate the anterior operation. On the right side, mobilization of the spleen with the splenic vessels and the left end of the pancreas brings the left adrenal gland into clear view. On the right side, care is taken to draw down the kidney before opening the retroperitoneum; this usually fixes the adrenal *in situ*. If the peritoneum is opened, and the kidney then retracted downwards, the suprarenal does not always follow it. Indeed, it sometimes does not move down with the kidney at all.

Operative Detail

The incision is an oblique one parallel with and one hand-breadth below the right costal margin. From a point just lateral to the right border of the right rectus muscle, the incision is carried upwards and to the left to meet the left costal margin. The right rectus and its sheath are divided in the line of the incision, the linea alba is divided in the midline, and the left rectus and its sheath are divided also as far as the costal margin. The peritoneal cavity is opened. The spleen is mobilized as for splenectomy by an incision through the peritoneum just beyond its reflection from spleen to abdominal wall

(left or posterior layer of the lineal renal ligament). The retroperitoneal continuation of the transversalis fascia is divided in the same line, and the spleen is drawn forward and to the patient's right with the tail and body of the pancreas and the splenic vessel (Fig. 1). This immediately brings the left adrenal gland to

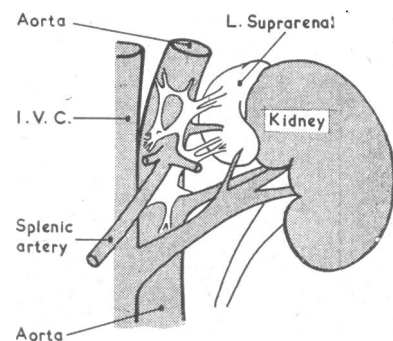


FIG. 1.—Traction on splenic artery fixes aorta, drawing it forwards and to patient's right, with renal artery, suprarenal artery, suprarenal nerves, and suprarenal gland.

clear view. If traction is maintained on the spleen, pancreas, and splenic vessels the tension on the splenic artery is transmitted to the coeliac axis and consequently to the aorta and renal artery, and the adrenal vessels and sympathetic nerves, and so the adrenal gland itself, are fixed. This manoeuvre may alter the position of the gland, to the operator's advantage, by 3-4 cm. (Fig. 2). The gland can then be dissected under vision, its vessels ligated, and the gland removed entire. The retroperitoneum in the area is then inspected

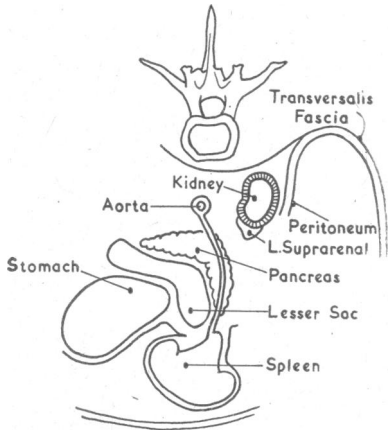


FIG. 2.—Spleen mobilized with splenic vessels and pancreas to expose left suprarenal gland.

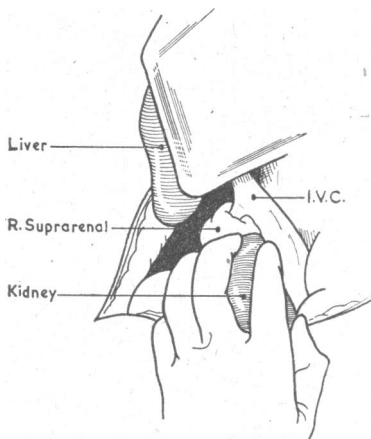


FIG. 3.—Kidney manually retracted downwards, liver upwards, inferior vena cava to patient's left. Right suprarenal gland exposed.

this has been done, an area of peritoneum a few centimetres in diameter is excised from the hepato-renal pouch. Incision of this peritoneum is not sufficient: the edges of such an incision do not always separate well. When this patch of peritoneum has been removed the adrenal gland comes under vision. Vision is improved by rolling the patient over a little towards her left side.

A retractor can now be inserted to roll away gently the right edge of the vena cava. The outer border of the gland is first dissected free, and then the inner border is freed by careful division between ligatures of the fascia which binds the adrenal to the sheath of the vena cava. The main vein can be seen clearly passing over the front of the medial part of the gland to reach the vena cava (Fig. 3). This vein is not so well seen when the operation is done from behind. When this vein is ligated, the gland can be easily separated from the vena cava and the separation is continued upwards. A long tongue of tissue usually extends upwards behind the right edge of the vena cava, but after division of the main vein, and retraction of the right edge of the

for the presence of accessory adrenal tissue.

Attention is now turned to the right side, and the right adrenal is sought in the area bounded by the lower border of the right lobe of the liver, the right edge of the vena cava, the upper border of the renal vessels, and the upper pole of the right kidney. If the liver is bulky or situated in a particularly low position, it is helpful to divide between forceps the falciform ligament and the right triangular ligament. A retractor is gently inserted to draw the liver upwards. This retraction must be carefully done, for the liver in this particular situation is easily torn. The upper pole of the kidney is then depressed by two fingers; one, placed medially in relation to the upper pole, pressing downwards on the renal artery, and the other on the outer edge of the upper pole. When

vena cava, it is usually possible to surround it gradually by successive pairs of forceps. Only after the medial and lateral borders of the gland, and the upper pole, have been freed, is dissection of the lower surface of the gland completed, between adrenal and kidney. The attachment of the adrenal to the perirenal fascia here maintains that convenient low position of the adrenal which has usually been obtained initially by depression of the kidney. The only danger of the operation on this side is the risk of venous haemorrhage when the dissection is being carried round the extreme upper pole. An ordinary sponge-holding forceps makes a suitably gentle holder for the adrenal gland during dissection.

MALE PSEUDOHERMAPHRODITISM: A HITHERTO UNDESCRIBED FORM

BY

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Of recent years considerable progress has been made in the clinical differentiation of intersexuality, and a now well-recognized form of male pseudohermaphroditism has emerged. Schneider *et al.* (1952) laid down the following criteria for the diagnosis of this type, referred to as "intersex males with purely feminine external genitalia and bodily habitus" by Williams (1952): feminine habitus, primary amenorrhoea, absence or almost complete absence of axillary and pubic hair, blind vaginal pouch with absent cervix, and intra-abdominal testes. They could find only 12 cases in the literature which fulfilled their criteria, and reported six cases of their own. Two further cases have been reported by Beatty *et al.* (1953) and by Armstrong (1953, 1955).

With the introduction of relatively simple techniques for the determination of chromosomal—that is, genetic—sex, first by the skin biopsy method (Moore *et al.*, 1953) and more recently by the even simpler polymorphonuclear leucocyte method (Davidson and Robertson Smith, 1954), a new and potent tool has become available for the elucidation of problems of intersexuality. Already it has been demonstrated that many examples of so-called Turner's syndrome (ovarian—or, better, gonadal—agenesis) are of male chromosomal sex though outwardly of female appearance (Polani *et al.*, 1954; Wilkins *et al.*, 1954; Russell *et al.*, 1955). The application of these techniques to two patients presenting with primary amenorrhoea led to their diagnosis as male pseudohermaphrodites, of a type apparently undescribed in the literature, and which forms the subject of the following report.

Case 1

This patient, aged 19, was referred on account of primary amenorrhoea. The mother and father are normal, and there is a normal sister, aged 16½, whose menarche occurred at about 15 and whose menstruation has remained regular. The patient is about 6 in. (15 cm.) taller than her sister, a little taller than her mother, and the same height as her father. She was of normal height until 11 or 12, when she began to grow rapidly, and is now one of the tallest in the family, which includes no other known examples of sexual abnormality. She has always been thin. The past history included chicken-pox and measles in childhood but no other significant illnesses. The social history was quite uneventful. The patient works as a typist and is happy in her occupation.