

atrophied testicle was of the size of a tamarind seed. He showed definite signs of hypogonadism. He was treated with injections of testosterone propionate and oestradiol dipropionate from 16th December, 1940 to 16th May, 1941. In all he received 1,290 mg. of the former in 100 injections. To 58 of these injections was added 1 mg. each of the follicular hormones. From the 10th injection, his erectile power and libido were increased and coitus occurred every other day. He used to get severe bearing down pain over the undescended testicle which he thought was being pushed downwards. After the 14th injection the testicle could be easily palpated and, if the internal abdominal ring had been large enough, the testicle might have descended into the scrotum. From this time his erections became feeble and libido less, obviously due to the depressing effect of the hormones on the anterior pituitary. The atrophied testicle behaved in a curious manner. It occasionally became twice its previous size and then again became small. The patient would not consent to an operation and, as no further benefit would result from the treatment, the injections were discontinued.

Case 9.—The most marked case of sexual infantilism I have come across was that of a married young man, 19 years old, with penis and testicles as infantile as those of a boy of 6 years of age. The length of the penis on erection was 2½ inches and he had no pubic hair or hair on the face. The distribution of fat in the pubic region and over the breasts was feminine in type. The general development corresponded with his age, and his weight was 120 pounds. Physically and mentally he was an adult. He reported that he performed coitus with his wife, a statement which was not supported by the latter. He was put on testosterone propionate injections of 25 mg. In 5 months he had 1,500 mg. of testosterone propionate and at the end of this period the penis on erection was 4½ inches, one testicle became markedly enlarged though the other showed only slight enlargement, pubic hair appeared, and nocturnal emissions occurred occasionally. To see whether the addition of gonadotropic hormone in the treatment would accelerate the rate of his sex development, he was put also on injections of a gonadotropic hormone (serogan) along with testosterone propionate. The only noticeable change produced by the additional treatment was that his night discharges became more frequent and more profuse. The prostate and seminal vesicles were still infantile. It was decided to have his semen tested but all that he could produce by masturbation was a few drops of urine.

The patient gave up treatment for 7 months, when he reappeared. There was no retrogression of his sex organs. His semen was examined. The quantity was 0.1 c.cm. and watery in consistency. There were no spermatozoa. He was put on injections of testosterone propionate 10 mg., and 1 mg. of follicular hormone, every other day. In all, he had 41 injections. Erections became progressively stronger and more turgid. Penis on erection was now 5 inches and he had half a dozen satisfactory coitus. The interesting point is that in spite of the large doses of the hormones administered, there was no decrease in libido or erectile power; this fact showed that in this case of sexual infantilism androgens and oestrogens even in high doses exerted no inhibiting effect on the pituitary gland. After 15 injections, his semen was examined again. The quantity was about 2.0 c.cm. and consistency 'thinner than cream'. No spermatozoa were seen.

Summary

1. Impotence is defined and classified.
2. The physiological and therapeutic actions of the male, follicular, luteal, pituitary and adrenal cortex hormones are explained.
3. Contra-indications of the various hormones and their therapeutic indications are described.

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BLOCKAGE OF THE INFERIOR HÆMORRHOIDAL NERVE FOR OPERATION ON HÆMORRHOIDS

By E. J. RAMDAS

CAPTAIN, I.M.S.

I. Anatomy

Two sphincters guard the anal canal, the external sphincter and the internal sphincter.

The external sphincter.—The external sphincter is composed of the subcutaneous part, the superficial part, and the profundus or the deep part. The subcutaneous part is composed of muscle fibres surrounding the anal orifice, and is intimately connected with the skin. It is supplied by perineal branches of the fourth sacral nerve.

The superficial part is composed of muscle fibres which rise from the coccyx, sweep round the anus and are inserted in the perineal body. Some fibres curve round the anterior margin of the anus to form a sling. It is supplied by the inferior hæmorrhoidal and the fourth sacral nerves.

The profundus part is a true sphincter muscle. It is composed of non-stripped muscle fibres. It has no bony attachment. It is in intimate contact with the pubo-rectalis portion of the levator ani. It is supplied by the inferior hæmorrhoidal nerve.

The internal sphincter.—The internal sphincter is a thickening of the circular non-stripped muscle fibres of the gut, and is continuous with the circular muscle-coat of the rectum. It surrounds the upper two-thirds of the anal canal. It is supplied by the second and third sacral nerves and the hypogastric plexus.

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Acknowledgment

I acknowledge my indebtedness to Messrs. Ciba (India) Limited for placing liberal supplies of their hormonal products at my disposal to conduct this study. The products used were *Perandren* ampoules and ointment, *Ovocyclin* ampoules, tablets and ointment, *Lutocyclin* ampoules and tablets and *Percorten* ampoules.

REFERENCES

- ALLEN, E. (1932) .. *Sex and Internal Secretions*. Williams and Wilkins Co., Baltimore.
- BALL, J. (1937) .. *J. Comp. Psychol.*, **24**, 135.
- FOSS, G. L. (1939) .. *Lancet*, *i*, 502.
- FRANK, R. T. (1940) .. *J. Amer. Med. Assoc.*, **114**, 1504.
- GUIRDHAM, A. (1940) .. *Brit. Med. J.*, *i*, 10.
- KORENCHESKY, V., and DENNISON, M. (1937). *Biochem. J.*, **31**, 862.
- MOORE, R. A. (1936) .. *Amer. J. Path.*, **12**, 599.
- RUBINSTEIN, H. S., and SOLOMON, M. L. (1941). *Endocrinology*, **28**, 229.
- SELYE, H., and FRIEDMAN, S. (1941). *Ibid.*, **28**, 129.
- ZELSON, C., and STEINITZ, E. (1939). *J. Pediat.*, **15**, 522.

The inferior hæmorrhoidal nerve from which the main nerve supply of the anal sphincter is derived traverses the ischio-rectal pad of fat and, after its exit from Alcock's canal, passes along the outer surface of the fascia lunata up to its insertion between the pubo-rectalis and the profundus part of the external sphincter. Here, about the middle of the outer surface of the sphincter, it breaks up into branches to supply the sphincter.

II. Procedure

With the patient in the lithotomy position, the perineum is painted with iodine and towels are arranged. The index-finger of the left hand is lubricated with vaseline and introduced gently into the anal orifice. The finger is then hooked over the internal sphincter, with the tip pointing towards the left side of the pelvis.

Fig. 1.—Showing the relation of nerve to sphincter. (Cunningham, Anatomy.)

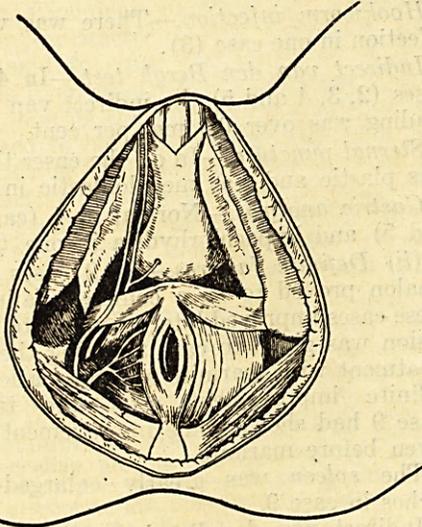
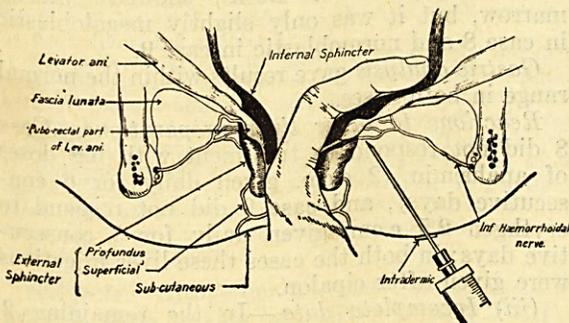


Fig. 2.



The margin of the levator ani (pubo-rectalis part) can be distinctly felt impinging against the finger. This is the place where the profundus part of the external sphincter is in intimate contact with the levator ani, and also the place where the inferior hæmorrhoidal nerve enters the sphincter. The finger inside the rectum is now so adjusted that the free margin

of the levator ani lies against the proximal interphalangeal crease.

With a fine needle on a 10 c.cm. Labat syringe (loaded with 10 c.cm. of 2 per cent novocain and adrenaline) an intradermic weal is raised, one inch to the left of anal margin, on a horizontal line passing through the centre of the anus. The syringe is so held that the tip of the needle is directed towards the middle of the interphalangeal crease.

The needle is then gently pushed in the horizontal plane, through the ischio-rectal pad of fat, which it traverses easily. A slight resistance is felt when the needle touches the fascia lunata, and the patient complains of pain. At this stage the tip of the needle can be vaguely felt by the finger in the rectum. With the needle held steady, 3 c.cm. of the solution of novocain is injected steadily, the aspiration test having been done first to avoid an intravenous injection. (There are only very small veins in the region.) A distinct bulge is felt by the finger when the injection is correctly made; at the same time the muscle is felt relaxing against the finger.

The needle is then withdrawn up to the skin and a subcutaneous weal is raised, anteriorly towards the perineal raphe and posteriorly towards the coccyx. This step is necessary only when external hæmorrhoids are present.

The procedure is repeated on the other side. Either the same finger is used or the corresponding finger of the other hand.

Within five minutes the sphincter relaxes and the operation can be started.

The mucosa of the lower part of the rectum is anæsthetized and the internal sphincter is relaxed by the solution percolating inwards.

III. Precautions

Not more than two punctures are made for carrying out the procedure, as infection is apt to occur at the point of injection.

The rectal mucosa should never be punctured. The injection is made close to the fascia lunata. Injection into the ischio-rectal pad of fat is a common cause of failure.

IV. Advantages

The procedure is very simple, and the technique is easily learned. My colleagues who formerly operated under spinal, general, caudal, or perirectal infiltration anæsthesia have now adopted this method. Discomfort during anæsthesia is slight, and because of this, patients do not refuse operation. Adequate relaxation of the sphincters is possible without the least danger. Post-operative discomfort is very slight, as the effect of the anæsthetic lasts for more than six hours. The period of acute pain is thus tided over.

This method was worked out with the help of my colleagues, Dr. S. G. Talwalker, now

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INDIAN-MADE LIVER EXTRACTS IN THE TREATMENT OF MACROCYTIC ANÆMIA

By C. R. DAS GUPTA, M.B. (Cal.), D.T.M.
(From the School of Tropical Medicine, Calcutta)

I. Ciplon in macrocytic anæmia

This liver extract is a 'Cipla' product, prepared by The Chemical, Industrial and Pharmaceutical Laboratories, Limited, Bombay. Each c.cm. of ciplon is said to contain liver principle contained in 450 grammes of fresh liver. There is no mention of the exact Cohn fraction of liver which it contains. It is said to be sterilized by the 'tindallization' process. It was supplied to us in sealed ampoules of 2 c.cm. each.

Subjects.—Nine cases of macrocytic anæmia admitted to the Carmichael Hospital for Tropical Diseases were treated with ciplon; of these 8 were males and one a female, and their ages ranged from 18 to 40 years.

Method of administration.—Two c.cm. of ciplon were injected intramuscularly every day up to 6 days.

The injections were rather painful.

Examination of blood.—In almost all the cases a daily reticulocyte count was done from the 4th to the 10th or 12th day after the first injection and complete examination of blood was done once every week.

Results

(i) *Definite improvement.*—After injection of ciplon, definite improvement was noted in 5 cases (1, 2, 3, 4 and 5), in 3 of which (1, 2 and 3) the improvement was associated with reticulocytosis (see table A).

In 2 of these cases (3 and 4), a second course of 6 injections was given and this was again followed by definite improvement in case 3 and slight improvement in case 4. Both these patients (cases 3 and 4) were seen three months after their discharge from the hospital and were found to be completely cured of anæmia.

One patient (case 2) was improving nicely but he left hospital before the blood picture had reached the normal level, and we have no information about him since his discharge.

One patient (case 1), who was discharged improved, is reported to be sick again.

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lecturer in anæsthetics, Grant Medical College, Bombay, and Captain D. R. Shirhatti, I.M.S.

I thank Professor Motwani, Grant Medical College, for his kindness in allowing me to study the exact anatomy of the inferior hæmorrhoidal nerve on the cadaver.

I am grateful to Lieut.-Colonel W. E. R. Dimond, I.M.S., Officer-Commanding, 15 Indian General Hospital and M.E.F., for his kindness in allowing me to operate on cases at the above hospital.

Case 5 showed improvement in the beginning but subsequently acid-fast bacilli were found in his sputum and he was discharged from hospital; this was thus a complicated case in which complete cure of the anæmia could not be expected.

Reactions to other liver preparations were as follows:—

Reacted to anahæmin (2 c.cm. for 6 days).	Case 4 given before ciplon
Reacted to Lilly's concentrated liver extract (2 c.cm. for 5 days).	" 4 " after "
Do. do.	" 2 " before "
Do. do.	" 3 " after "
Reacted (slightly) to T.C.F. plain liver (2 c.cm. for 6 days).	" 3 " " "

No other liver extracts were given in cases 1 and 5.

The spleen was found to be slightly enlarged in one, case 2.

Hookworm infection.—There was very slight infection in one case (3).

Indirect van den Bergh test.—In 4 out of 5 cases (2, 3, 4 and 5) the indirect van den Bergh reading was over 0.5 mg. per cent.

Sternal puncture.—In all the cases the marrow was plastic and was megaloblastic in reaction.

Gastric analysis.—Normal in 4 (cases 2, 3, 4 and 5) and hypochlorhydria in one (case 1).

(ii) *Definite failures.*—In 2 cases, 8 and 9, ciplon proved to be a complete failure. Both these cases improved later on marmite. A transfusion was given to case 8 during the course of treatment with marmite and the patient showed definite improvement after the transfusion. Case 9 had shown some improvement with iron given before marmite.

The spleen was greatly enlarged—over 7½ inches in case 9.

Indirect van den Bergh test was positive in both the cases and was over 1.0 mg. in both.

Sternal puncture.—Both showed plastic marrow, but it was only slightly megaloblastic in case 8 and normoblastic in case 9.

Gastric analysis gave results within the normal range in both cases.

Reactions to other liver preparations.—Case 8 did not respond to treatment with big doses of anahæmin (2 c.cm. given daily for 6 consecutive days), and case 9 did not respond to erythgen 2.5 c.cm. given daily for 5 consecutive days; in both the cases these liver injections were given after ciplon.

(iii) *Incomplete data.*—In the remaining 2 cases, data were not complete. Case 6 was admitted with general anasarca and a dilated heart; he failed to respond to ciplon, and later to erythgen; soon afterwards he became mentally deranged and was transferred to another hospital.

Case 7 was a relapsed case of macrocytic anæmia with a huge spleen, about 8 inches. On the last occasion, in 1939, his blood did not