

# TORSION TESTIS AND ITS TREATMENT

## REPORT OF A BILATERAL CASE

BY

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Testicular torsion still receives scant attention although exhortations abound in surgical literature, of which that by O'Connor (1933) is a good example, emphasizing the serious outcome of neglect of the lesion. Rarity of it may be pleaded, but this is a doubtfully valid excuse, resting more on failure to recognize the condition than on fact. Present chances for a twisted testis are poor, surgery saving only 50% and in the rest partial atrophy is likely. Sometimes the opposite organ also suffers, and the victim may become a eunuch.

The papers by Burkitt (1956) and Chambers (1956) provide a further reason for reviewing the subject. They stress that if the testis is to have a better fate the onus of treatment must be mainly on the G.P., not the specialist.

### Aetiology

The chief predisposing cause is varying degrees of failure by the gubernaculum to draw down the testis into the scrotum from its developmental birthplace by the kidney. In about half the cases torsion occurs in the inguinal testis. Another developmental imperfection explains cases occurring in the fully descended organ—namely, too spacious a tunica vaginalis, which allows the testicle to fall forwards and the cord to twist. This is due to the failure of the peritoneal processus vaginalis to close behind the testicle as it descends. A cul-de-sac remains, investing the spermatic cord above the testis and in continuity with the tunica vaginalis. In the bilateral case reported below (Fig. 1) the patency extended 6 cm. up the cords on both sides; while in another patient a still more infantile state was found, reaching nearly to the level of the internal abdominal ring with a corresponding mobility of the testis (Fig. 2). Fig. 3 shows the normally closed tunica level with the caput epididymis.

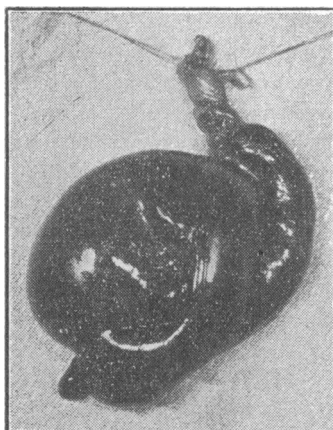


FIG. 1.—Acute torsion of right spermatic cord: orchidectomy for gangrene.

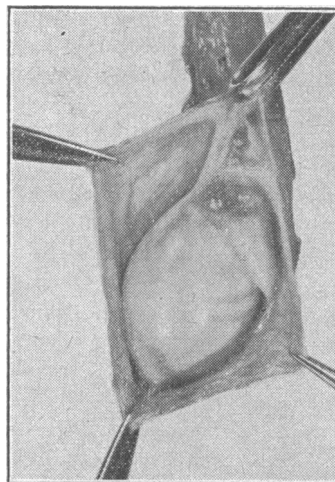


FIG. 3.—Tunica vaginalis closed over caput epididymis — normal anatomy.

Campbell (1948) postulates a different aetiology in the neonatal cases in which the torsion is outside the tunica vaginalis—that is, a torsion of the cord—and explains how the testis in the newborn may be withdrawn from the scrotum without division of any tissue—a fact first noted by Astley Cooper two centuries ago, and more recently by Cooper (1929).

The common age incidence is from puberty to 30 years. Ewert and Hoffman (1944) state that torsion varies from a partial twist to three or four complete twists. Fig. 4 depicts the main clinical types, including the rarest—the intra-abdominal torsion, usually found with a cancerous testis.

Exciting causes by way of physical strains are variably present, and often the onset is during sleep or even while sitting in a chair and making a movement of crossing the knees. Unconscious thigh movements during sleep or an overactive cremasteric reflex may provoke some cases (see below).

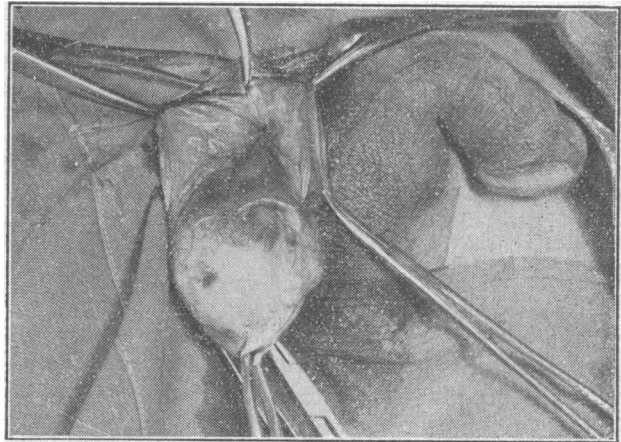


FIG. 2.—Patency of processus vaginalis from tunica to near internal abdominal ring.

### Pathology

When torsion occurs in the retained testis the organ is usually cancerous and torsion is accompanied by bursting of the testicular mass with fatal results (Charendoff *et al.*, 1951).

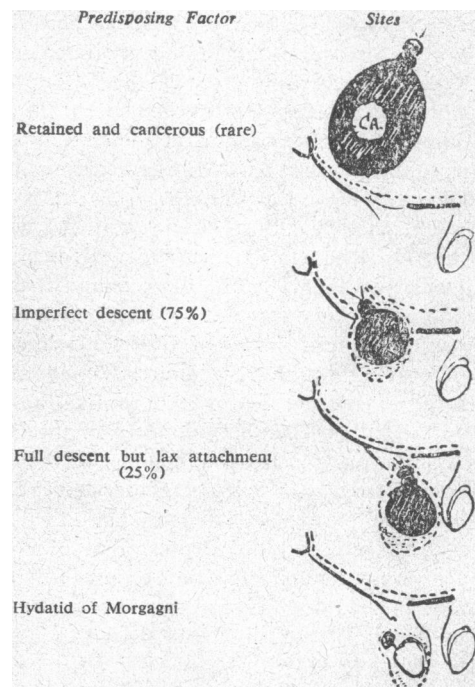


FIG. 4.—Varieties of torsion sites.

In torsion of both the partially descended, with its processus vaginalis usually open, and the scrotal testis the tense swollen organ is surrounded in the course of a day or two by oedema, ecchymosis, and cellulitis spreading to the scrotal wall. Blood may be mixed with the secondary hydrocele. The spermatic artery being an end-artery, total ischaemia often results. The vestigial legacy is a soft miniature testis; in a case of ours it was 1.5 cm. in diameter. Biopsy of this removed relic showed: "The testis is entirely necrotic and largely calcified. There is no cellular reaction and changes are ischaemic. There is no evidence of syphilis or malignancy—ischaemic necrosis." It was removed during prostatectomy on a man of 70 instead of the routine vasotomy. The patient could not recall past trouble in the

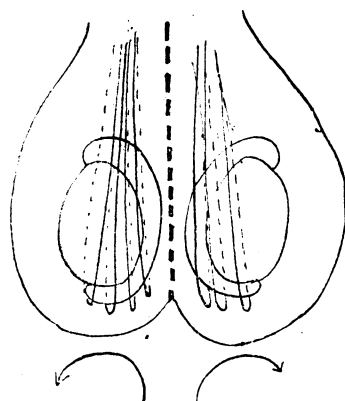


FIG. 5.—Testicles shown in "cremasteric sling": opposite direction of usual twists, right and left sides, indicated by arrows.

testicle. His opposite testis was normal and routine vasotomy was done. Some cases of early gangrene go on to suppuration.

Although spontaneous or therapeutic detorsion saves the testis, variable degrees of fibrosis follow. In the chronically recurring lesions a substantial testis may remain despite multiple attacks, as in the case reported below. Torsion occasionally involves merely one of the genital developmental relics at the upper pole of the testis

—for example, the hydatid of Morgagni, which swells to 1-2 cm. in diameter, and with intense reactionary cellulitis around may resemble torsion of the body.

In the left testicle the twist is usually clockwise, and in the right anti-clockwise. The rotation, encouraged by a lively cremaster, is unlikely to be towards the rigid mesial septum, but outwards. We suggest this may explain the usual direction of the torsion (Fig. 5).

### Symptomatology

Torsion presents itself in three distinct clinical categories: (1) transient recurrent aches or minor colic; and (2) acute, variably ischaemic, attacks: (a) early phase, testis and epididymis definable; and (b) late phase, testicle obscured by surrounding inflammatory exudate. In some histories there may be a mixture of these events from time to time. The following case, during its lengthy history, illustrates all three types.

(1) At the age of 18 the patient had spells of continuous aching and a twisted sensation in the right groin which began to trouble him, awaking him during the night and lasting for about 20 minutes. The testicle hardened, but by the next morning the whole trouble passed off and he worked as usual. He did not have the doctor then or for the many minor attacks thereafter. Such a history is a very helpful diagnostic pointer for the doctor if he elicits it when a severe attack compels the patient to see him.

(2) At 19 years the patient had the first major attack and saw his doctor, who gave no diagnosis but bandaged the scrotum. At 22 years the next very bad attack occurred, with vomiting. The doctor arrived quickly, diagnosed torsion testis, and immediately sent the patient to hospital, where the specialist amended the diagnosis to acute epididymitis and treated with antibiotics.

(3) In his third severe attack (May, 1956) he was seen by us for the first time late on the fourth day. It had developed during the night; pain disabled him and recumbency relieved it, though exacerbations occurred. The right half of the scrotum was thrice as large as normal. Cellulitis and oedema of the skin anteriorly were present. Acute tenderness to the touch or on passive movement in any direction (Prehn's sign) hindered attempts to define the testicular elements; but, whereas the fingers sensed elasticity in front, there was irregular hardening over the region of the cord

at the back. Apart from a tired look, he appeared in no obvious discomfort, lying with the homolateral hip mildly flexed and abducted. Slight fever was present, but no constitutional upset.

He had no past history of urinary disease. There was nothing amiss per rectum and the laboratory reported normal urine. Acute epididymo-orchitis was erroneously diagnosed, after failing to note the significant absence of collateral genito-urinary disturbance and to extract the history of previous attacks, an almost infallible token of torsion.

**Diagnostic Features Summarized.**—Sudden pain, which quickly intensifies in the lower abdominal quadrant or scrotum, follows physical stress or may supervene during sleep. The testicle at once swells and hardens. The patient guards against movement of the testicle, which is extremely tender. Per rectum nothing abnormal is to be felt. Constitutional upset is lacking, although vomiting or a mild febricula may be recorded. Urinary and intestinal disease are absent. History of former similar attacks may often be elicited.

**Differential Diagnosis.**—In the case of the inguinal testicle, strangulated hernia, orchitis of mumps, and adenitis have to be excluded. In the scrotal case the common mistake is to diagnose acute epididymo-orchitis or acute forms of hydrocele, haematocoele, or pyocoele. Owing to diffusion of pain into the adjacent peritoneum, appendicitis or intestinal or reno-ureteric colic may be misdiagnosed. Mild recurrent torsion is apt to be dismissed by the doctor as testicular neuralgia or cremasteric spasm.

### Treatment

Efficacy is proportional to immediacy. Because the seminiferous tubules are very intolerant to ischaemia, release of the strangled artery is as urgent for the testicle as tracheotomy is to save the life of the individual. Measures vary with the clinical types.

**Acute Stage.**—Once the doctor diagnoses torsion it is incumbent on him to attempt immediate detorsion of the cord and restore the spermatic pulse at once. An hour later may be too late. The manipulation may be unbearable without local analgesia. Usually a clockwise direction is needed to undo the right testis and an anticlockwise direction for the left. Relief is maintained by a suspensory bandage. If this fails, open operation must be arranged expeditiously. In the first day or two adhesions are still soft and untwisting is feasible. Hot cloths may stimulate a sluggish circulation. Unless obviously dead, the testicle is better fixed and retained in the hope of its survival. Late sloughing and sepsis may necessitate drainage. Furthermore, operation may find its justification by revealing a strangulated hernia.

### Acute Torsion Seen in Later Stage

At open operation, in the later phase of an attack, adhesions may have become organized, preventing untwisting; gangrene calls for ablation. Where, however, strangulation of the artery has been incomplete, detorsion may already have occurred or be feasible and sufficient viable tissue may be present to merit preservation of the testicle.

Concurrent herniotomy is done in the cases of patent processus vaginalis.

In a neonatal case conservation is preferred to opening the scrotum. Glaser and Wallis (1954), reviewing the literature, point to the futility of surgery, since in no case yet reported has the testicle been saved. Longino and Martin (1955) advise that, where detorsion fails, the testicle should be retained for its possible endocrine value.

Orchidopexy, apparently not considered by Birkitt (1956) or Chambers (1956), plays a useful part in torsion. It prevents recurrent torsion after reduction, spontaneous or manipulative. In addition, contralateral orchidopexy is especially indicated where one testicle has suffered or been destroyed, as there is a significant incidence of bilateral torsion. Thus, within a few months of losing his right testicle, a repetition of mild attacks began in our patient's remaining testicle, and his anxiety was aggravated by plans

of marriage in 1958. In January, 1957, operation became urgent because of two rather severe attacks despite the precautionary use of a suspensory bandage by day. Orchidopexy, during a quiescent phase, revealed a testicle of normal appearance, but the typical stigmata of lax attachments were present, nodding forwards towards the horizontal owing to a narrowed mesorchium, and the vaginal tunic prolonged 6 cm. up the cord.

For orchidopexy we favour a simple Jaboulay procedure combined with an anchoring nylon suture through the skin and lightly catching the tunica albuginea.

### Summary

Torsion of the spermatic cord affects a most accessible organ, yet the profession still fails miserably both in diagnosis and in treatment of it. Although uncommon, it is a serious malady incurring loss of the testicle in half the operated cases.

In severe twists, with total arrest of the spermatic circulation, ischaemic necrosis is inevitable unless the doctor performs manual detorsion within an hour.

Doctors called to cases of sudden inguino-scrotal pain in youths or young men should respond with the utmost haste. If they diagnose torsion, they should themselves undertake manipulative detorsion at once. Only thus can there be improvement in the percentage of testicles saved.

If surgeons confronted with an acute scrotal swelling of uncertain diagnosis give up guessing and promptly explore, they will often discover a torsion which, in cases of partial ischaemia, may still be effectively untwisted. At the least, operation establishes a firm diagnosis, whereas all too often clinical diagnosis fails and the cases are treated for acute orchitis.

Orchidopexy prevents recurrent torsion and is advisable in the opposite testicle also, because patients are prone to bilateral torsion.

### REFERENCES

- Burkitt, R. (1956). *Brit. med. J.*, 2, 345.  
 Campbell, M. F. (1948). *J. Pediat.*, 33, 323.  
 Chambers, D. G. (1956). *Brit. med. J.*, 2, 552.  
 Charendoff, M. D., Balion, H. C., and Simon, M. A. (1951). *J. Urol.*, 66, 274.  
 Cooper, E. R. A. (1929). *J. Anat. (Lond.)*, 64, 5.  
 Ewert, E. E., and Hoffman, H. A. (1944). *J. Urol.*, 51, 551.  
 Glaser, S., and Wallis, H. R. E. (1954). *Brit. med. J.*, 2, 88.  
 Longino, L. A., and Martin, L. W. (1955). *New Engl. J. Med.*, 253, 695.  
 O'Connor, V. J. (1933). *Surg. Gynec. Obstet.*, 57, 242.

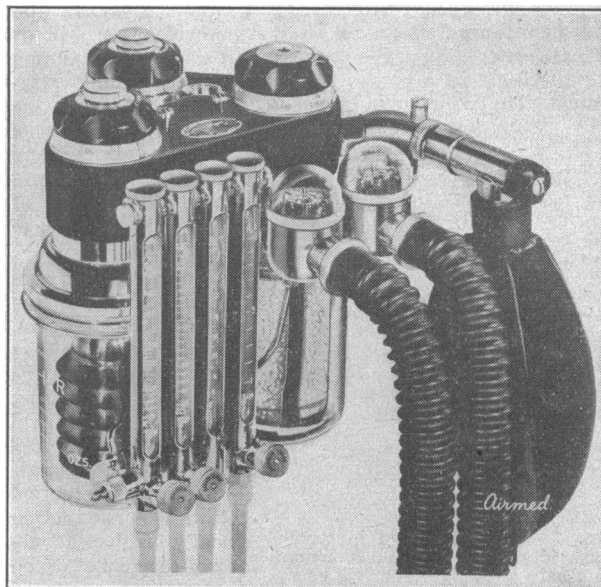
## Preparations and Appliances

### MODIFICATIONS TO THE MARRETT APPARATUS

Dr. H. REX MARRETT, consultant anaesthetist, Coventry and Warwickshire Hospital, writes: Since the introduction in 1948 of the Marrett anaesthetic apparatus there have been many advances in anaesthesia and consequent changes of techniques. It is because of the latter that alterations in design have been made for the purpose of safety and greater efficiency. Some methods, such as insufflation, have become practically extinct except for use with the Boyle-Davis gag in child tonsillectomies. Others are new, such as the rapid inflation of the lungs following the use of the relaxants during induction.

The bag-control valve on the first model was designed so that the bag could be shut off during the insufflation technique. Owing to the present-day method of using by-pass oxygen after the relaxant it has been thought safer to prevent the closure of the rebreathing bag, thereby allowing the tension of the thin rubber bag to give an indication

of the pressure in the circuit and in the patient's lungs. The real danger is present when a junior anaesthetist inserts an endotracheal tube immediately after an ultra-short-acting relaxant without first inflating the lungs, and then turns on the oxygen by-pass for subsequent inflation with the bag control drum in the "shut" position. The bag mount has been moved to the right of the expiratory dome so that it can be more easily seen, and is attached by a tapered fitting,



so enabling a "walk around" bag assembly to be easily connected, with obvious advantages to those using controlled respiration.

Another safety feature is that instead of the by-pass oxygen being directed through the flowmeters it now passes direct to the patient's side of the inspiratory unidirectional valve. Thus the risk of decanting liquid ether or trichloroethylene into the machine, should the jars be overfilled and a control inadvertently be left "on," is entirely eliminated.

With the increasing use of colour-indicating soda lime, the absorber, which was of metal construction, now consists of two glass jars fitting one inside the other, the inner jar holding 1 lb. (450 g.) of soda lime. The inner jar is automatically guided into position by means of a simple spring when the outer jar is screwed into the body of the machine. Glass jars have many advantages: they allow quick observation of the change in colour of indicating soda lime and are easy to keep clean. An airtight fit is now more certain because the seal of the outer jar is at the top instead of the bottom, thus being free of soda lime granules. A jar similar to the outer soda lime one is now used for the ether vaporizer, thus permitting larger cones to be used, giving an even smoother ether induction.

The soda lime control can now be set either to "circle" or to "to-and-fro" absorption. With the previous model both inspirations and expirations passed through the soda lime—that is, "to and fro"—which was to provide maximum absorption efficiency, but with the attendant disadvantage of slight dead space between the top of the soda lime and the bottom of the control drum. This dead space was sufficient, when added to that in the facepiece, to cause an increase in rate and depth of respiration in small children. By selecting "circle," expirations only pass through the soda lime, thereby eliminating all dead space in the machine. The resistance to respiration under working conditions tested with a sensitive gauge has never been seen to rise above 1.5 cm. of water on the "to-and-fro" circuit and not above 1 cm. on the "circle."

The machine is manufactured by Airmed Ltd., Harlow, Essex, who provided the illustration.