

We have operated on patients with a filling time of less than thirty seconds, with no ill after-effects. The operation performed, a ligation and excision of the saphenous vein and its tributaries is safe, gives excellent results, and is applicable to all cases of varicosities of the saphenous system, irrespective of the filling time, except where there is a definite contraindication, as in the case here reported.

## REPORT OF CASE

T. S., a white youth, aged 19 years, single, a plumber's helper, born in England, reported to the Polhemus Clinic in March, 1925, for examination of varicose veins of the lower left extremity.

His present illness followed an attack of typhoid in 1919 for which he was treated at the Long Island College Hospital. Before leaving the hospital in October, 1919, he noticed that his left leg was swollen. He was told that he had a "milk leg," and his leg was strapped. Ever since that time the veins of his lower left extremity have been markedly enlarged, but he has not complained of the symptoms often associated with varicose veins, such as pain, numbness, tingling or fatigue. There have been no trophic changes in the soft tissues, and no ulceration.

As a child he had measles and diphtheria. He had influenza at the age of 11 and typhoid at 13. He has been fourteen years in the United States. He has been working since the age of 13 as a plumber's helper, and is on his feet a great deal. His habits are regular, and there is no history of constipation or any other intra-abdominal obstruction to the venous current. He wears garters. His mother suffered from varicose veins and was operated on by Dr. Barber.

The Wassermann reaction is negative. The urine is normal. The systolic blood pressure is 125; diastolic, 80. The general physical examination is negative. Associated varicosities consist of a left varicocele; there are no hemorrhoids.

The left internal saphenous vein is markedly varicosed throughout its entire extent, but this varicosity differs from the usual varicosities of this vein in the following respects: Over the fossa ovalis, where the internal saphenous vein dips to join the femoral vein, there is a markedly varicosed and tortuous mass of veins, consisting of a wormlike collection of veins irregularly clumped together, and resembling somewhat the caput medusae in an advanced case of portal obstruction. The mass measures about 2 inches (5 cm.) in diameter and it is difficult to locate the main stem of the vein. All the tributaries that drain into the internal saphenous vein at this point are markedly varicosed; the superficial external pudic, the superficial external and internal circumflex, and the superficial epigastric veins stand out prominently. In these tributaries the venous current is diverted from its usual course. Thus in the superficial external circumflex the venous current runs upward instead of downward and ultimately enters a vein in the axillary region with which the circumflex establishes an anastomosis.

The superficial internal circumflex vein on the left side runs upward toward the umbilicus, where it becomes continuous with the analogous vein on the right side. The latter vein runs downward to drain into the right saphenous vein. The two internal circumflex veins are markedly enlarged, measuring about 1 cm. in diameter, tortuous, and look like an inverted V with the apex at the umbilicus. In this manner a great deal of the blood from the left internal saphenous vein finds its way into the right internal saphenous vein. It is possible that an anastomosis exists with the para-umbilical vein. The direction of the current is upward in the left and downward in the right superficial internal circumflex veins.

When the patient is up on his feet, these veins stand out prominently; when in the horizontal position, the veins become less prominent; and when placed in the Trendelenburg position, the veins collapse.

A manometer reading was taken, the needle being introduced into the left superficial internal circumflex vein. The blood in the manometer tube rose to the heart level, a distance of 14 inches. This finding illustrates the fact that, even with

such handicaps obstructing the venous current in its way toward the right auricle, the vis a tergo rises to a point sufficient to propel the blood onward toward the heart. The old teaching, therefore, that in varicose veins there is a reversed circulation, with the blood flowing away from the heart, is erroneous. As long as cardiac compensation is maintained, no such reversal of current occurs.

The Trendelenburg test was positive, and the filling time was thirty seconds.

## COMMENT

From these observations we are led to believe that a partial or complete thrombosis, of an infectious origin, exists in the deep veins of the left lower extremity, extending upward to a point proximal to the point at which the saphenous joins the femoral vein. How far up the femoral or iliac the thrombosis extends, it cannot be positively stated, for while the patient has an associated left varicocele he has no hemorrhoids, which would have existed had the iliac been thrombosed up to a point proximal to that at which the middle hemorrhoidal vein drains into it.

Operation in this case is absolutely contraindicated. The patient has been under observation for more than two years and a half, and it will be interesting to learn what the final outcome will be.

The accompanying illustrations give an idea of the appearance of the superficial veins in the left lower extremity.

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### VAS LIGATION FOR THE PREVENTION OF PREOPERATIVE AND POST- OPERATIVE EPIDIDYMITIS\*

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In all operative procedures on the bladder or prostate gland, epididymitis is a frequent and often a troublesome complication. Particularly is this the case in dealing with patients suffering from prostatic obstruction, either of the benign or of the malignant type. It is, of course, a well known clinical fact that epididymitis may arise at any time throughout the course of prostatic obstruction; and, while it is rarely a dangerous complication, it plays an important part in increasing the length of hospitalization of the patient and usually has a markedly depressing effect on the morale. In some extremely sick patients with lowered resistance, the added effect of this infection may prove to be too much for the individual to withstand, and in such cases, fortunately rare, the fatal outcome may be directly attributed to the added burden of the epididymitis. Then, too, in the very rare case in which a blood stream infection develops, either during the preparatory treatment or postoperative course, the septicemia often appears directly after the epididymitis, so that in some of these cases, at least, the epididymitis may be considered as the portal of entry of the infection into the circulation.

In recent years many urologists have recognized the importance of the prevention of epididymitis, and for this purpose a growing number have advocated vas resection or vas ligation.

The recent literature of the subject has been presented by Goldstein,<sup>1</sup> who operated on a series of fifty

\* From the James Buchanan Brady Urological Institute, Johns Hopkins Hospital.  
1. Goldstein, A. E.: Bilateral Ligation of the Vas Deferens in Prostatectomy, *J. Urol.* 17: 25, 1927.

unselected patients, twenty-five with preliminary ligation, and twenty-five without. Of the twenty-five unligated, 20 per cent developed epididymitis, a figure that corresponds accurately with statistics given by other writers on the subject. Among the twenty-five ligated, only one (4 per cent) developed a very mild epididymitis, which resulted in no disability. This well planned clinical experiment proves without any doubt the efficacy of vas ligation as a preventive of epididymitis following prostatectomy. In Goldstein's opinion, the complication is about as frequent following the one-stage suprapubic, the two-stage suprapubic or the perineal technic, and statistics of other observers seem to bear out this impression.

As usually practiced, this procedure is carried out just before operation by exposing the cord on each side by a short incision, isolating the vas and either simply ligating it or resecting a small portion. Some writers believe that resection offers a surer method of prevention than simple division and ligation and, if the open operation is chosen, this method should probably be carried out, as it adds nothing to the difficulty or time of operation.

For the purpose of simplifying the procedure and avoiding the open incisions, with the possibility of infection, which is always present in the neighborhood of a suprapubic or perineal wound, the following technic was followed for the first time eighteen months ago, and has been used in a limited series of cases since that time.

A small portion of the skin of the scrotum directly over the cord is shaved and painted with Scott's solution<sup>2</sup> or other efficient skin disinfectant. The cord is then brought up to the skin and carefully palpated, and the vas isolated from the other structures, which are allowed to slip back. The vas is caught by two Allis clamps applied on the skin directly over it in such a way as to fix the vas up against the overlying skin and away from the other structures of the cord. It will be found quite possible to do this in practically every case unless scar tissue from a previous operation is present or unless a former inflammatory process makes accurate palpation impossible. A sharp needle threaded with silkworm-gut is then passed through the skin of the scrotum between the two clamps, carrying the needle as close to the firmly held vas as possible. The ligature is then tightly tied, the ends are cut short and subsequent dressings simply consist in daily application of antiseptic solutions. The ligatures are left in place for seven or eight days and then removed.

A small amount of reaction develops about the stitch, but in no case in our series has infection developed to such an extent as to require anything else than the simple antiseptic applications mentioned. In no case has

hematoma or other evidence of injury to the cord developed, and I feel certain that this can always be avoided, provided a small needle is used and that it is passed through the skin as close as possible to the vas.

Local anesthesia is only rarely necessary, as the vas can be satisfactorily immobilized with the Allis clamps fixed in the first notch, and the passage of the needle and tying of the ligature can be done so quickly that the patient rarely feels more than the slightest sensation.

The procedure was first carried out in the operating room just before prostatectomy was undertaken, but the procedure was so simple that, at the suggestion of Dr. E. P. Alyea of the resident staff of the Brady Urological Institute, it was determined to try it on a limited number of patients entering the hospital for the purpose of undergoing prostatectomy. It is, of course, well known that a number of patients develop epididymitis from preliminary instrumentation and especially as a result of the infection that is always present about an indwelling catheter. Also it would not seem to be too much to assume that at least some of the infections that

develop after operation may not have been caused by operation itself but may have arisen from a seminal vesiculitis or other deepseated infection which had in turn resulted from preoperative instrumentation. In any event, it would seem to be logical that the most efficient method for the prevention of both preoperative and postoperative epididymitis would be vas ligation before any urethral instrumentation had been carried out.

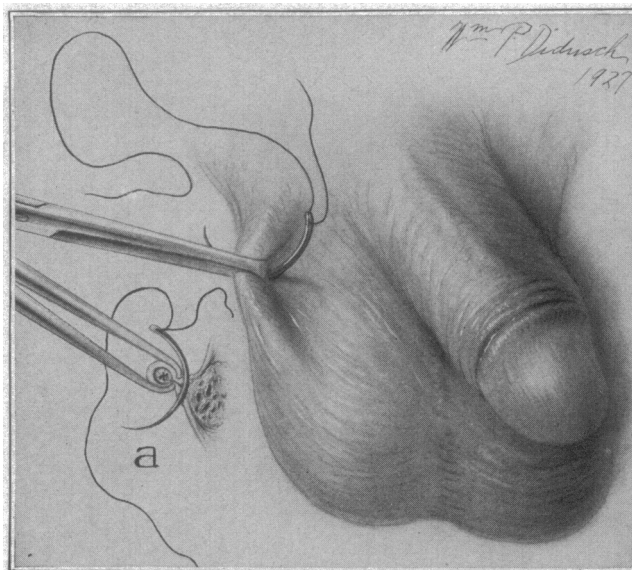
The simple procedure that has been proposed can be easily carried out in the examining room or at the bedside as soon as the patient is admitted to the hospital. The vas is, of

course, completely occluded, together with the lymphatics that surround it, and the mild inflammatory reaction that results offers a complete barrier to descending infection over the period of time during which the occurrence of infection is most probable.

A series of cases in which preliminary vas ligation has been carried out by the technic described has been analyzed by Dr. Alyea, and will be presented later.<sup>3</sup>

3. Alyea, Edwin: J. Urol., to be published.

**Habitability of Submarines.**—It has been found that carbon dioxide can be tolerated in much larger quantities than was previously thought, and that even when 3 per cent is present there may be very little or no indication of its effect on personnel except panting on exertion. There is a gradual and insidious absorption, which may not prevent the performance of general duties. Nevertheless, it has been found that after several hours of submergence the men become "dopy" and listless, characteristics of the effect of carbon dioxide. It has been noted that releasing oxygen from the cylinders will "pep up" the crew, but there is no neutralization of the increasing carbon dioxide in the blood.—Carpenter, D. N.: U. S. Nav. M. Bull., January, 1928.



Vas deferens grasped by Allis clamp and needle passed as closely to vas as possible: a, cross section view of method.

2. Scott's solution consists of mercurochrome-220 soluble, 2 Gm.; water, 35 cc.; alcohol (95 per cent), 55 cc.; acetone, 10 cc.