

FROM THE CLINIC OF THE WOMAN'S HOSPITAL, NEW YORK

THE "WARREN APRON" IN REPAIR OF HIGH LACERATION OF THE RECTUM ASSOCIATED WITH THIRD DEGREE LACERATION OF THE PELVIC FLOOR

LILIAN K. P. FARRAR, A.B., M.D., F.A.C.S., NEW YORK

IN 1882 Dr. J. Collins Warren presented before the American Gynecological Society a contribution entitled "A New Method of Operation for the Relief of Rupture of the Perineum through the Sphincter and Rectum." The operation has been used extensively and endorsed by surgeons for the third degree lacerations of the pelvic floor but is considered not to be applicable when the laceration extends high in the rectum. If, however, the dissection of the flap is begun high on the posterior wall of the vagina just below the cervix and is extended outside and below the sphincter ani pits on either side, the apron or flap will be sufficiently long to extend below the tear in the rectum and thus protect the wound which now lies anterior to the flap.

The technique of the operation to be described differs from the Warren operation chiefly in the outline of the flap to be used and the modern method of repairing injuries to the pelvic floor by suturing the torn urogenital diaphragm and reuniting the separated levator muscles. This method of repair has been used by the writer in 12 patients, 10 of whom have had an absolutely perfect result. Two cases required additional suturing owing to excessive catharsis in one case

and a too wide separation of the legs when placed in the holding stirrups in another. In neither patient was there any injury to the flap and both had a satisfactory result. The operation is best done after a full 6 months' interval has elapsed from the last confinement, as this allows ample time for the tissues in the pelvic floor to undergo involution. The most favorable time in the month is 2 or 3 days after the cessation of the menstrual flow so that there will be time for healing before the next period begins. The bowels should be moved thoroughly the week of the operation, preferably with castor oil (1 ounce) given 4 and 2 days before the operation, and a high enema the day of the operation—6 to 8 hours before the time set for the repair. A limited diet with little residue should be given on the 3 days previous to the day of the operation.

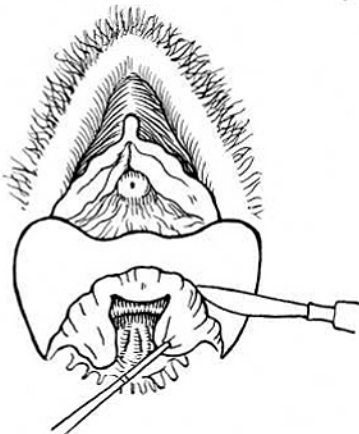


Fig. 1. Outline of "apron." (After J. Collins Warren.)

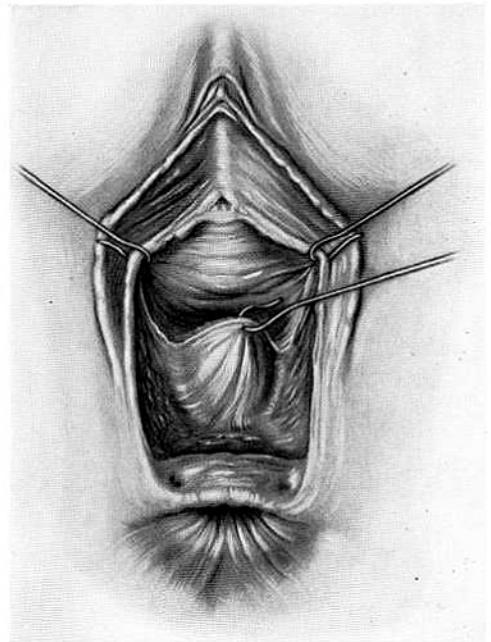


Fig. 2. Outline of operation field. (After Howard A. Kelly.)

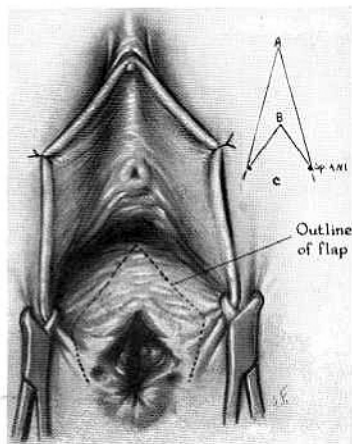


Fig. 3.

Fig. 3. Outline of apron. *A*, Dissection begun just below cervix; *B*, upper end of tear in rectum; *C*, point on imaginary line between ends of sphincter ani muscles.

Before outlining the flap, the sphincter ani muscles are thoroughly stretched and a 12-inch strip of 1-inch wide iodoform gauze is packed lightly into the rectum. The technique of the operation is well shown in illustrations. Figures 1 and 2 show the Warren and Kelly flaps. Figure 3 is an outline of the apron which we use. The dissection is begun just below the cervix. *A* to *B* must equal or be a little longer than *B* to *C*. The incision must extend outside of the sphincter ani pits and a little below them. Dissect free a thick flap in the area outlined, up to the lines extending from just below the sphincter ani pit on one

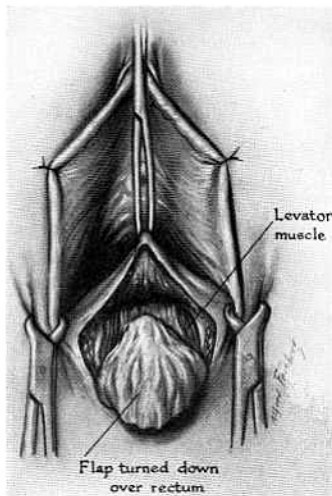


Fig. 4.

Fig. 4. The flap has been turned down over the tear in the rectum.

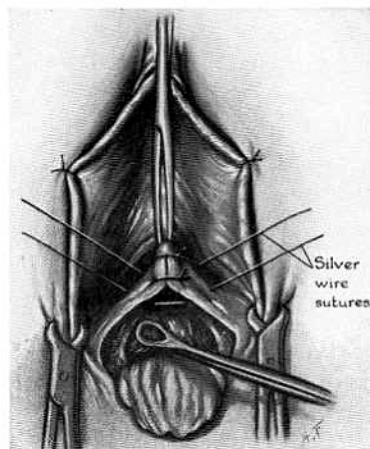


Fig. 5.

Fig. 5. Silver wire sutures placed anterior to flap.

side to the point *B* and down to a point just below the sphincter ani pit on the other side, keeping a finger back of the flap as a guide when approaching the edge of the rectum. The flap will now hang down over the tear in the rectum and *A* will cover point *C* (Fig. 4). Carry 3 to 5 silver wire sutures anterior to the flap in the vaginal portion of the operating field (Fig. 5). The first suture should be above the apex *A*, to take the strain off the rectum when it is re-united. The second wire suture should be introduced into the mucous membrane on the left side about $\frac{1}{8}$ inch from the margin of the denuded area and deeply enough to pick up the edge of the torn urogenital diaphragm. It should come out at the margin of the flap and catch up lightly tissue in the flap to prevent a dead space as first advised by Tait, and should be re-introduced at the right margin of the flap taking the torn edge of the diaphragm on the right and out on the mucous membrane. Successive sutures should be passed in exactly the same way until the mucocutaneous junction is reached. The anterior fibers of the levator ani muscles are then found.

The levator muscles are sutured with No. 2 catgut, and 2 to 3 silver wire sutures are passed from the skin surface of the perineum under the levator muscles (Fig. 6).

When the levator muscles are united they act as a guide to the torn sphincter muscle which should be sutured with No. 1 tanned gut, after they have been dissected out. Two wire sutures

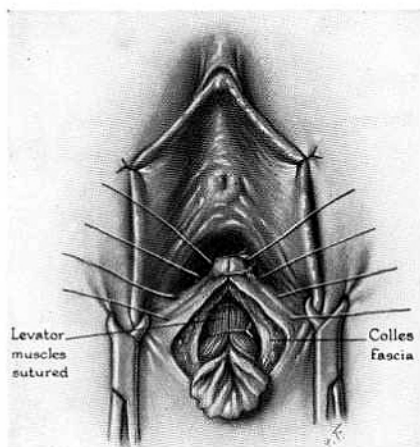


Fig. 6. Levator muscles sutured with No. 2 catgut.

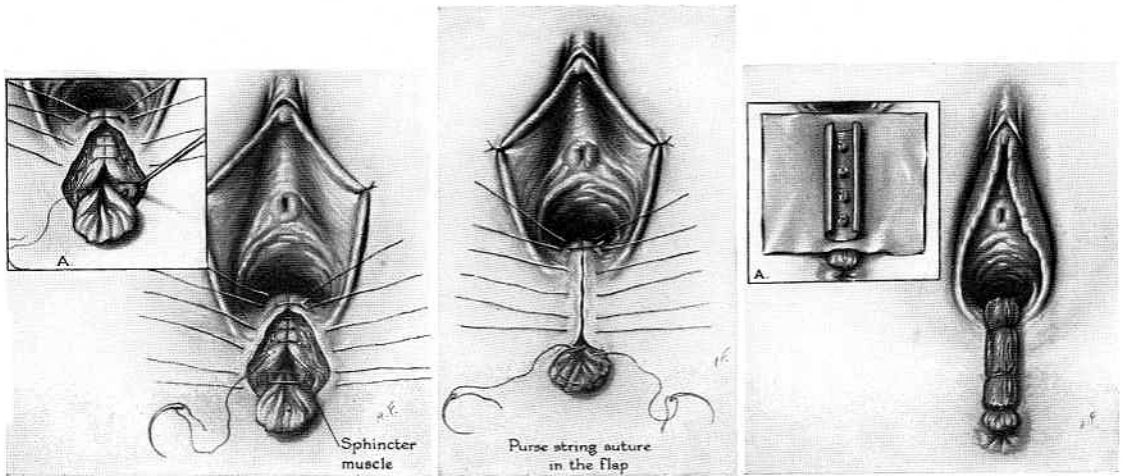


Fig. 7.

Fig. 8.

Fig. 9.

Fig. 7. Torn sphincter is sutured with No. 1. tanned gut.
 Fig. 8. Purse string suture closes edges of flap which may be attached to or spread out to fit the edge of the anus.

Fig. 9. All wire sutures are twisted and those in the vagina have their ends covered with a washer and shot firmly crushed.

are then passed deeply under the torn edges of the sphincter muscle. The upper edge of the sutured sphincter muscle may be sutured to the levator muscle where Luschka's fibers normally are. A continuous No. 2 tanned gut suture closes Colles' fascia and is tied later to the end of a No. 1 tanned gut suture passed subcutaneously in the skin margins, beginning at the mucocutaneous junction and ending at the anal margin (Fig. 7).

The flap now hangs in the restored anus and a purse string suture will close the edges which may be attached to or spread out to fit the edge of the anus. This flap will contract and be withdrawn into the rectum where it can be felt weeks later, only as a slight thickening on the anterior wall of the rectum (Fig. 8).

All wire sutures are now twisted and each one in the vagina has its ends covered with a washer and a shot firmly crushed. The twisted wire sutures on the skin surface are passed through a piece of perforated rubber tubing covered with thin rubber. The ends of the wires are covered with shot and the outer rubber covering is tied over the tube to keep it water tight, as in the technique which is employed by Dr. Herman Grad of the Woman's Hospital. The gauze is removed from the rectum and the knees are kept tied until the patient becomes conscious (Fig. 9).

AFTER-CARE

The perineum must be kept clean by pitcher douches of potassium permanganate solution

after each urination or bowel movement. The diet should be liquids chiefly—no milk should be given, however.

The bowels are moved on the fifth day by Epsom salts repeated if necessary. Enemas are never given.

The silver wire sutures are removed on the fourteenth day under gas oxygen anaesthesia, care being taken not to stretch the pelvic floor by placing the legs in stirrups.

The principles of the repair of the pelvic floor have been taught by Emmet, Tait, Marcy, Watkins, and Ward; the anatomy demonstrated by Edouard Martin, Testut and Jacob, Halban and Tandler, and others; the method of repair of third degree laceration of the pelvic floor by Kelly, Watkins, Ristine, and Noble. So completely has this been done, that one can only assemble the technique to fit each individual case, keeping always in mind the importance of uniting the edges of the torn urogenital diaphragm and suturing together the levator muscles after reaching the mucocutaneous line where they normally decussate with one another before the injury. The support of the pelvic floor depends not on muscle or fascia alone, but upon the integrity of both muscle and fascia working together.

My appreciation and grateful acknowledgment are due to Dr. Howard A. Kelly for his invaluable guidance of many years and in this instance for his teaching the repair of the complete laceration of the sphincter ani muscle.

BIBLIOGRAPHY

1. CARRELL, J. F. Perineal injuries during parturition, with report of 336 cases. *Am. J. Obst. & Gynec.*, 1927, xiii, 627-632.
2. CUNNINGHAM. *Anatomy*, 1926.
3. DEUTSCHMAN, D. A plea for the preservation of the perineum and a modified prophylactic episiotomy for the prevention of perineal lacerations. *Med. J. & Rec.*, 1924, cxx, 150-153.
4. EMMET, THOMAS ADDIS. Laceration of the perineum involving the sphincter ani and the operation for securing union of the muscle. *Med. Rec.*, 1873, viii, 121.
5. FARRAR, LILLIAN K. P. Fascia and ligaments of the pelvic floor. *Kelly's Gynecology*, 1928.
6. HALBAN, JOSEF. Operative Behandlung weiblicher Genitalprolapse und der Beruecksichtigung der Anatomie und Aetiologie. Vienna, 1919.
7. HALBAN and TANDLER. Anatomie und Aetiologie der Genitalprolapse beim Weibe. Vienna, 1907.
8. KELLY, HOWARD A. Lacerations of the perineum. *Kelly's Gynecology*, 1928, pp. 283-287.
9. LEYNE, F. Considerations sur la resection immediate du périnée déchiré par l'accouchement. *Ann. de l'Inst. chir de Brux.*, 1922, pp. 152-155; *Arch. méd. belges.*, lxx, 983-986; *Rev. franç. ginec. et obst.*, 1922, xvii, 430.
10. MARCY, H. O. The reconstruction of the pelvic structures in woman. *Am. J. Obst.*, 1892, xxvi, 687.
11. MARTIN, EDOUARD. *Der Haftapparat der weiblichen Genitalien*. Berlin, 1911.
12. NOBLE, GEORGE H. An operation for complete laceration of the perineum designed for the purpose of eliminating danger of infection from the rectum. *Tr. Am. Gynec. Soc.*, 1902, xxvii.
13. ORR, J. L. Primary repair; modified technique and after treatment. *Glasgow M. J.*, 1928, cix, 314-319.
14. RISTINE. A new method of operating for complete tear of the perineum. *Am. J. Obst.*, 1900, xli, 365.
15. SISTRUNK, W. E. Plastic surgery: open operation for extensive laceration of anal sphincter. *Ann. Surg.*, 1927, lxxxv, 187-190.
16. TAIT, LAWSON. *Diseases of Women and Abdominal Surgery*, 1889.
17. TESTUT and JACOB. *Traite d'Anatomie Topographique*, 1914.
18. TITUS, PAUL. Surgery, episiotomy and immediate postpartum repair of both old and new perineal injuries. *Am. J. Surg.*, 1927, iii, 499-505.
19. WARD, GEORGE GRAY, JR. The problem of the rectocele. *Surg., Gynec. & Obst.*, 1913, xvii, 361. *Rectocele, Enterocoele, Injury to the Pelvic Floor*. *Kelly's Gynecology*, 1928, Chapt. xx.
20. WARREN, J. COLLINS. A new method of operation for the relief of rupture of the perineum through the sphincter and rectum. *Boston M. & S. J.*, 1878, xcvi, 25; *Tr. Am. Gynec. Soc.*, 1882, p. 322.
21. WATKINS, THOMAS J. Perineorrhaphy for complete laceration. *Surg., Gynec. & Obst.*, 1921, xxx, 360.