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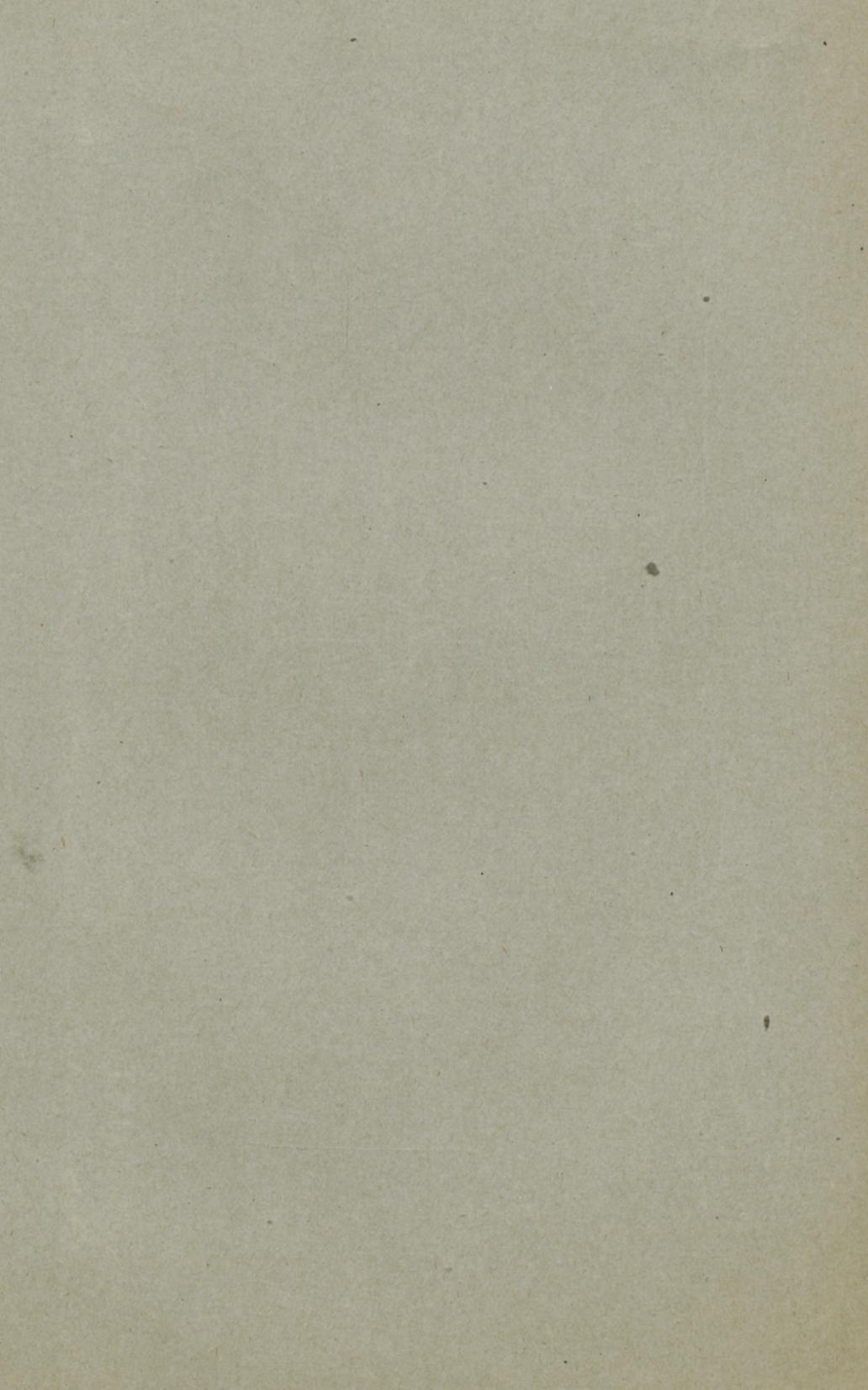
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REPRINT FROM ANNALS OF SURGERY, NOVEMBER, 1889.



THE CURE OF HÆMORRHOIDS BY EXCISION AND
CLOSURE WITH THE BURIED ANIMAL
SUTURE.¹

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THE recent discussion upon the surgical treatment of hæmorrhoids, published in the *New York Medical Journal*, evoked by a late paper of Mr. Whitehead, of Manchester, England, is both timely and interesting.

The modifications of surgical procedure, based upon aseptic measures, mark the present as the era of surgical revolution, to which the surgery of the rectum should offer no exception.

Few of the minor surgical diseases cause so much suffering and present to the general practitioner such constant repetition of complaint, and in return for advice rendered, none are more appreciative and grateful than are the cured sufferers.

The teachings of the text-books, with few exceptions, offer little improvement upon the methods of our fathers. The advocates of the ligature perhaps equal those who claim superior advantage to be derived from the use of the clamp and cautery. Although, resulting from the use of either, a permanent cure is generally obtained, I am constrained to believe that both are radically defective and should be relegated to the history of surgery. While it may be conceded that the general practitioner is, in a measure, familiar with the pathological conditions pertaining to hæmorrhoidal disease, it is well to keep ever in mind that the blood is carried directly to the part with the arterial impulse, through short branching vessels, and then in turn is received from the capillaries into an extraordinary net-work of veins which empty through the infe-

¹Read at the meeting of the New York Medical Association, New York, September 27, 1889.



rior mesenteric into the portal system. These veins are entirely without valves. To this, in certain measure, has been attributed by various authors, from Boerhaave and Morgagni to the present time, as cause why quadrupeds are not subject to hæmorrhoidal disease. I take pleasure in calling attention to a recent most interesting and learned article upon this subject by Dr. Bodenhamer¹. It seems, however, a just criticism that the weight of the venous column alone acts only in a very subordinate degree, as a predisposing cause, although manifestly an important factor, after the blood current becomes greatly retarded in the oftentimes enormously dilated hæmorrhoidal veins. Were the cause to be found in this peculiar distribution of the portal circulation, the upright position of man would make this condition the rule, rather than the exception, and it would be indeed extraordinary to find the varicosities limited to the hæmorrhoidal plexus and lying almost entirely external to the sphincter muscle. Oftentimes, however, after the pathological condition has become well established the current through the ectasic vessel is so greatly retarded by the weight of the blood column in the erect position that most invalids learn to seek relief from change of posture.

Anatomists emphasize, in the normal condition, the large number of hæmorrhoidal veins and their comparatively large size.

In relation to the surrounding pelvic organs, they occupy a dependent position and their only support is derived from a loose network of connective tissue. It is apparent that the anatomy of these thin-walled vessels, their relation to the surrounding parts, and their physiological function furnish, as it were, a predisposing cause of disease. To this very probably may be added individual structural weakness, as is often exhibited in persons with thin-walled veins of the lower extremities. It has long been recognized that the varicosities of the hæmorrhoidal vessels, which are probably wanting in the lower animals, are comparatively rare in the savage races, and

¹"Are Quadrupeds Subject to Hæmorrhoidal Disease?" *New York Med. Jour.* Jan. 12, 1889, p. 39.

become in a considerable ratio, a more and more constant factor in the sedentary occupations pertaining to modern civilization. A great variety of pelvic diseases in the female, and the genito-urinary diseases in the male, complicated with constipation, are in a large measure active causes.

The rectum may be viewed as a convenient cess-pool for the more or less constant reception of the waste and worn-out debris of the alimentary canal, which is ever poured into it in a more or less fluid state. The curves of the lower bowel, from the sigmoid flexure downward, are an evident design, in part at least, to vary the support of the weight of the column, and are admirably adapted to deflect and equalize the pressure. To still further aid, that portion grasped by the sphincter ani is firmly held in the levator loop, and by it is carried upward and forward, thus taking the weight of the mass, in large measure, off from the anal outlet. When the rectal contents remain sufficiently soft to produce everywhere equable pressure, the circulation is comparatively little disturbed, and defecation is accomplished with very little muscular strain. Let retention of the contents with absorption of the fluid portion go on until the molding process becomes one of difficulty, and the reverse is true. The over-loaded rectum produces pressure upon the venous return current, reflexive nervous irritation supervenes, a hyperæsthetic state follows, with increased tension of the sphincter ani; pari-passu a cellular infiltration goes on in the loose connective tissue of the parts, as the result of the venous congestion, and the irritated nerves continually repeat the telegraphic messages of pain and suffering.

Although the pathological conditions above described produce by far the larger part of suffering ascribed to so-called "piles," we must not forget that there are other diseased conditions which may be confounded with the above. Small fleshy masses about the verge of the anus, sometimes called condylomata, are of easy distinction. They have nothing whatever to do with the hæmorrhoidal veins and are changes in the cellular structure of the skin, or mucous membrane, and may be the result of friction, or erosion, arising from a variety of causes. The so-called villous tumor of the rectum is of sufficient frequency to be held in consideration. It is not unlike

the villous growths of the bladder and other mucous surfaces. Its extraordinary vascularity commonly reveals its presence, because of hæmorrhage, and unless differentiated, it will be diagnosticated as a bleeding pile. The soft mucous polyp of the rectum is an adenoid structure of close relationship to the villous growth, and is sufficiently often the cause of suffering to be kept in mind.

Mr. Whitehead, of Manchester, already referred to, very properly emphasizes the pathological conditions described above, and insists upon it that the extraordinary dilatation which the veins often undergo can be learned only by the dissection of the living subject. My own attention was called to this many years ago in finding how very commonly the hæmorrhoidal veins were enormously dilated in the female who had suffered laceration of the perineum.

However, where the laceration was complete, the ectasic vessels were wanting, although the mucous membrane of the rectum under these conditions is often seen as a soft, projecting reddish tumor. From this it would seem safe to infer that the sphincter constriction, with the changes incident upon the retention of the rectal contents, acted as the cause of the dilated vessels rather than the superincumbent weight of the portal column of blood.

When the venous plexus of hæmorrhoidal vessels has become pronouncedly varicosed, they have as a covering the lax submucous tissue of the rectum close to the anus, and when put on tension are protruded as a ring of transverse rugæ round the anal aperture. Certain of the rugæ are developed into rounded protuberances and sometimes even into fungoid tumors of considerable size. Blood stasis often occurs producing induration, and suppuration may supervene. The veins sometimes rupture into the connective tissue and changes follow which result in tumors of various size, color and density; so-called external piles.

The straining caused by defecation, or the gentle pressure of the finger from above downward, will frequently cause soft, bluish, exquisitely sensitive grape-like masses to protrude—internal piles. The mucous membrane covering these is frequently congested and abraded so that a more or less continuous hæmorrhage ensues.

The method for cure of hæmorrhoids by the ligature, applied with slight modifications of details, has been considered the safest, and most manageable procedure. The projecting tumors having been well drawn down are usually transfixed with a curved needle, armed with a double ligature, tied firmly in halves and a portion of the strangulated mass excised. In this way all the hæmorrhoidal tumors are ligated and the mass is returned within the sphincter. This was the favorite operation of the late Dr. Van Buren of New York and his followers, and has at present, in Mr. Allingham, the famous English surgeon, its most distinguished advocate. The use of the ligature applied to cause necrosis of tissue, and then allowed to remain in the wound, is open to the same general objections which have caused its abandonment for the constriction of the large vessels. Sloughing necessarily supervenes, which means always an infected wound, and exposes the patient to the same dangers, although perhaps less in degree, as infected wounds in any other part of the body.

That this is not an hypothetical criticism there is abundant proof. The stoutest advocates of the ligature admit that abscesses, general septic poisoning, and other dangers, as secondary hæmorrhages, are not wanting in the experience of the most careful and practiced surgeons.

Were it necessary to adduce proof of the above statements, quotations could easily be given. Although these dangers are decidedly exceptional, making the operation a comparatively safe one, I cannot doubt the experience of many whom I am addressing could be added in corroboration of my personal testimony. Growing out of the dissatisfaction resulting from such experiences, the use of the clamp and cautery came into vogue and has been especially popularized by the distinguished surgeon, Mr. Henry Smith, of London.

This procedure I early adopted in my own work, and enthusiastically advocated its use for some years. Its advantage over the ligature lies chiefly in that the primary wound is aseptic, while by the time the slough is ready for separation the subjacent tissues are fairly well protected by an abundant proliferation of granulating tissue. In my own experience the suffering produced by the burning, which is especially painful,

if any of the external tissues are involved, renders it decidedly objectionable, while all wounds produced upon any of the tissues of the body by the cautery are invariably slow of repair. I am of the opinion that the results which I have obtained after the use of the cautery have been generally more satisfactory than with the ligature. Hæmorrhages are reported to have occurred secondarily, and it is claimed that contraction is much more common than after the use of the ligature.

It may be accepted that the use of the cautery, except perhaps in certain conditions in uterine cancer, has been very generally relegated to the past. Even in cancer of the uterus it finds fewer advocates than formerly. Certainly bleeding can be controlled without its use, and it may be considered as questionable if deep burning is safer than the deep cutting of any tissue.

Certain crushing instruments have been devised to be used either with or without the ligature for the purpose of producing more rapid necrosis of the tissues involved. The advantage claimed for simple crushing instruments is the avoidance of hæmorrhage, but on the other hand some operators report that hæmorrhage has followed their use. Theoretically, crushing seems to me to offer very doubtful, if any, advantage over the use of the ligature, and as with the ligature must produce a septic wound. Therefore I discarded it without trial.

There remains to be considered the cure of hæmorrhoids by the chemical action of certain medicaments injected into the parts. Few of the modern methods of surgical procedure met the enthusiastic trial and received more speedy adoption than this, the so-called carbolic acid treatment of piles. It had much to warrant its acceptance; carbolic acid of itself was then believed to be the chief of antiseptics; rapidly coagulating the blood and the albuminoids, there was little danger of poisoning from its absorption. Variously combined with morphia, cocaine, etc., little pain followed its use; patient and physician were alike enthusiastic. At present it appears, however, that the general consensus of surgical opinion is that the result is, in large degree, disappointing. When the stronger preparations are used causing necrosis of tissue, no matter how

carefully injected, not seldom the tissues desirable to be removed fail to be acted upon, while those that should be retained are destroyed by the sloughing. The explanation is that the fluid introduced into the loose meshed connective tissue escapes beyond the extraneous part. When weaker preparations are used, even after many repetitions of the injections, the hæmorrhoidal vessels remain comparatively little changed. The method of cure by injection is also sometimes objectionable and even dangerous from secondary results. It is only recently that I have seen a young and otherwise healthy man rendered seriously ill with fever and general septic poisoning supervening upon the injection of hæmorrhoids, at the hands of one of our most distinguished experts, where the connective tissue surrounding the anus remained for some days œdematous, reddened and painful.

After this somewhat hasty but, I trust, judicial and dispassionate criticism of the above methods, it may be asked if any safer and better treatment can be offered for the cure of hæmorrhoids. There remains for us the discussion of Mr. Whitehead's operation for cure by excision. This I do not hesitate to accept as a distinct step in advance of the methods previously discussed. We have seen that the vessels are frequently so deformed as to fail entirely in the original purpose for which they were designed, and the end sought to be attained by all the previous methods is their destruction and removal. The real objection to dissection has been the fear of hæmorrhage, and as a means to obviate this, both the ligature and clamp and cautery were devised. Mr. Whitehead has clearly shown us that his method of dissection is safe, that the hæmorrhage is not excessive and a rapid cure results. It is certainly scientific in that, by a clean dissection, the parts desirable to eliminate are removed. The free edges of the divided tissues are stitched together, followed usually by primary union. Mr. Whitehead's method is best given in his own words¹. "By the use of scissors and dissecting forceps the mucous membrane is divided at its juncture with the skin round the entire circumference of the bowel, every irregularity of the skin being care-

¹*Brit. Med. Jour.*, Feb. 26, 1887.

fully followed. The external and the commencement of the internal sphincters are then exposed by a rapid dissection, and the mucous membrane and attached hæmorrhoids, thus separated from the submucous bed on which they rested, are pulled bodily down, any individual points of resistance being snipped across, and the hæmorrhoids brought below the skin. The mucous membrane above the hæmorrhoids is now divided transversely in successive stages, and the free margin of the severed membrane above is attached, as soon as divided, to the free margin of the skin below by a suitable number of sutures. The complete ring of pile-bearing mucous membrane is thus removed."

Mr. Whitehead very wisely emphasizes thoroughly paralyzing the sphincter by digital stretching. The bleeding vessels, which are small and easily seized, are immediately twisted upon division. The sutures are of carbolized silk and interrupted.

The criticisms that followed the presentation of Mr. Whitehead's paper, read at the meeting of the British Medical Association in 1886, were for the most part favorable.

Dr. Cousins emphasized the importance of the ring of ligatures which he so carefully applied round the anus, as the real protection against hæmorrhage.

Dr. Kelsey, of New York,¹ however, criticises Mr. Whitehead's method "as a naturally difficult, tedious and bloody operation," and that no essential change has been made in the guiding principle. He claims that Mr. Whitehead does not give results in sufficient detail to enable us to judge of the points necessary for decision. Dr. Kelsey reports with much greater approval the experience of Dr. Weir in six cases of Whitehead's operation. He admits that Weir's experience shows results better than those obtained from the use of the ligature, but Dr. Kelsey, who seems never to have done Whitehead's operation, expresses a distinctive preference for the clamp and cautery.

¹*New York Med. Journ.* Dec. 8, 1888, p. 626.

To these criticism Mr. Whitehead makes emphatic answer.¹ To the charge that his operation is "a difficult one, he says, that young surgeons have repeatedly assured him that they do not find the operation difficult, and that he is satisfied that it is an operation which can easily be performed by any surgeon possessing average skill and intelligence.

That it is tedious, he declares that in an average case it can be completed in ten minutes.

That it is bloody, he states "that it is never excessive, hemorrhage, such as I meet with, may very well take a subordinate position to other and more important considerations involved in the operation." Mr. Whitehead's experience at the time of reading his paper, included 300 cases of operation, certainly sufficiently ample upon which to base deductions and which entitle his opinions as worthy of the highest consideration and respect. He clearly demonstrates that hitherto the profession have far too greatly feared the dangers of hæmorrhage, seeming the sole cause of objection to the dissection method.

It does not seem hypercritical to take exception to Mr. Whitehead's definition of the diseased condition, as a "pile bearing membrane" which he emphasizes should be removed. The deformed ectasic hæmorrhoidal plexus is the important pathological factor and the other changes which ensue are entirely secondary and comparatively unimportant.

Supervening upon the operation the collateral circulation is speedily restored. The criticism that the minute venous radicles may be considered as rudimentary piles, although in a sense a quotation is scarcely just to the author who plainly considers them as a part of the dilated plexus of vessels, already existing, only subordinated by the larger growths. These left behind all know are often a source of trouble.

The conditions which pertained at the beginning as the active cause of the disease may again reproduce disease but certainly rarely evinced by a large plexus of dilated veins appearing as hæmorrhoidal tumors.

About ten years ago I operated upon two cases of prolapse of the rectum, by first, before resection, entirely encircling the

¹Whitehead's operation for hæmorrhoids, *N. Y. Med. Jour.* Feb. 23, 1889. p 207.

prolapsed parts with a row of continuous, double tendon sutures. From the good result obtained in these, I was led to apply the same method to the case of the ring of the dilated hæmorrhoidal vessels before resection. For some years this method has entirely superceded all others in my practice, and it has been repeatedly demonstrated to members of the profession with their distinct approval. The results of my experience in the use of the buried tendon suture in the cure of hæmorrhoids, I incorporated in a paper read at the meeting of the American Medical Association in May, 1888, and afterward published¹ in the Journal of the Association.

On account of its simplicity, safety, and exceptional result, after abundant experience, I do not hesitate to offer my method to the profession as possessing distinct advantages in the treatment of this troublesome disease. Care must be taken previous to the operation to have the large intestine thoroughly emptied by a cathartic and usually a large injection is given a few hours before operation. The patient is etherized, placed in the lithotomy position, the limbs supported by the Clover crutch, or some modification of it. The parts are thoroughly cleansed by a sublimate solution, as in other operations. The digital dilation of the sphincter is carefully made until the muscle is paralyzed. The rectum is then washed with the sublimate solution, care being taken that none of it is allowed to remain. A considerable pledget of wool, into which iodoform has been freely dusted, is placed in the rectum. All the subsequent stages of the operation are carried on under irrigation with a mercuric solution. Along the line of the juncture of the mucous membrane with the skin, either with a sharp knife, or with scissors, division is made from the central line posteriorly from below upwards on both sides to the meridian line above. With a little care this division is made without injury to the plexus of vessels. The loose connective tissue fascia is easily separated by the finger, or a blunt instrument, quite deeply, cutting any connective tissue bands which may appear. The mucous membrane is separated from the plexus in a somewhat similar manner.

¹The Surgical Advantages of the Buried Animal Suture. *The Journal of the American Medical Association*, July 21, 1888.

The deformed hæmorrhoidal plexus is thus separated from its surroundings except at its base. A needle with eye near the point is threaded with a tendon introduced posteriorly behind the mass, and withdrawn; again threaded with the external end of the suture it is carried about one-third of an inch from its first introduction, unthreaded, threaded with the opposite end and withdrawn. This stitch resembles that taken by the shoemaker drawing the waxed end of his thread from opposite directions through the hole made with the awl. In this way the entire base is encircled by a line of deep, double, continuous sutures. As will be observed, this is the same stitch that I have used for many years in the co-aptation of the deep parts by the buried suture, as in the closure of the canal in hernia, in sewing off the pedicle of abdominal tumors, and in perineorrhaphy. The advantage derived from this manner of sewing, is that an even continuous compression is secured from which it is impossible for any tissue to escape. The stitches are not drawn too closely since they are used to protect against hæmorrhage, and not to produce necrosis of the enclosed parts. With scissors dissect away the hæmorrhoidal plexus just above the line of sutures. The mucous membrane is now stitched by a continuous tendon suture to the line of division first made through the skin. This may be done either with the over and over stitch, or that which I have more recently learned to prefer, a running blind stitch taken from side to side from within outwards, which also buries the external line of sutures. In this way it will be observed that there are no stitches left in sight, that the divided edges are evenly and accurately approximated, restoring the parts to their normal condition. The wound is then carefully dried, dusted with iodoform and oftentimes still further protected by a thin layer of iodoform collodion. If properly done the operation is aseptic and is followed by primary union.

Were it requisite I could give a long series of cases with detailed results, also a series of photographs showing the different stages of the operation and the processes of repair at different data. All this, however, seems superfluous. Almost without exception the patient is remarkably free from pain and the processes of repair go on rapidly.

When the operation is uncomplicated by any other, done at the same time, absolute restraint in bed is not necessary and micturition is usually voluntary and easy. Only one case has proved an exception and that unfortunately was a distinguished member of our profession. In this instance, I departed from the rule, which I believe should be absolute, and left a small portion of the plexus in front undissected, because it was comparatively little changed. Elsewhere the ectasia was enormous. The anterior portion not included became œdematous, exquisitely sensitive, like an acutely swollen pile, caused reflexive vesical tenesmus, retention of the urine, prolonged catheterization and cystitis. This remaining portion had to be removed ultimately and the vesical conditions long remained troublesome, although the healing of the wound was rapid and satisfactory. The cure of the hæmorrhoids is complete and all the old sufferings and discomfort have disappeared.

The case is instructive, as well as interesting, enforcing a surgical rule which the anatomy of the part teaches and which Mr. Whitehead very properly emphasizes, the careful removal of the whole hæmorrhoidal plexus. By whatever method attempted it is the failure to do this which gives failure in result. I do not remember ever to have dissected the parts, however seemingly irregular was the distension of the veins, without finding the whole plexus varicosed. The circulation through the veins, when once changed to cause dilatation, almost necessarily involves the whole plexus.

Emphasis should be made in clinical instruction upon the early voluntary evacuation of the bladder, in the position easiest to accomplish it. The bowel may be safely moved the third or fourth day. Prolonged constipation resulting in hardened feces is to be avoided.

In summarizing I think I may safely conclude:

First.—That the ligation of tissues for the purpose of producing necrosis and the resultant septic decomposition should to-day be considered as unsurgical and unscientific, and should never be resorted to in any part of the body.

Second.—The destruction of tissue by the actual cautery is productive of pain and suffering and is unwarranted, in that it is unnecessary, with the rarest of exceptions in surgery. The

arguments in defense of its use would equally well apply to many other operations, where it has been universally abandoned, as well as to hæmorrhoids. That it is a relic of the barbarism of the past and should be relegated to history.

Third.—The dissection and the removal of the hæmorrhoidal plexus of diseased vessels is as rational and as scientific as the dissection and removal of diseased tissues elsewhere. The danger of hæmorrhage from the excision of these structures is greatly exaggerated. Mr. Whitehead has shown in his abundant experience that they may be freely dissected with safety without special caution of control of the bleeding, and that his operation can only in a minor degree be called bloody.

Fourth.—That by the method which I practice and advocate the operation can in *no sense* be considered a bloody one. It is simple and easy to do after a little experience. There is no arterial hæmorrhage to be controlled. All the important vessels are secured *before* division by the continuous encircling sutures which serve a still further purpose of coapting and holding at rest the divided connective tissue. Necrosis of the parts is entirely avoided and with the care practiced in modern surgery the wound is maintained aseptic. The superficial tissues are accurately coapted so that not a single suture acts as foreign material.

The advantages of closure with the animal sutures over the excision as practiced by Mr. Whitehead I think are: First, Constriction of blood vessels before division which certainly diminishes the loss of blood and ensures against secondary hæmorrhage. Second, A much more accurate and easy mode of readjustment and closure of the parts. Third, Continuous animal sutures, which are buried and incorporated into the tissues, have a decided advantage over the interrupted silk suture which is ever to be considered as foreign and, if not removed, must be thrown off by suppuration.

The advantages derived from the buried animal suture in other parts of the body are now generally accepted by the profession.

Cat-gut is often untrustworthy from inherent defects.

Tendons taken from the freshly killed animal, properly preserved and prepared, are greatly to be preferred, those from

the tail of the kangaroo proving superior to any others which I have been able to obtain.

Measures for the permanent cure of hernia are based upon their use. All operative wounds made in healthy tissues without exception should be closed, layer by layer, with the buried animal suture, the skin itself not excepted, and when properly done drainage is no longer required and the wound can be at once made germ proof by hermetically sealing with iodoform collodion. To this rule amputations should prove no exception.

The use of the buried animal suture in its application to the cure of hæmorrhoids, aseptically applied, is a logical deduction from the Listerian teachings of a great fundamental truth formulated many years ago.



