Graduation Thesis
on
Some points in the
Surgery of the Ophthalmic
Eye
by
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On some points in the surgery of the Sphincter ani.

There is a natural aversion, due to a sense of delicacy inherent in human nature, in submitting to a Rectal Examination. Very many persons will suffer much pain and anxiety before they will consult their medical attendant when troubled with Rectal Disease. But the anus, situated as it is at a point where mucous membrane becomes continuous with skin, having special functions to perform, we can understand how it is liable to be the seat of many pathological conditions, some of which are comparatively trivial, such as External Haemorrhoids, while others are most serious, sometimes even destroying itself such as Epithelial Cancer.
Then again it cannot be denied that the mental worry and the actual pain connected with Rectal disease are often out of proportion to the importance of these diseases in a surgical point of view, and as it is impossible to be certain in diagnosis without examining the parts, the necessity arises for the medical attendant to insist on anal rectal examination in all cases, and thereby avoid many mistakes which are so often committed by not taking this precaution, to satisfy himself as to the treatment required.

Such considerations were first brought to my attention about 4 years ago, when assisting a general practitioner in a large provincial town. This practitioner was widely known for his skill in the curing of anal diseases, and as I had the good fortune of seeing him carrying on his successful treatment, I was very much impressed by its simplicity and success.
And having had by nod opportunities of testing it myself, I thought it advisable to call attention to it in my Thesis, the more so, because scarcely any of our Standard Surgical Text Books refer to it, & those that do so, (Bryant) only to dismiss it as barbarous, unscientific, unsurgical, and in the works of Allingham, Cripps & Smith, scarcely any reference is made to it.

I desire therefore to write about Forcible Dilatation of the Sphincter ani, which consists in mechanical stretching of the sphincter ani, being fully persuaded that such procedure only requires to be more fully known to be widely appreciated.

I shall discuss those cases only in which I have found this proceeding of value, together with those in which physiological facts & analogy will lead us to expect the same good results, treating
of their pathology, signs and symptoms, only so far as such considerations may assist in explaining the principle underlying the operation, because I feel that I cannot add anything on those points to what is given in Erichsen, Bayard, Holmes, Driscoll, etc.

It will be also necessary for me to state some anatomical and physiological facts connected with the sphincter that I am on the treatment advocated by me.

The Anus or lower opening of the alimentary canal is a dilatable orifice, at which the mucous membrane and skin become continuous with each other. It is guarded by the external sphincter muscle (sphincter ani externus) which is a layer of fibres nearly an inch in depth on each side, placed immediately beneath the skin surrounding the margin of the anus.

(Quain's Anatom.) Vol. 3. p. 96.
The External Sphincter is assisted by the Internal Sphincter which is a muscular ring surrounding the lower part of the rectum at inch above the anus extending over about an inch of the rectum line. It is two lines which is paler than the external sphincter & its fibres are continuous above with the circular fibres of the rectum & may be looked upon as these fibres more numerous development.

The Blood supply is derived from the inferior haemorrhoidal artery which is a branch of internal pudie. which anastomoses with the middle haemorrhoidal artery.

The nerve supply is derived from inferior haemorrhoidal branch of pudie nerve & also small branches from the 4th sacral nerve.
The sphincter ani is habitually in a state of normal tonic contraction, thereby causing the occlusion of the aperture. But while thus the contraction of the external sphincter is usually maintained involuntarily, it is yet capable of being increased or diminished by a stimulus applied, either internally or externally to the anus. The tonic contraction is in part at least due to the action of a nervous center situated in the lumbar spinal cord, and the increased or diminished contraction following on local stimulation is probably due to reflex augmentation or inhibition of the action of this center. The center is also subject to influences proceeding from higher regions of the cord. By the action of the will, by emotions, or by other nervous events, the lumbar sphincter center may be inhibited thus the sphincter itself relaxed or augmented thus the sphincter tightened. (Quain, 343. Hasting Physiol.)
Irritable Sphincter ani.
This consists in the sphincter being very sensitive, tis thus leadig
to powerful contractions and the
drawing in of the anus. This at
times seems to be functional
in as much as no lesion or cause
can be found, it occurs most
commonly in hysterical women.
In such women I have known it
to produce, reflexly, the most pain-
ful condition of the posterior
vaginal wall so that coitus was
unendurable while itself render-
miserable. In others it is found
to be caused by pertinacitiy or piles
which act as a source of irritation.
It is generally accompanied
by vague pains in the lumbar
region, perineum, or the inside
of the thighs which prevent the
patient at times being able to sit.
Sometimes however the pains are
of a most acute character. When
the condition is undistinguishable
from what Dr. D'Esteau of Paris
has termed Spasmodic neuralgia
of the anus. But besides the
pain & the misery this condition
Causes, constipation is produced and in many cases health is injured. The condition is easily diagnosed, inasmuch as on anal examination the anus is seen powerfully puckered up, and on the surgeon touching the part the patient instinctively withdraws from the surgeon. If the sphincter is seen felt to be thron dooms powerful contractions, but at the same time can ought to be taken as certain whether this condition is complicated with spasm or internal piles. Treatment.

Soaking external applications may be tried such as Belladonna ointment with euphorbium or opium. Belladonna ointment or ointment of bromes may be used internally. But as a rule these will not suffice and the tendency is for the disease to get worse until the sphincter is much hypertrophied. In these cases forcible dilatation is of great value, acting often as a charm restorating the sphincter to its normal condition.
Case.

A patient, male, about 50 years of age, of strong constitution came complaining of much pain at the anus, which, as he said, "felt so tight." He had pain in his loins, thighs, and constipation. He had been suffering for some time and had consulted 2 or 3 practitioners before he came under my care. On examination, I found the sphincter most firmly contracted and hypertrophied and very sensitive, and was much as he had tried several remedies without deriving any benefit. I determined to dilate the sphincter, and he willingly consented. I administered chloroform and dilated the sphincter well, and at once all the pain was gone. In very few days he returned to his work, and when I heard of him last, 12 months after the operation, he was entirely free from any morbid condition of the sphincter. He was well pleased with the result that he parted with a friend of his who was suffering from piles, which I also cured by forcible dilatation.
Fissure or Ulcer of the anus. This is a crack or small superficial sore of the mucous membrane or skin covering the external anal sphincter. The ulcer is seldom larger than a silver three-pence or of a circular or long, oblong shape and is usually situated towards the corners.

The symptoms are very characteristic, consisting of severe burning pain at the seat of the fissure immediately after defaecation, especially if the stool is hard. The cause of this pain is thus explained by Felton: 'The reason for this anal ulcer being so very painful is the multitude of nerves associated with it; and the cause of the continued painful contraction which accompanies it lies in the enduring strength of the sphincter muscle. This is almost that exposure of those nervous sensory filaments upon the ulcer causes excitatory or involuntary spasmotic contraction of the sphincter through the medium of the spinal marrow.'
The sphincter muscle contracts towards its own centre, and, as long as the muscle is in a state of contraction, it brings the digestive edges of the ulcer into forced contact; this excites more muscular contraction, and thus, by time and exercise, the muscle becomes hypertrophied, massive, & increased in tension. Then this powerful contraction prevents the discharge of the ulcer from getting away & thus the discharge irritates the system & still further. When the pressure is of long standing its base becomes indurated, & very often it is complicated by a fistula. Treatment.

Now it is evident from the above remarks that what generally prevents the healing of a fissure is the want of rest of the part. Recent cases may be cured sometimes by applying nitrate of silver to the fissure & an anodyne or astringent suppository. But if the case is of some standing these will not suffice, & it will be necessary to seal the parts best.
The usual method of attaining this end is by packing the point of a bistoury along the base of the fissure, so deep as to get to the healthy tissue below, including some of the fibres of the sphincter. After this, generally the fissure heals rapidly. Should this not suffice, the entire sphincter should be divided.

But simple as this operation is, yet deaths have resulted from it by septicemia; and again, many patients have strong objections to the idea of being cut; so that if we can by another proceeding attain these conditions that are essential for the healing of the fissure, we are in duty bound to give it a fair trial. Now, we have seen that what prevents the fissure from healing is the contraction of the sphincter; if we will forcibly dilate it, then, for a time weaken its fibres, we will be able to give the parts that need which is so necessary, and this is what I have found for eise dilatation.
Case. A young woman, dressmaker, had been under the care of a medical man for some months complaining of pain at the anus. She was told that the pain was due to piles and was treated accordingly with medicine and ointments. When I saw her she was evidently suffering much mental worry besides the local pain. Various methods of canal examination were suggested. On examining her a well-marked longitudinal fissure was seen with a raw looking base. The idea of "cutting" was most repugnant to her, but on explaining to her the alternative of "stretching" the sphincter she immediately consented. I administered Chloroform, the sphincter was well dilated and the fissure was closed. She made a perfect and most rapid recovery.

This case proves conclusively the value of this proceeding if there are more than one fissure or the sphincter is by far the best operation, and if there be a fistula complicating the fissure a cure may as a rule be obtained by forcible dilatation.
Haemorrhoids, or Piles

Are elevated varicose haemorrhoidal veins caused by obstruction to the free return of blood from the rectum. They are divided into External and Internal. External being those outside the "white line" of Hilton i.e. outside the verge of the anus, and Internal those inside the white line or the verge of the anus.

If of long standing the Internal may come the partly External when they will form the Inter-External variety if some authors.

The External are sub-divided into
(a) Sanguineous tumour which consists of a vein containing a dark coagulated clot surrounded by skin and connective tissue more or less thickened.
(b) What is sometimes called Cutaneous excrecence consisting mostly of hypertrophied skin and fibrous tissue. I have been led to believe that this form, by the continuous irritation, tis itself may take on a malignant action.
External Haemorrhoids unless very large complicated with Internal Haemorrhoids do not usually cause much inconvenience & much can be done by general treatment, by attending to the liver, bowels, diet, & habits together with local cleanliness. Should these fail then I should remove them by the Clamp & Caustery as I do not believe that lodgel dilatation would answer in these cases, inasmuch as, which is more commonly present, by that means the irritation caused by the external pile would not be removed.

Internal Haemorrhoids

are more important by far from a surgical point of view than the External. They consist of a dilated vein, & are commonly made up of three distinct growths. Sometimes as many as four or five are present, & which may merge one into another & thus form a prominence inside the rectum tending the margin of the anus.
When quiescent and of long standing they only protrude through the anus during defecation and return naturally or with a little pressure, but when of long standing they may protrude on the slightest exertion and thus produce most troublesome pain. The pain accompanying internal piles is at times most excruciating due to the pile being gripped by the sphincter while as a rule there is present a certain amount of uneasiness at the anus. Haemorrhage from the piles varies from the least quantity after defecation to such an amount as to render the patient blanched. Sometimes they cause much mucous to be discharged which is very annoying to the patient and they lead to irritation of the bladder so as to cause retention of urine. In females they often cause much uterine irritation, reflexly, and the patient becomes dyspeptic owing to the irritation constipation, loss of blood, that they cause and thus left alone is rendered miserable.
Treatment of Internal piles.
As a rule they require surgical interference although much benefit may be derived, especially in recent cases, by local soothing application regulating the bowels. But as a rule the surgeon is not consulted till the piles are such as to call for operation. Now, it is evident that here again and in a most marked degree the action of the sphincter has much to do with the production & treatment of piles. When from any cause the blood has not a free return from the rectum, the branches of the inferior haemorrhoidal vein become dilated & protrude under the mucous membrane covering the sphincter, & then this protrusion acts as a stimulus or foreign body to the sphincter. Strong reflex contractions are brought about which will of course tend directly to aggravate the condition as it will still further prevent the return of blood. So that it is obvious that what is required, is to remove this condition by dilating the sphincter.
And I have much reason to believe, after some experience, that the results, and I am inclined to believe that the great success of Dr. Whithead's method which consists in forcible dilatation of the veins, depends mostly on the dilatation of the hemorroidal veins, that there will be a tendency for the veins that will have to carry on the circulation still to become enlarged, while by merely dilating the sphincter the natural channels of the circulation are not interfered with, while the piles disappear by the contraction of the sphincter of the vein. But here also we find that if the piles be of very long standing there has been much induration of the fibrous tissue around them, the dilatation will not suffice but it will be necessary to remove the piles by Dr. Whithead's method which includes forcible dilatation of the sphincter.
The value of dilatation of the sphincter is also seen where there is merely a general varicose state of the veins of the submucous areolar tissue of the anus, without any distinct tumour springing above the level of the membrane, but where the smaller branches of the haemorrhoidal plexus have undergone varicose dilatation.

Case. A young man, aged 20, was suffering very much both from the pain, which was acute, especially after defecation, and the large quantity of blood he was losing, weakening him so much as to make him totally unfit for following his occupation. On examination I found him suffering from well marked, bleeding, internal piles. I administered Chloroform & dilated the anus with. The improvement from the day of the operation returned the workman in a week, with no symptoms whatever, & at the end of 12 months, when I saw him, although he was following a laborious trade he had nothing to complain of.
Fistula in ano. Divided into complete and incomplete.
Complete when there are internal and external openings to the fistula.
Incomplete when there is only one opening, this constitutes blind internal.
Internal when there is only an internal opening and blind external when
there is only an external opening. Sometimes there are more than the
fistula. The course of a fistula varies much, but usually its external opening is within an inch
of the anus. The internal immediately within the sphincter. At
other times its course is more con-
circular, may even go round the bowel, or if a horse-shoe shape
or may even open in the perineum or rectum.

Fistula is most commonly due to neglected ileocolic abscess.
In others it is due to ulceration of mucous membrane of bowel.

Treatment. In most cases
operative interference is necessary.
It what is recommended in all
cases is the division of the
fistula flap with the sphincter.
This is recommended, because it is the contraction of the sphincter which prevents the fistula from healing. Now as I have previously shown forcible dilatation of the sphincter answers this purpose admirably, in recent fistulae complete rapid recovery may be obtained by this proceeding. But should the fistula be very old and the walls indurated, in such cases dilatation most likely will not suffice, and it will be necessary to lay open its tract.

While I was thinking over this, I came across an admirable lecture by Wheelhouse of Leeds, which appeared in the British Medical Journal, May 6, 1883. In it I find that Wheelhouse is a very firm believer in the great value of anal dilatation. It goes so far as to say, "that careful, deliberate and sufficient stretching will do all that moxion will do," and while I have reason (due to correspondence) for believing that Wheelhouse did not intend those remarks to be taken as literally true, still he maintains that...
Such cases as I have indicated may be cured by stretching. Specially should stretching be preferred to cutting in pathological patients, while we know it is as difficult to get the fracture to heal even after cutting.

Lateral Sclerosis of the Spinal Cord, or as it is called Spastic Paralysis.

This disease is characterized by commencing insidiously with fleeting pains in back or limbs which last for a longer or shorter period. Then gradually motor weakness comes on so that the patient is easily tired and restless; the feet slips jerking often when he sits even after a short walk. These symptoms continue to become more pronounced until there is actual paresis accompanied with tremors so that the foot becomes peculiar and there are marked distortions of the limbs. The tendon reflexes also are markedly increased, so that ankle dorses can be easily produced, while the organic reflexes
are not interfered with, except when
the disease is very far advanced.
The spastic or contracture of
the function of the limbs and bladder
may give trouble. The knees
may become so marked as to
permanently prejudice the muscles of
the general health and function of
the body are good and there is no
interference with the intellectual
sensory and nutritive functions.
It may be limited, attacking
only one limb or it may attack
all the limbs or even the whole body.
Its progress may be slow or acute.
It may be associated with
degeneration of lateral column
of the cord secondary to disease
of the brain or pyramidal tract
as in Central haemorrhage, myelitis
or it may be of primary origin
in the same region. This abrup-
ting a disease per se as in
the so called Primary Lateral Sclerosis.
Its Pathology consists in sclerosis
of the lateral columns of the cord
without implicating the grey matter.
This sclerosis consists in hyperplasia
overgrowth of the neuroglia with atrophy
Nerve fibres nerve cells.

Causa: Various theories have been advanced to account for this disease but each is not entirely satisfactory. Charest says that the symptoms are due to irritation of the ganglionic cells of the ganglion of the cord by degenerated continuous fibres of the lateral column.

An other theory, perhaps the most popular at present, is that the symptoms are due to the simple severance of the spinal from the central centres and thus the inhibitory action of the higher is removed from the lower ganglia. The last theory has been modified by some by stating that when cerebral influences are suppressed the uncontrolled action of the cerebellum as a stimulator of muscular tones becomes prominent which accounts for the stiffness that ensues.

But it is evident from the symptoms that the common factor in the production of these symptoms is an abnormally increased irritability of the motor ganglionic cells in the anterior cornua of the cord, by physiology we
learn that one of the functions of these centres is to maintain a certain degree of permanent tonicity of muscular fibres, for this the reflex arc must be intact if the ganglionic cells are in a state of hyperexcitability from whatever cause hypotonicity or rigidity of the muscles result. Symptoms ensue there cannot be any doubt that this hyperexcitability of the ganglia can be brought about by their irritation through the afferent nerves from below. Boussingault demonstrated that injury to afferent fibres may be followed by hyperexcitability of the ganglionic cells to which they are attached. That such occurrence is actually proved is a demonstration in the usual results of masturbation or excessive venery and it seems more probable that the causes which lead to hyperexcitability of the ganglionic
Motor cells are of an active or irritating rather than of a passive or inhibitory nature.

For an admirable resume on Paralytic Paralysis, see Dr. Hughes Bennett in the Lancet March 13, 1886, to which paper I am indebted for many of the above remarks.

Now it is plain that in those conditions of the sphincter ani, which I have discussed, we have present those very conditions which seem to have a most powerful influence in producing paralytic paralysis. In irritable sphincter being of any degree pressure, pelves, rectum, and we have a source of continuous irritation and the afferent nerves carry the impressions to the centre in the lumbar spinal cord, it thus helps the centre in a state of continuous hypersensitivity, and the centre again sends impressions through the efferent nerves, and thus the sphincter is held firmly contracted.

Such then being my conviction as to the cause of Paralytic paralyses, in several cases, believing that I am borne out in my belief by the generally acknowledged cause of locomotor atasia in many cases.
onanism or sexual excess, which acts in the same way on the sexual centre of the cord, it is plain that the sooner the better the source of irritation is removed. This can be well done by stretching the sphincter. Now it is obvious that the operation will be of greater value in the very early stage of the disease, before structural change has happened in the cord. That such a stage does actually exist we have reasons to believe and we can expect that the parietic cells will lose their overexcitability if the irritation is removed in time. But even when we have reason to believe that structural lesion is present, there can be no doubt in my mind as to the advisability of removing any rectal disease that is curable.

It is very difficult to determine how far the effect may be partially due to nerve stretching. No doubt the nerves of the sphincter are to an extent stretched when the rectal end is entirely stretched, but I think that it has no effect, and that the result is due entirely to the removal of the irritation.
Case. An elderly gentleman had evident symptoms of aseptic but complicated to a certain extent with Bismuth atonia. He complained of much irritation at the anus. On examination the sphincter was found to be irritable, firmly contracted. The hyper trophy of the rectum exam ined a fibrous polypus, of small size was seen. Chloroform was administered, the sphincter well dilated and the polypus removed. For about 2 months after the operation there was a decided improvement both in the nervous symptoms and general condition. He could walk much better, the pains were also much better. But at the end of the two months he began to get worse, the disease steadily progressed for about twelve months when he died.

Now in this case, I have had two men with vague nervous pains in whom I practiced dilatation with good results. I have no least doubt that dilatation did good for a short time, that had it been practiced sooner a permanent cure might have been obtained.
The Operation.

Let the patient be prepared for a few days by being a little abstemious 4 or on the night before the day of operation let the patient take aperient pills such as Oil hydrarg is or Colomel. Then on the following morning let a large enema such as 2 pints of warm water with an ounce of olive oil in it be administered so as to empty the rectum thoroughly. Then about 2 hours before the operation let the patient have a cup of beef tea or coffee and a small biscuit.

Then having thoroughly anesthetized the patient, place him either in the lithotomy position or on his left side, then the operator permeates his two thumbs with their dorsal surfaces in contact into the rectum, introducing them as far as he possibly can, then he forcibly separates them until he feels the spincter giving way. Then the anus becomes patentous thenceforth sometimes I have not been able to introduce my thumbs, in those cases I gradually introduce my middle fingers forcibly through.
There can but be very little doubt that tearing of the muscular fibres occurs to a certain extent, but it being subcutaneous no harm can happen, but rather in those cases where hypertrophy of the sphincter is well marked. This tearing may be of value as it will tend, however slightly, to lengthen the individual fibres.

Care must be taken to avoid abrading the mucous membrane of this. The surgeon can do by oiling his fingers well & keeping their palmar aspects as flat as possible against the sphincter. Also the operator ought to be careful not to exert the whole force on the proximal end of the dilating fingers, but should endeavour to distribute the force as evenly as possible over the whole extent of the sphincter. Sometimes also the internal sphincter is hypertrophied when it will be necessary to dilate it also in the same manner.
In some cases the sphincter will be found so much hypertrophied that it will be impossible to dilate it with the fingers, and it will be necessary to use an instrument & the one here sketched answers admirably.

But in all cases where the fingers can be used they are far preferable to any instrument as by means of the thumbs or fingers the operator has the sense of touch to guide him, which is invaluable. So he can thereby gauge the extent to which the sphincter is becoming relaxed. But it has been recommended to divide the sphincter when much hypertrophied, but cautiously taking care not to bring the point
If the incision is too near the mucous membrane, it has been found to answer well in these cases, but I cannot help believing that the cases must be very few indeed in which it would be necessary to resort to this procedure in preference to forcible dilatation.

After the operation the bowels are to be kept quiet for 20 days, when a mild aperient should be given, & in the less serious cases such as irritable dilatation of haemorrhoids, the patient may be allowed to go about a little while in the more serious cases it will be better for the patient to rest a little longer & the surgeon must be guided by the symptoms & progress of the patient.

And, now, having discussed these diseases in which I have found the operation of great value, I shall recapitulate its chief advantages.
The advantages of this operation

1. Not so repugnant to the patient as the idea of cutting; as long as human nature will be what it is there will be many who will absolutely refuse to submit to any cutting operation but who will gladly submit to "dilatation of the chestather.

2. No risk of blood poisoning & this I consider ought to weigh heavily with the surgeon in deciding on an operation. For although we know that pyaemia after surgical operations about the anus is comparatively rare still such cases occur & as we have no means of predicting absolute safety in any particular case the surgeon cannot undertake a cutting operation, even on the Thompson method will answer quite as well, without incurring grave responsibility, & depriving his patient of some chances of recovery.
Easy of Execution

for however simple the division of the sphincter is said to be in our 3rd and 4th cases, it is always felt to be a grave responsibility by general practitioners, as it is no uncommon thing to have a failure even in the hands of pure surgeons; and nothing can be more annoying both to surgeon and patient in case of failure. It is a great relief for the practitioner that he has in "Perineal Dilatation," a method which most likely will prove successful, and should it fail will cause very little annoyance to the patient.

Efficient in suitable cases

I have said in suitable cases, in as much as this operation as every other operation, will not answer in all cases, and I have endeavored to point out in what cases I have found it answer well. I have shown that in cases of contracted irritable sphincter with bleeding internal piles it is the operation par excellence.
That in cases of pressure or ulcer it usually is successful and even in fistula of a very long standing I very often tried about a case that in nervous diseases which seem to depend on some active irritation at the anus much good will be derived from it.

As to the objections that some surgeons seem to have against it, as being barbarous (Rayment) I confess that I have never seen any reason given for so calling it. But I am inclined to believe that those surgeons who costyle it have not given it a fair trial and that using the knife appears to them less barbarous more scientific than using their fingers. And how when dilatation of both ends of the stomach is being practiced, I believe that the operation which I have here advocated will soon come to be a recognised method of treating some conditions of the structure and
Plas Darland
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April 29, 1876

I do hereby certify the accompanying thesis to have been composed by myself.

J. H. Williams

[Signature]