

among those who have tried it with the introduction of the finger into the bladder, to introduce an instrument into the bladder from behind. It is an operation that I think will come into favor here, as it has on the other side of the Atlantic. I am glad to see that there has not been a man on the floor, in the discussion of this subject, who has spoken of urethral stricture who has referred to permanent cure of strictures. After all, it is a pretty sad lot that falls to the patient after the operation. Ordinarily a man will have to use an instrument at times all the rest of his life. All strictures are not alike; some will yield readily to simple dilatation; if we have this form of hard strictures that are tougher than any cartilage we can conceive of, no simple dilatation is going to effect a permanent cure.

DR. JULIUS ROSENSTERN, San Francisco, Cal.—Although I have been attacked on all sides, still I am very glad that my paper, at least, has given foundation to so many able remarks on the subject. I have not been convinced altogether that I have made an error. That there can be urethrotomies made, internal ones, in the deeper part of the urethra, without danger or with success to the patient I do not doubt. I believe it is our great statistician, Harris, who has shown that Cesarean operation has been done by Bull, who has opened by accident the uterus of a woman; most of those so opened do recover; still I do not believe anybody would recommend that as a safe and proper way to perform that operation. I do not believe that urethrotomy in the deeper portion is a safe method, because we can not guard against very dangerous hemorrhages; there is danger in this method, in spite of the assertions of the very able gentlemen here on the floor. I must say that if in such hands as those of De Aul (?) the mortality from urethrotomy is 8 per cent. I believe nobody can say that it is an indifferent operation. Such are the records of his hospital and his clinics. It is all very well to say, perfect asepticism protects against the immediate results of the operation. It may be for the time, but who will guarantee us that the deeper parts of the urethra opened may not be infected, and if there is infection on that urethral tissue, general infection may follow? I believe wounds that can be laid open with safety, can be accurately watched, should be treated in that way, and we should not rely on chance, as we have to in most cases of internal urethrotomy. In the pendulous portion, in cases, as was said here, of recurrent and hard and calloused strictures I have been perhaps more fortunate. I have not found very often the necessity, except when urged by patients where they are very anxious to get rid of it, to use the internal urethreter. I have gotten on very well with gradual dilatation, and I must say I have had no desire to try a method or apply what I consider a dangerous practice where I can get around it with absolutely safe methods.

As to electrolysis, that has been mentioned here by one gentleman; he seems to misunderstand my statement. I have not recommended it; I have said that I believe that in some cases it seemed to do some good; that in a great many cases I had no effects whatever. But certainly, although I have tried it a few times lately, I have not made it a practice to give it a trial in every circumstance from the result of my experience, and I do not believe I have expressed in the paper any great enthusiasm for it.

As to the catheter of A'Demeure, I have also mentioned in my paper that Guion uses it, but I myself do not use it. I have used a drainage tube in external urethrotomy cases for twenty-four hours, as long as I found it necessary, but I have rarely used the catheter of A'Demeure, except in those cases where the entire urethra was torn and the urethra united over the body of the catheter that was introduced through the open bladder.

I was asked to explain my idea of absorption in introducing a catheter and leaving it lie there for ten to fifteen minutes. I believe that just as we can by pressure and massage remove some exudations in the exterior parts, so we can by the same means do something similar in the interior organs. We think that by exciting the lymphatic glands and the vascularity of the parts, that absorption is stimulated by the taking up of inflammatory products in the surrounding tissues; that they are made more amenable to absorption. And it certainly seemed in the cases I treated that by thorough continuous introduction of a sound and leaving it to lie there for some time, that hard strictures cure swifter under the treatment by stretching and by absorption, and that is the explanation and the idea I had, by saying that, leaving the catheter or leaving the bougie for some time in the strictured parts stimulated absorption of the inflammatory products in the urethral canal.

THE PATHOLOGY AND SYMPTOMATOLOGY OF HEMORRHOIDS, ANAL FISTULA, AND ANAL FISSURE.

Read in the Section on Surgery and Anatomy at the Forty-fifth Annual Meeting of the American Medical Association held at San Francisco, June 5-8, 1894.

BY DAVID POWELL, M.D.

MARYSVILLE, CAL.

HEMORRHOIDS.

Although anatomically divided into external and internal, and presenting some pathologic features peculiar to their situation, hemorrhoidal tumors are essentially similar in structure, whether located in the rectum within the sphincter muscles, or about the margin of the anus. Pathologically considered they are identical, and composed primarily of the same morbid elements—enlargement or varicosity of the venous hemorrhoidal plexuses, and infiltrated connective tissue.

Within the dense areolar membrane which enters into the structure of the lower part of the rectum and verge of the anus, is a network of tortuous veins, the inferior or external, and the superior or internal hemorrhoidal plexuses. From the former, the blood finds its way into the general venous circulation through the middle and inferior hemorrhoidal veins which communicate with the internal iliacs; from the latter, through the superior hemorrhoidal vein into the portal system. The absence of valves in the hemorrhoidal veins; the dependent position of the parts; man's erect position; distension of the rectal ampulla from fecal accumulation; obstruction of the portal circulation; pressure by the gravid uterus or any abnormal tumor upon the inferior vena cava or iliac veins, tend to produce the pathologic conditions which favor the development of hemorrhoidal tumors, viz: The varicosity of the veins, and the extravasation of their contents into the surrounding peri-vascular tissues.

In their incipiency, hemorrhoids, both external and internal, are merely a dilated or varicose condition of the veins of the submucous areolar tissue in the region affected, without intumescence or any appreciable tumor. But as the disease progresses a constantly recurring congestion and inflammation, from various irritating causes, produce very characteristic changes and modifications in the vessels and tissues involved. The veins become more and more expanded; their coats become thickened; the surrounding cellular tissue is infiltrated and indurated; the investing tissues hypertrophied by plastic deposit, and sooner or later a well defined swelling or tumor is developed. If external to the sphincter it appears as a rounded venous-looking tumor, purplish in color with an ill-defined base, just at the verge of the anus, running up into the bowel and covered with the thin sensitive skin of the part. During the straining accompanying forced defecation the veins become greatly distended, finally give way and the blood is extravasated into the surrounding connective tissue, forming a large, tense, globular, painful hemorrhoidal tumor. Upon section an external pile is found to be composed of hypertrophied integument, infiltrated areolar tissue, and one or several dilated veins containing coagulated blood. The presence of coagulum in the distended veins and surrounding cellular tissue is an important pathologic feature of an *external* hemorrhoidal tumor, and is of much prac-

tical moment when considering the application of remedial measures.

Internal hemorrhoids differ in form, situation and structure, and are accordingly divided into venous, arterio-venous, and capillary. The venous internal pile differs from the external in being covered with mucous membrane instead of integument and having a tendency, from slight irritating causes, to bleed. The arterio-venous pile as described by Hamilton "consists essentially of hypertrophy of folds of mucous membrane surrounding the anal opening, the so-called pillars of Glisson. They have a red, almost vermilion color, elongated form, and contain within them one of the descending parallel branches of the superior hemorrhoidal artery."

Capillary hemorrhoids are small sessile tumors usually situated high in the rectum, exceedingly vascular and in structure consist chiefly of small arterial ramifications and hypertrophied connective tissue.

Symptoms.—The symptoms of hemorrhoids vary with the location, progress of the disease, and size of the tumors. A non-inflamed external pile does not cause much distress—merely a sense of fullness after defecation, with local heat and slight itching. But as the disease increases and the tumor becomes enlarged and inflamed the suffering is often intense. A deep seated, dull, aching, throbbing pain is experienced, radiating from the anus through the perineum into the nates, which is much increased by walking or standing. The spasmodic contraction of the irritated sphincter and levator ani muscles increase the patient's suffering and often produce general systemic disturbances, manifested by malaise, rise in temperature and anorexia. Pain, sensation of foreign body in the rectum, an uneasy feeling and smarting about the anus, increased during defecation and accompanied with or preceded by more or less hemorrhage, are among the first symptoms of internal hemorrhoids. Later the bleeding becomes a more urgent symptom, is more frequent and profuse, sometimes leading to extreme anemia and exhaustion. The pile-tumor protrudes during the expulsion of feces, is caught by the sphincter, becomes inflamed, sometimes strangulated, and the pain is excruciating. Constitutional and sympathetic disturbances ensue, evinced by fever, weak rapid pulse, languor and extreme restlessness. In many instances, too, irritation of the genito-urinary organs, producing frequent desire to void urine and difficulty in micturition with the accompanying tenesmus, add greatly to the patient's sufferings.

ANAL FISTULA.

Quite opposite opinions have been advanced regarding the exact pathology of fistula in ano. It has by some been contended that the fistule originates in an ulcer of the mucous membrane of the rectum, and that the "suppuration in the neighboring textures was subsequent to, and dependent upon this ulceration." In support of this view it has been suggested that the semilunar lacunæ, small valves or pouches, found in the mucous coat of the rectum, in which seeds and other foreign substances might readily find lodgment, may be frequent factors in the causation of ulceration resulting in fistulæ. While, furthermore, it can not be doubted that ulceration of a tubercular focus and traumatism may cause perforation of the rectal wall from within, through which

fecal matter may escape, and thus excite suppuration in the surrounding loose areolar tissue, yet the frequency with which fistulæ follow ischio-rectal and other abscesses about the rectum, indicates that the first pathologic manifestation of the disease, in a very large majority of cases, is an "inflammation and suppuration of the cellular tissue external to the bowel, and that the abscess subsequently opens into the gut" (or through the integument or both) "and thus constitutes the fistula." There is perhaps no surgical disease a clear appreciation of the pathology of which is of more importance than is that of fistula in ano. If therefore, periproctical suppuration is, in most instances, the cause and not the effect of the disease, the fact is of much practical significance; for successful preventive measures must rest upon a correct theory of the steps in its formation.

Symptoms.—Anal fistule is not usually accompanied by severe or urgent symptoms. Among the weak, debilitated and strumous who are the most frequent sufferers, other symptoms and conditions often divert attention from the local trouble. During the inflammatory stage, however, there is often much pain and considerable general systemic disturbance. But where the suppurating tension is relieved by free sinuous openings the symptoms subside, and the only inconvenience resulting may be slight tenesmus and pain in defecation, the passage of flatus and pus, if the fistula is complete, and the annoyance of soiled linen from the constant escape of a purulent, fetid, sanguineous discharge.

ANAL FISSURE.

Anal fissure is an affection of much practical importance and interest, not so much on account of its pathologic relations, but because it is often attended with extreme local pain, and frequently gives rise to grave constitutional disturbances. Beginning in an excoriation of the skin and mucous membrane to the extent of exposing some of the nerve filaments of the anus, the reflex irritation and spasm of the sphincter muscles thereby induced, lead to the formation of painful and oftentimes very obstinate ulcers. Fissures are usually of traumatic origin and in the great majority of cases are situated at the posterior commissure of the anal opening. They form suppurating grooves with inflamed indurated edges running parallel with the axis of the bowel, and may extend into the rectum above the sphincter. They are often associated with hemorrhoids, and the external termination of the fissure is frequently found concealed under a small external pile or fold of integument.

Symptoms.—The symptoms of anal fissure and ulcer, both local and constitutional, are characteristic. Among the former are a dull aching pain extending into the loins and thighs, aggravated by an evacuation of the bowel, and continuing with increased severity for several hours after each visit to the closet; morning diarrhea; spasm of the sphincter muscles from irritation of the peripheral nerves causing excruciating pain; and more or less loss of blood or muco-purulent discharge at stool. Continued and annoying irritation of the genito-urinary organs is also a common symptom, sometimes inducing spasmodic stricture of the urethra, frequent micturition, a sense of fullness and tenderness about the prostate, loss of sexual power, and seminal emissions.

The constitutional disturbance, too, is often greater than the pathologic conditions would seem capable of producing. There is a marked perturbation of the nervous system which is seemingly in intimate sympathy with the local affection; and if the disease continues unrelieved, "the countenance becomes pale, anxious and careworn, and the patient's expression is indicative of constant suffering."

TREATMENT OF ANAL FISTULA.

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BY J. McFADDEN GASTON, M.D.

ATLANTA, GA.

PART I.

For a proper understanding of the principles underlying the management of anal fistule, it is requisite to present some data connected with the rectum.

Morton and Witherill state that the rectum in its upper and middle portion is derived from the internal and middle layers of the blastodermic membrane, while its lower third with the anus, like the buccal cavity, is formed by the external and middle layers. The rectal veins like the rectal arteries are divided into three sets; superior, middle and inferior. They form two distinct venous systems, the rectal emptying into the portal system, and the anal terminating in the internal iliac.

The throat and rectum have many points of correspondence in their structure, being supplied with circular fibers, which make them the counterparts of each other, by opening and closing their respective orifices. There are two sets of muscular fibers encircling the lower part of the rectum, known as the outer and inner sphincter, by which it is automatically closed except when dilated voluntarily for the release of flatus or the discharge of fecal matter. There is also another distribution of circular contractile muscular fibers at the upper limit of the rectum, which constitutes the division between it and the sigmoid flexure of the colon. This may be appropriately designated the recto-colic sphincter, and forms an effective barrier ordinarily to the descent of the excrement into the rectum. This annular muscle has not received from anatomists or physiologists the consideration which its rôle in the intestinal functions warrants. It is a veritable constriction from muscular contraction by which the colon is normally closed against the descent of the fecal mass into the rectum. When the excrementitious matter reaches the sigmoid flexure of the colon it is deprived of all nutritious properties and after this desiccated mass passes the muscular division between the colon and rectum, and is deposited in the lower reservoir it contains only effete matters.

The fecal deposit acts then as a foreign body, and stimulates this canal to expel the *débris* by the anal orifice, or by remaining there becomes a source of trouble and even of disease. If the indurated mass remains in the rectum for an undue period, it induces more or less local disturbance and extends an erethism to the general system, through the nerve supply to this portion of the organism.

The rectum is a pouch or depository consisting of contractile tissue and capable of great distension under the accumulation of fecal matter within it. While its proper function is that of a temporary res-

ervoir with the property of contraction for the expulsion of its contents, it may fail to perform the office of a waste pipe and become shut off as it were by the sphincters above and below. These annular muscles are provided with somewhat similar means of opening and closing at each extremity of the rectal canal; and being composed of tissues in their walls, which are alike subject to induration and thickening, with constriction of the passage.

Zeigler qualifies proctitis as an inflammation of the rectum, resembling in many points inflammation of the vermiform appendage. The exciting agents are frequently foreign matters and stagnating feces; but disturbance of the circulation in the hemorrhoidal veins may likewise end by inducing inflammatory change in the bowel. When the inflammation and ulceration extend deeply into the tissues of the wall of the bowel, the surrounding connective tissue becomes infiltrated and hypoplastic or breaks down into abscesses containing fetid pus.

Thus it occurs that the rectum becomes a seat of disease and among its disorders fistulas are not uncommon, either as sequelæ of peri-rectal abscesses or resulting from abrasions and ulceration of the inner coat.

Apart from fecal concretions and enteroliths lodged in the rectum and becoming sources of irritation and inflammation to its mucous coat, there are foreign bodies which pass through the alimentary canal and find their way into the rectum to cause trouble in the surrounding structures. Fish bones, spiculæ of chicken bones and other bony fragments have frequently been found in peri-rectal abscesses after having perforated the rectal wall. Very recently I removed a spicula of bone over an inch in length which had become lodged just within the external sphincter, and one extremity had perforated into the mucous membrane of the rectum. This would have ultimately effected an opening through which the fecal matter could have penetrated the tissues and set up a suppuration process. The incautious introduction of a syringe pipe or other solid substances, may also induce abrasions of the mucous membrane of the rectum, which will terminate in ulceration and perforation of the rectal wall.

The attempt to remove hardened fecal matter with a scoop or with the fingers may lead to a like bad result. But there are sources of disorder from injuries inflicted in the parts immediately around the anus, which set up inflammation of the deeper seated structure. Violence of any kind, by a kick, sitting down upon a projection or being thrown upon the pommel of a saddle, may lead to a peri-rectal abscess, which calls for considerable skill in its treatment to abort its termination in a fistulous outlet. The early recognition of such a purulent collection and its discharge by a free incision, with the subsequent use of a drainage tube and light tamponage with antiseptic gauze, are usually attended with a radical cure of such traumatic abscesses. But there will occur cases which resist treatment or which fail to be properly managed that result in fistula.

There is a class of tuberculous abscesses in the peri-rectal tissues which are of strumous origin, and independent of any mechanical injury, that are accompanied by fistula of the most aggravated type. This form calls for constitutional as well as local treatment.

It is not a legitimate inference that the drain of a