

Original Articles.

PILO-NIDAL SINUS.¹

BY R. M. HODGES, M. D.

A DEEP, symmetrical, and somewhat conical dimple occasionally, indeed frequently, exists near the tip of the coccyx, well forward toward the anus, in the cleft between the nates. Sound and natural as regards integument, resembling to a certain extent the navel, with the dimensions of which it may be compared, it is fixed at its deepest portion, and the depression cannot be obliterated or made shallower by stretching the skin. Congenital in origin, it attracts the attention of nurses or mothers, and in infancy inquiry is made as to its significance. Later in life, opportunities for inspection being less frequent, it passes unobserved. It probably represents an imperfect union of the lateral halves of the body, involving the integument only.

Justification for assuming that so trifling a defect may be ascribed to this cause is found in certain imperfections, as trivial, occasionally noticed in various parts of the body. For example, in some cases of hare-lip a complete lateral fissure is accompanied by a slight linear furrow on the other side of the median line, seemingly the scar of an operation already performed, but in reality the indication of an incomplete double hare-lip, or imperfect union of the embryonic intermaxillary fissure. Cleft of the uvula, of the iris, some of the slighter degrees of hypospadias, represent deformities much less in amount, but of similar origin to this indentation over the coccyx.

Under certain circumstances this apparently unimportant dimple becomes the seat of a pathological process, which, like the dimple itself, has scarcely attracted attention. Two instances in which it was observed by Dr. J. Mason Warren were published by him in 1867. He speaks of these as similar to other cases, "numbering perhaps eight or ten," which had fallen under his notice, but which he had nowhere seen described. Although the occurrence is well known to both surgeons and students at the Massachusetts General Hospital, and perhaps elsewhere, this reference constitutes, so far as I can learn, the only allusion to the subject in medical literature. The occurrence referred to is this:—

A fistulous opening—rarely more than one—over the coccyx, in the immediate vicinity of the anus, and always in the median line, annoys the patient by the itching, irritation, and discharge of pus by which it is accompanied. It is generally stated to have existed for a long period, and is supposed to be fistula in ano,—an impression which, if at first shared by the surgeon, is quickly corrected. A director or probe being introduced passes at considerable depth above and below the opening, indicating a cavity of an inch or more in diameter, but does not enter the gut. On exposing its interior by an incision, a certain quantity of pus is evacuated, and a lock of loose hair is found occupying the space, more or less matted and curled, and of varying size and amount. The hairs of which it is made up are always short, without bulbs, and correspond in color to those of the patient. The cavity containing them has no cyst, or lining membrane, or

other characteristic suggestive of a congenital dermoid wen; merely the granulating walls of an ordinary suppurating sinus, with no trace or suspicion of hairs growing from its surface, or of isolated spots of cuticle from which they might have been shed. The lock of hair being removed, the sinus fills up with new tissue, and in due time heals by a solid cicatrix.

This sinus is never found in children, never in men who do not have a great amount of hairy growth about the nates, and so rarely in women that the records of the Massachusetts General Hospital include but a single instance (mentioned by Dr. Warren), and in this, for a female, there was an unusual pilous development.

Explanation of this phenomenon is to be found in the anatomical peculiarity first spoken of, and in some of the peculiar properties possessed by hair. Short hairs show a remarkable tendency to "stay put" wherever they lodge. The "hair balls" found in the stomachs of cattle, due to their habit of licking each other, and which attain sometimes the dimensions of a child's head, remain for long periods of time in the cavity of that organ. This latter fact and the disposition of hair to felt together are shown by its gradual consolidation into the solid masses which, when cut in halves, serve in Texas ranches as scrubbing-brushes for floors.

In the navels of dirty persons, hairs, together with lint from underclothing, and other body *débris* collect together in a concretion, sometimes provoking quite severe local inflammation. The sparse body hairs of persons careless as to cleanliness and friction of their skins often bury themselves beneath the epidermal layer of the integument. It is a less familiar fact, however, that a horse-hair from a mattress, or a long hair of a woman, trod upon on the floor by the naked foot, or accidentally coiled up in the shoe, will, and often does, insinuate itself beneath the skin, and with little if any discomfort worm itself into the tissues for a considerable portion of its length. This is an occurrence repeatedly met with by "pedicures" or corn doctors, and hairs removed under these circumstances are frequently found among their trophies of nails and corns. On one occasion the late Professor Jackson exhibited to the Boston Society for Medical Improvement a bristle, extracted by Dr. John Homans from a foot, into which it had penetrated, unconsciously to the patient, one and a third inches. Hair-cutters are continually in trouble from the short hairs which penetrate the skin of their fingers and hands.

In view of these several facts there is no occasion for surprise that body hairs, broken off by friction or decay in a pilous region which entangles and prevents them from falling, should felt and mat together when they have lodged and accumulated in a depression favorably situated for their reception and retention, and subject to so much motion in walking and sitting as the one to which attention has been directed. Neither is it strange that they should, in course of time, excoriate the surface, softened by continuous perspiration, and penetrate or even perforate the integument; nor that, finally, by the inflammation and suppuration provoked, they should become a subcutaneous foreign body, the original dimple in the skin degenerating into the fistulous orifice of a more or less extended excavation in the cellular tissue, for which the possessor is compelled to seek surgical advice.

For the development of this rather singular lesion,

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to which, for the sake of designation, I venture to give the name of pilo-nidal (*pilus*, a hair, *nidus*, a nest) sinus, the following elements are necessary:—

- (1.) The presence of a congenital coccygeal dimple.
- (2.) Abundant pilous development; hence, adult age, and almost of necessity the male sex.
- (3.) Insufficient attention to cleanliness; consequently its subjects, as a rule, must be persons of the lower class, and the affection one met with in hospital, or dispensary, rather than private practice.

THE TELEPHONE AND MICROPHONE IN AUSCULTATION.¹

BY C. J. BLAKE, M. D.

It is too soon to have forgotten the enthusiasm which greeted the first publication of the electrical transmission of articulate sounds as made possible by the invention of the telephone, and the interest which was awakened in the medical profession in anticipation of its value in auscultation, and especially for the purposes of clinical demonstration,—expectations which were still further encouraged at a later day by the results of experiments made almost simultaneously by Mr. Berliner, of Boston, and Prof. Eli W. Blake, of Brown University, in this country, and Professor Hughes, in England, and published to the world by the latter in the various forms in which the discovery was demonstrable, as the microphone.

It is now more than four years since the introduction of the telephone, and more than two years since the appreciation of the full value of the "broken circuit" in connection with the telephone for sound transmission; in addition to the various forms of "transmitters" which are used on telephone lines, and which are in fact microphones, differing only in the mechanical devices for reception of the sound waves and adjustment of the contact surfaces, several forms of microphone have been constructed especially for purposes of auscultation, but none have as yet, even in a slight degree, answered this purpose. Setting careful investigation of their capabilities aside, this is sufficiently evidenced by the fact that none of these instruments have come into general use.

That, with numerous experimenters in the field, nothing in this line of research has been satisfactorily, practically accomplished awakens the question by those who await results as to why it has not been done, and it is an endeavor to answer this question which forms the basis of this paper, in which I shall have to apologize for partially retelling a twice-told tale in explanation of experiments bearing upon this subject made at different times during the past four years, at first with the hope of devising an auscultation telephone and microphone, and finally for the purpose of determining the reasons for the want of success in this attempt.

Having failed at one end, it was necessary to begin afresh at the other; this I am inclined to think has been the experience of other investigators of this subject, and as achievement is so often, finally, the result of the study of apparent impossibilities, it is to be hoped that a practically useful auscultation microphone may yet be devised. When the discoveries of the tel-

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ephone and microphone were first announced, some very enthusiastic gentlemen went so far as to predict that telephonic consultations would be held, and that eminent special practitioners, who "listened to the heart beats of a nation," as a matter of business, would each settle themselves down in the centre of a web of wires and auscult at indefinite distances from the patients; the general argument being that an instrument which could make audible the foot-fall of a fly or the rustling of a camel's-hair pencil could certainly transmit at their full value the sounds from within the chest cavity which are so loudly heard in the stethoscope. But little of that knowledge of the practical working of the telephone over lines in use for purposes of ordinary communication, which came with the general introduction of the instrument, was necessary to prove the baselessness of this scheme; the very delicacy of the telephone in its susceptibility to interrupted currents and its almost fatal propensity—if such an expression may be used—to pick up sounds that did not belong to it were enough to show that it could not be used for so delicate a purpose as auscultation over any circuit of sufficient length to expose it to the influence of other electric currents. The first experiments, begun in 1877, were therefore made over a private wire, extending a distance of about eight hundred feet from one house to another, overhead, isolated as far as possible from other wires, the nearest overhead wire being six feet distant, but having a ground connection; the telephones used were the ordinary hard-rubber case hand telephones, Bell. The telephone was placed upon the bared surface of the chest, the mouth-piece of the telephone being pressed upon the surface, the auscultant listening at the second telephone at the other end of the line. The experiment was several times repeated with the telephone upon different portions of the chest, and with varying degrees of pressure; with exception, in one instance only, of the suspicion of a barely perceptible "thud," no sound which could be referred to the heart as its source was heard, although with the telephone in this position the voice and words of the experimenter could be heard by the auscultant.

There could also be plainly heard, in consequence of the ground connection, the snapping and crackling noises indicative of earth currents, the clicking of the Morse instruments, and the sound of a "fast speed transmitter" on the Western Union lines running along the Providence Railroad, and the ticking of the clock connected with the Observatory in Cambridge. It was very plain, therefore, that even if the heart sounds could be transmitted they would be drowned by extraneous noises, and the experiment was repeated by making the auscultation in the same room with the patient, the two telephones being connected by the short flexible wires, about three feet long, in common use. Even under these favorable circumstances no sound originating in the chest cavity could be heard.

Disks of postal-card paper, having small disks of iron in the centre, were substituted for the metal disks of both telephones, but with no better results, and the experiments with the telephone alone were abandoned.

The introduction of the microphone awakened new interest in the possibilities of auscultation, and a series of experiments was instituted with various forms of this instrument, the Bell telephone being used as a receiver.

Guided by former experience, a short line without ground connections was always used, and the micro-