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BY

HENRY C. COE, M.D., M.R.C.S.,

PATHOLOGIST TO THE WOMAN'S HOSPITAL; ASSISTANT SURGEON TO THE NEW YORK CANCER
HOSPITAL; OBSTETRIC SURGEON TO MATERNITY HOSPITAL.

presented by the author

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SO-CALLED "VARICOCELE" IN THE FEMALE.

At the third annual meeting of the Alumni Association of the Woman's Hospital Dr. A. P. Dudley read a paper entitled "Varicocele in the Female: What is its Influence upon the Ovary?" In reviewing the discussion of this paper (at which I was not present), I was surprised to find that the writer's ideas apparently met with the entire approval of the assembled gynecologists. In the brief limits assigned to the present communication, I can only give a very condensed statement of my objections to the views advanced and ingeniously supported by Dr. Dudley, whom I regard as a careful clinical observer; but I hope that I shall be able to enlarge upon it in future, when I have more data at my command. I may be allowed to preface my remarks with the caution that clinical observations in general are less trustworthy in support of a pathological theory than anatomical, the former being more influenced by the "personal equation" of the observer. The history of pelvic pathology will bear me out in this statement.

The position taken by Dr. Dudley is briefly as follows: Varicocele in the female is a condition closely analogous to varicocele in the male, giving rise to certain definite subjective symptoms in the former as in the latter. Objectively it is often mistaken for cellulitis or salpingitis, but may be clearly recognized by examination per rectum. Atrophy or cystic degeneration of the ovary, with consequent sterility, are a direct result of this condition. Permanent dilatation of the pampiniform plexus is not remediable by palliative treatment, but requires a radical operation, *i. e.*, ligation and excision of the portion of the broad ligament containing the dilated veins.

In studying this subject we naturally consider its anatomical and clinical aspects.

I. *Anatomy.*—Richet was the first to describe this condition under the name, "*varicocèle ovarien*," and this term appears in various French and German works on pathological anatomy, though less often than the more correct expressions "varicosities" and "varicose dilatations" of the veins of the broad ligaments. I have not noted the paucity of references to this condition, of which Dr. Dudley speaks; in fact most of the authors, whom I forbear to quote, mention it as rather a common accompaniment

of pelvic affections. In few extended articles on pelvic hæmatocele is there wanting a reference to the presence of dilatation of the ovarian and uterine plexuses during menstruation and pregnancy as an element to be taken into consideration in tracing the origin of sudden internal hæmorrhage. I think that we are all prepared to subscribe to Graily Hewitt's statement: "It is rational to infer in many cases the existence of a chronic varicose condition of the uterine and ovarian plexus of veins."

We are next led to ask these questions: How shall we distinguish between temporary and permanent dilatation of these veins, and what is the relative frequency of the two conditions? Is so-called varicocele in the female comparable anatomically with varicocele in the male? Is this condition a cause or a result of accompanying disease of the pelvic organs, *i. e.*, has it in itself any special pathological significance?

Dr. Dudley is careful to make a distinction between temporary and permanent dilatation—that in the latter cross-sections of the dilated veins show that their walls have undergone well-marked hypertrophy—but he does not lay sufficient stress upon the inherent power of the pelvic veins to resist the strain of repeated and long-continued congestion. We must not compare the pelvic plexuses with those adjacent to other organs (the spleen, perhaps, excepted), because of the great engorgement to which the former are physiologically subjected. Sexual excitement, menstruation, pregnancy—each of these conditions entails a more or less continuous strain upon the walls of the vessels, which they are able to resist not so much by reason of their inherent tone, as from the continuity of the entire venous system of the pelvis, whereby one plexus acts as a safety valve to another when the latter is suddenly overcharged with blood, just as the force of a rapid river is expended when it pours its waters through a hundred tiny branches into a wide delta. In other words, pelvic congestion is general, and does not affect any single plexus. Doubtless a plexus such as the pampiniform, from its position at the upper portion of the broad ligament, must bear more of the brunt, but it does not bear it alone. I have often been struck with the degree of dilatation which exists in the veins of the broad ligaments in connection with large uterine fibroids, without anatomical evidence of chronic changes in the vessel-walls. That subinvolution and displacement of the uterus are a frequent cause of pelvic congestion cannot be denied, but, so far as my post-mortem observations have shown, I have not found that the vascular dilatation is necessarily permanent. Certainly the passage in Winckel's work, quoted by Dr. Dudley, does not justify the conclusion that he regards true varicocele as a very frequent or important complication of retro-displacement. Phleboliths are indeed sometimes found in the veins of the broad ligaments, but no more frequently than in the vesical and urethral plexuses; and, moreover, my reading and observa-

tion would seem to teach me that these bodies are found more often in the *lower* rather than in the upper half of the broad ligament (compare Winckel's most striking case), *i. e.*, not in the pampiniform plexus. Now, it is unscientific to infer that the presence of these bodies is proof positive of the presence of varicose enlargement of the veins and obstruction to the circulation. Excluding the so-called marantic thrombi, found in the female as in the male and due to the same cause, I believe that in the majority of cases phleboliths are the direct result of thrombo-phlebitis extending from the uterus—in short, puerperal infection, rather than subinvolution, is the true cause of permanent changes in the vessel-walls. If this is true, it is impossible to institute a close comparison between the formation of phleboliths in a varicocele in the male and their appearance in the veins of the broad ligaments.

"Varicocele," to use a convenient definition by Keyes, "is constituted by a varicose enlargement of the pampiniform plexus and veins of the cord." Granting that the ovarian plexus is the analogue of the pampiniform in the male, in order to have a condition in the female actually corresponding with varicocele, enlargement should be strictly confined to the ovarian plexus; whereas Dr. Dudley thinks that "the term is not misapplied when referring to a dilated and tortuous condition of the veins in the broad ligament;" in other words, he would describe varicocele in the female as a general dilatation of *all* the plexuses in the broad ligament. It is a fact that when the veins of the ovarian plexus become dilated, those of the uterine and vaginal plexuses share in the dilatation; but can this be called "varicocele," as we understand it in the male? As well say that varicocele in the male includes enlargement of the dorsal vein of the penis and the rectal and vesical plexuses.

Again, the veins in the broad ligaments run generally at right angles to the axis of the body, and are far less subject to the influence of gravity or change of posture than are the spermatic plexuses in the male. On the other hand, as already stated, the veins in the female are subject to frequent periodical and irregular engorgements to which they become accustomed, as it were; far less local congestion in the male leads to abnormal turgescence and dilatation of the corresponding veins. Moreover, any attempt to draw a close comparison between the ovary and testicle, either anatomically or physiologically, is unwise, since the former organ is subject normally to congestion which, in the latter, would be abnormal, which also applies to their efferent veins. The arguments with regard to the course of the left spermatic vein and the proximity of the sigmoid flexure hold good in both sexes, yet the infrequency of so-called varicocele in females, as compared with that in males (ten per cent in the latter, as estimated by Keyes), shows that there is an essential difference in the two cases. This difference, I believe, lies in the greater resisting power of the veins

of the broad ligaments, and in what I have called the "safety-valve" action of contiguous plexuses.

I think that the pathological significance of dilatation of the veins of the broad ligaments can be dismissed in a few words. As Dr. Dudley admits, and as will be inferred from reading various descriptions of the condition under discussion, it is a common consequence of obstruction to the circulation, either local (from indurations or cicatrices in the broad ligaments) or general (from displacement of the uterus or ovaries), or both. I have already alluded to the changes in and around the veins resulting from phlebitis.

As to the influence of this venous dilatation upon the ovary, we certainly would not expect to find atrophy of the gland as a result. No more striking example of general and excessive dilatation of all the venous plexuses in both broad ligaments can be observed than that seen in connection with uterine fibroids, yet here the condition is almost invariably hyper-nutrition of the ovaries—hypertrophy rather than atrophy. On the other hand, the most typical examples of atrophy are seen in ovaries which are buried in adhesions, and thus have their circulation greatly reduced. I cannot accept the view that the varicose enlargement precedes the degenerative changes in the ovary—that it stands in a direct causal relation to them. Cystic degeneration of the ovary is so very common that its presence in connection with venous dilatation would prove nothing. Since three of Dr. Dudley's four patients had passed the menopause, the atrophy could hardly be regarded as pathological; this opinion is not modified after a perusal of the description of the microscopical appearances presented by one of the ovaries removed. We might pertinently ask: Why were not these cases of senile loss of tone in the dilated vessels, with ordinary post-climacteric atrophy of the ovaries? I am open to conviction of error in this inference, but I regard the fact that in all but one of these test cases the patient had reached the menopause as the strongest argument against his pathological theory.

II. *Symptomatology.*—"The most prominent symptom," to quote from Dr. Dudley's paper, "is pain of a peculiar dull, aching character, extending up the side to the region of the kidney; . . . also the fact that this pain will disappear after the patient has occupied the prone position for a time, and reappear after taking the erect position. The pain is quite similar in character to that experienced by the male who suffers from varicocele, while several of the general symptoms are analogous in character, such as lassitude, a vague sense of unrest, and mental depression." It is to be remarked that none of the patients operated upon were in the hospital under careful observation for three weeks (1) between the time of the first examination and the operation, too short a period to justify a positive statement regarding the exact origin

of the symptoms in such complicated cases. I confess that I can find nothing characteristic about these symptoms, which do not differ from those which we observe in connection with the more common pelvic disorders. As for any comparison between pelvic pains in the female and those which accompany varicocele in the male, a mere reference to the intricate system of nerve-plexuses in and around the uterus and ovaries and between the folds of the broad ligaments will be enough to indicate how different are the conditions in the two cases. I shall not dwell upon this subject, but shall refer you to a paper which I read before the Neurological Society in 1887, on "The Significance and Localization of Pelvic Pain," in which I aimed to show the difficulty of attributing any special form of pain to a simple localized lesion. As for the "general symptoms" referred to—how do they differ from those which may be obtained from questioning nine out of ten gynecological patients, especially those who are somewhat advanced in years? From a mechanical standpoint alone, I do not see how so much stress can be laid upon the posture of the patient, since, as I before remarked, the veins of the broad ligaments are less influenced by gravity than are the spermatic plexuses in the male.

III. *Physical Examination.*—Dr. Dudley lays especial stress upon the necessity of examining per rectum, "after the patient has been allowed to stand for a short time." "Bimanual pressure of the ligament," he adds, "will then readily reveal the knotted, angle-worm appearance (feel?) of the vessels." He says nothing about drawing down the uterus in order to render the upper portion of the ligament more accessible. Unless this is done, it must be very difficult to reach the site of the pampiniform plexus with the examining finger. I am inclined to believe that without such aid few men have fingers sufficiently long for the purpose, even if the patient was a most favorable case for examination. Dr. Dudley says that even such a prominent special pathologist as Winckel "does not mention having made a *diagnosis* of it in the living subject." The probabilities are that the learned and conservative gynecologist referred to, having made a study of varicosities in the cadaver, has frequently sought to detect this condition at the examining-table, but has either failed to satisfy himself that he found it, or considered it merely as a complication of disease of the pelvic organs, and therefore not sufficiently important to be mentioned. Certain it is that Winckel would be the last man to verify his diagnosis by opening the abdomen, unless there was a more serious condition present than supposed varicose veins. I have frequently made careful examinations per rectum, the patient being thoroughly anesthetized and all the conditions favorable for ascertaining all that was possible by the bimanual. I cannot recall a case in which I have felt the "knotted angle-worm" mass which has been described. In patients who had no displacement of the uterus or ovaries, no pelvic indurations—in short, nothing to dis-

tract the attention from the broad ligaments—I have readily detected what have been called “the three winglets of the broad ligament,” *i. e.*, the Fallopian tube, round and ovarian ligaments, which branch out from the cornu. Moreover, under favorable conditions, the large and tortuous ovarian arteries can be felt pulsating between the two latter cords. These might readily be mistaken for a bunch of veins. In order that the veins may give sufficient resistance to be mapped out through the rectal wall, these must be not only enlarged, but their walls must be greatly thickened. Frequently, in both the living and dead subject, have I grasped the broad ligament between the thumb and finger when the veins were enormously dilated, and felt so little resistance that they gave the sensation of an ill-defined mass rather than a bundle of cords. On the contrary, a diseased vein does give a decided sense of resistance. In this connection, I would refer to a point upon which I laid special stress in my paper on “Minor Pelvic Inflammations,” *viz.*, the fact that phlebitis and periphlebitis are a common cause of thickening of the veins near the base of the broad ligaments, and that this condition, as found in the cadaver, frequently represents the indurations usually attributed to “cellulitis” when felt in the living subject. I also mentioned lymphangitis and phleboliths as other conditions which could sometimes be recognized clinically. It did not occur to me that dilatation of an entire venous plexus at the upper portion of the broad ligament could be mistaken for old parametric indurations in the lower half of the same, although I have several times noted that the engorgement persists after death.

Granting, as we must on the authority of such an experienced examiner as Dr. Dudley, that he clearly recognized before operation the peculiar knotted mass which he took to be varicose veins, and these alone, we note in all his cases the omission of an important means of absolutely reconciling the mass felt with the mass seen after opening the abdomen. I allude to the examination of the pelvis, with an assistant's finger in the vagina (or rectum) while that of the operator is within the cavity. I have often practised this in the cadaver, and Dr. Polk at the operating-table, in the course of his most convincing investigations into the nature of so-called cellulitis. Dr. Polk, by the way, makes no mention of varicocele in any one of his series of operations or autopsies. Since the ovaries, tubes, ovarian ligaments (and in one case a portion of the round ligament) were removed *with the enlarged veins* in Dr. Dudley's cases, there must remain some doubt as to the exact correspondence between the clinical and the anatomical diagnosis. I do not see how there can be much danger of confounding dilated veins with “salpingitis”—understanding by the latter term disease of the tube sufficient to cause marked enlargement. The symptoms attending the latter condition are unquestionably far more severe in character, while the

accompanying peritonitis would effectually conceal any venous enlargement, even if it did not mask the shape of the large resistant tube.

IV. *Treatment.*—I now pass to a brief consideration of the treatment of permanent dilatation of the veins of the broad ligament. I agree with the writer perfectly in regard to the small, or only temporary, benefit obtained by local treatment directed through the vagina (hot injections, counter-irritation, tamponing or local depletion), for reasons which I have frequently set forth, the principal being the free anastomoses of the venous plexuses, in consequence of which anemia at one point in the pelvis is obtained only through corresponding hyperemia at another point.

Pelvic massage, according to Brandt's method, may possibly offer an efficient substitute for the above-mentioned palliative treatment. That laparotomy is ever justifiable for the relief of this condition alone I cannot allow, for the following reasons:

The operation of ligating or excising the dilated veins alone, as in the corresponding operation in the male, presents exceptional difficulties because of the number and intimate relation of the various delicate structures in the broad ligaments. If the operation is not done thoroughly, all the affected veins will not be removed, and those which remain will become still further dilated, as seen in ordinary cases of extirpation of the tubes and ovaries. On the other hand, by "quilting" the ligaments "close to the pelvic floor," it is difficult to avoid the uterine arteries and ureters. If the ovary and tube are removed with the affected veins, and an attempt is made to include in the stump as much as possible of the broad ligament, the latter may be either torn at its base, or may subsequently slip from the grasp of the ligature, both of which accidents have occurred in the hands of the best operators. I have seen several cases of fatal hemorrhage from this cause in easy, uncomplicated operations.

The fact that the patient is relieved of certain symptoms after removal of the ovary, tube, and varix does not prove that they were due to the presence of the varix alone, as that was not the only important structure excised. A more satisfactory proof would be afforded by the persistence of the symptoms in cases in which the varix was left and the ovary and tube were removed. In short, laparotomy performed on this indication only is a purely empirical measure, as it always is when done for the relief of pelvic pain alone. What the profession needs is not a new indication for laparotomy, but the reduction of the already long list.

There is no precedent for the performance of the operation described by Dr. Dudley in the case of women who had passed the menopause, since it is acknowledged that the ovaries were atrophied; and from the physiological rest enjoyed by the pelvic organs, there is reason to believe that the venous congestion would have become diminished in nature's way. We would hesitate be-

fore operating upon more serious conditions after the menopause; why would not the same rule apply to these cases?

I submit the following deductions in opposition to those set forth by Dr. Dudley:

1. True varicocele in the female, if this term is applied to permanent dilatation of the veins forming the pampiniform plexus, with considerable thickening of their coats, is rare; at least, it is seldom found at the post-mortem table, which is the best test of the absence of chronic changes in the vessels.

2. Varicose enlargement of the veins of the broad ligament cannot be regarded as closely analogous to varicocele in the male, as viewed from the standpoint of etiology, anatomy, or symptomatology. The anatomical conditions in the female are widely different from those in the male.

3. In deciding as to the cause of the venous dilatation, regard should be had not only for the influence of long-continued congestion (from displacements or other causes), but for the changes in the vessel-walls and the surrounding connective tissue, which point to previous phlebitis of uterine origin (puerperal or traumatic).

4. In exceptional cases of varicocele in the male, atrophy of the testis may result from interference with its circulation. It is exceedingly doubtful if atrophy of the ovary can be traced to a similar cause. The obstruction to the circulation can usually be ascribed to surrounding adhesions, and the conditions of the veins is *post* rather than *ante hoc*. In other words, the same cause may lead to both the ovarian disease and the dilatation of the veins. Or, if no adhesions are present, cirrhosis of the ovary is more likely to precede, than to follow, venous dilatation.

5. There is no evidence that varicose enlargement of the veins in one or both broad ligaments gives rise to any peculiar symptoms which could not be explained equally well by the presence of accompanying disease of the pelvic organs, especially to localized peritonitis. There can be no just grounds for comparing the symptoms due to varicocele in the male with somewhat similar pains in the female, even when these are associated with venous dilatation, since the anatomical conditions in the latter sex are far more complicated.

6. So-called varicocele ought not to be mistaken for cellulitis, or resulting indurations, since the former should occupy the upper portion of the broad ligament, while the latter is usually found at its base. Well-marked tubal disease should give a different history, and enlargement of the tubes sufficient to call for operative interference ought to be distinguished from a cluster of dilated veins. On the other hand, it must be under exceptional circumstances, and by an examiner possessing in a high degree the *tactus eruditus*, that such veins are clearly detected at the examining table, nor does the finding of dilated veins after opening the abdo-

men necessarily prove that they were the objects felt within the pelvis before the operation.

7. Varicose enlargement of the veins of the broad ligament does not constitute a sufficient indication for laparotomy, nor is it possible to remove all the affected plexuses without ligating or excising nearly the whole of the broad ligament—a dangerous procedure which has led to most of the fatal cases of secondary hemorrhage. Laparotomy is certainly not justifiable after the patient has passed the menopause, as the quiescent state of the pelvic organs would naturally seem to favor a spontaneous cure.

