

THE PRE-OPERATIVE DIAGNOSIS OF APPENDICITIS:

DEMONSTRATION OF A NEW METHOD BY DORSAL EXAMINATION.

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The principles and the varied aspects of this new method would require more space for their elucidation than can be allotted to them. This fragmentary report is limited to a brief sketch of the procedure, of its uses, and of its results.

The dorsal field of percussion—the region which supplies physical signs in many cases where they are wanting¹—includes the resonant sacral and iliac surfaces (Fig. 1),

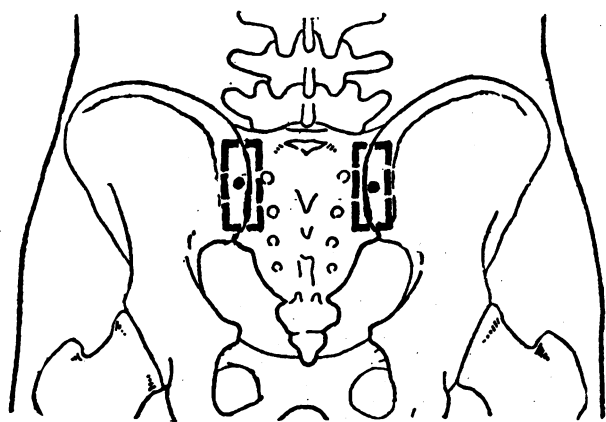


Fig. 1.

and between them two "posterior iliac patches" of sub-resonant dullness. The latter are localized by feeling for the crest of the posterior iliac tuberosity, and they are easily mapped out with a Sanson's pleximeter. The right "patch" is rather duller than the left (Fig. 2), presumably owing to the airlessness and thickness of the appendix. But the transfixion experiments indicated by the dots in Fig. 1 warrant a conclusion that the main dullness of the two patches is due to the common iliac blood vessels.

The normal standard (Fig. 2), which has been obtained in a series of tracings from healthy subjects during

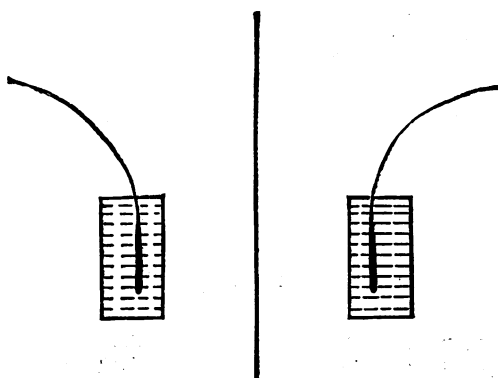


Fig. 2.—The clinical diagram of the normal standard.

the last two and a half years, since I began including this negative test in all overhauling examinations for general soundness, consists of those features, and of an absence of any adventitious dullnesses, whether sacral or iliac. These were almost invariably present in the large number of declared or of suspected cases which, through the liberality of my colleagues, I was able to examine in the wards of St. George's Hospital. An adventitious dullness may encroach more or less upon the right patch; but its site of special frequency is the right iliac surface.

Less often it occurs at the right sacral, and sometimes, though rarely, it involves the left sacral surface also.

The normal post-operative standard (Figs. 3 and 4) is characterized by a general resonance, due to a remarkable disappearance of the "normal patch" dullness, as well as of any adventitious dullnesses. A "clean" result implies that there are no remnants of dullness (such as those in Figs. 12, 13, 14). Fig. 4 shows the less usual "type B" of this standard, where the patch can still be outlined as a specially tympanitic resonance. These changes are permanent.

A.—Is it Worth While?

The method presents no difficulty, entails little disturbance and no pain for the patient, and claims only five minutes all told, including taking a permanent record on tracing paper. The satisfaction of ascertaining the presence of the normal standard in the healthy, and of the post-operative standard in the operated, may be optional. But in the "suspected" cases where there are no signs, and in acute cases without any localizing physical signs, is it not worth while looking at the other side, and obtaining the dorsal evidence, such as it is? On that point my observations and the tracings afford direct evidence

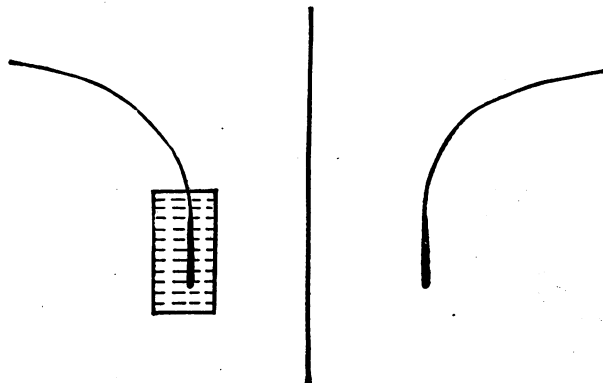


Fig. 3.—The Normal Post-operative Standard, type A: No patch.

relating (1) to fatal cases of abscess overlooked for want of a dorsal examination, (2) to test cases where the pre-operative tracings were confirmed at the operation, and (3) to suspected cases which were kept under observation and dismissed not operated on "for want of evidence" at the time when the dorsal method supplied independently its definite indications. The value of registrable evidence is also worth mentioning. So long as views are divided as to the clinical range of our surgical interference, and as to the justification this may receive from the conditions displayed

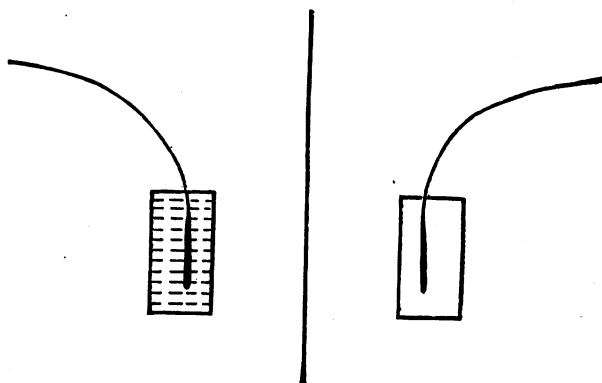


Fig. 4.—The Normal Post-operative Standard, type B: Tympanitic patch.

by some appendices after removal, it is as well not to forget the contentious aspect, in spite of the favour in which operations are held in this generation, and to secure any documentary evidence, pre-operative and post-operative, such as is offered by this method.

I. The first of the fatal cases of overlooked abscess, which originated the short history of the method, was illustrated in my papers on dorsal percussion of 1899 and 1910.² The iliac dullness had been correctly interpreted as due to an abscess, though not suspected of an appendicular origin. The abscess was

approached but not reached by a laparotomy, and was only opened a few days later at the *post-mortem* examination behind thick adhesions. In that instance the only correct report obtained during life was that supplied by the dorsal examination. In my *second* patient, ten years later, the abscess (likewise opened at the autopsy) had not been diagnosed because the dorsal pelvic examination had not been made. I had broken my invariable rule, and examined for appendicitis (in conjunction with Dr. Gould May) carefully, but in vain, only from the front, because the patient was at the time in the last stage of exhaustion from granular kidney. The *third* fatality, much more deplorable because it might have been prevented, occurred some years ago, before that rule or the method had been framed. The dorsal examination and the diagnosis were made eventually, but not at the first consultation, when the laparotomy, which was undertaken later and soon followed by death, might have proved

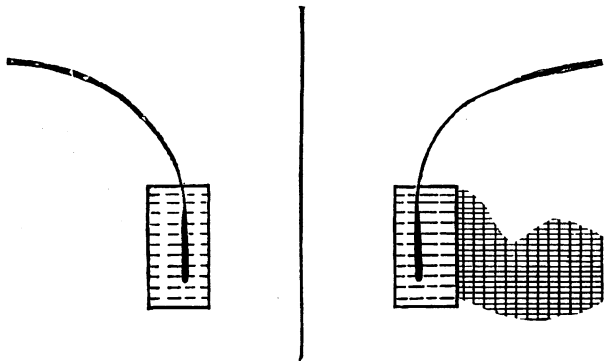


Fig. 5.

successful. The patient was a gentleman in the later fifties and of sound constitution, suffering from suspicious abdominal and marked bronchopneumonic symptoms. He was thoroughly examined by the anterior method for the physical signs of appendicitis, with negative results, and the obvious signs of right basic pulmonary congestion misled my diagnosis instead of guiding it. At the second consultation the diagnosis was made at the first touch of the loin, which revealed the presence of surgical emphysema and its pelvic origin. A foul abscess was opened the same day, but the patient died two days later. Incidentally, this case brings strong light to bear upon the dangers of operative delay after an abscess has been diagnosed.

As these and other cases show, an abscess may escape detection by abdominal examination, if deep seated and particularly if retrocaecal. The latter are precisely the cases in which a dorsal pelvic examination can hardly fail to detect it. To illustrate that fact one of the tracings (Fig. 5) may be brought forward at once from Series xviii. It was taken a few hours before the operation from a young man with acute and pyrexial symptoms. A large iliac dullness extended in the tracing a

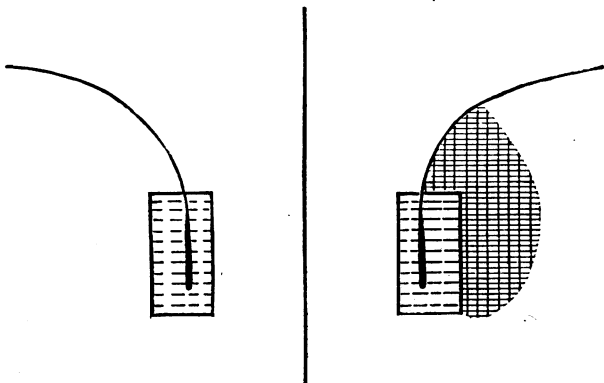


Fig. 6.

little further outwards than in this figure. The pre-operative examination, at which I was not present, revealed abdominal pain and local tenderness but not any localizing signs, although it so happened that I had percussed the abdomen also and taken a tracing (exhibited but not here reproduced) of a dullness extending above the outer half of the groin. The condition proved to be one of anterior appendicitis. The appendix, which came straight forward, was acutely inflamed and was removed. But as it was not surrounded by any fluid or inflammatory exudation the wound was closed. The pyrexia continued. After a few days the wound began to ooze, and was reopened, with free discharge of pus, and a drainage tube was introduced. My second tracing was taken fourteen days later after a rapid recovery. It showed, instead of the "clean" result (Figs. 3 and 4) which is customary after a primary evacuation of a retrocaecal abscess, a considerable remainder of dullness, presumably due to residual inflammatory material or to adhesions. Had

the evidence of my dorsal examination been reported at the time of the operation it is possible that pus might have been further searched for and discovered. Happily in this case the pus found its own way forwards.

II.—The Test Cases (unselected), as Evidence of the Reliability of the Method.

CASE I.

Case I was that of a doctor friend and patient with urgent symptoms, but no palpable abdominal tumour. The tracing, which I had the misfortune to lose, showed a considerable dullness, which spread from the patch high on to the dorsum ilii. The operation, performed by Mr. Crisp English, gave relief to a retrocaecal abscess and removed successfully a gangrenous appendix, which extended straight upwards.

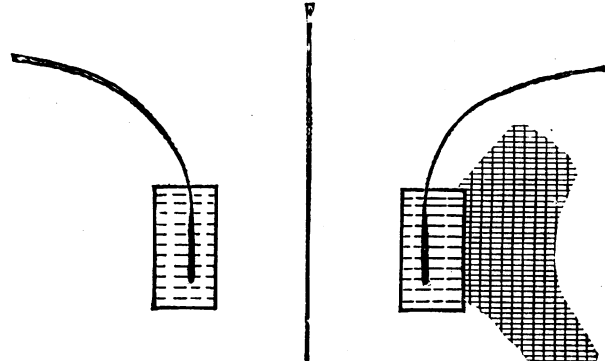


Fig. 7.

CASE II.

In Case II (Fig. 6) the absence of abdominal evidence was attested at three stages by separate examinations—by the out-patients' physician, who diagnosed that the case was *not* appendicitis, and sent it up for that reason into the medical ward; by the visiting physician, who confirmed the absence of physical signs; and by the surgeon to whose ward it was transferred a week later, and whose decision to operate was based upon the general clinical symptoms, including some slight elevation of temperature. At the operation Mr. G. R. Turner removed the appendix and broke down adhesions. The following is his report of the condition which he found: "Appendix normal in origin, but twisted and coiled up, and mainly retrocaecal in situation, being matted to the caecum by adhesions. The appendix was swollen, but there was no peritoneal exudation or effusion around it. Faeces were found in the canal." The post-operative result was shown in another tracing. The patch was normal, of type B.; but at the dorsum ilii a small remnant of the dullness persisted, at a distance from the patch. The tracing (Fig. 6) had been taken on admission.

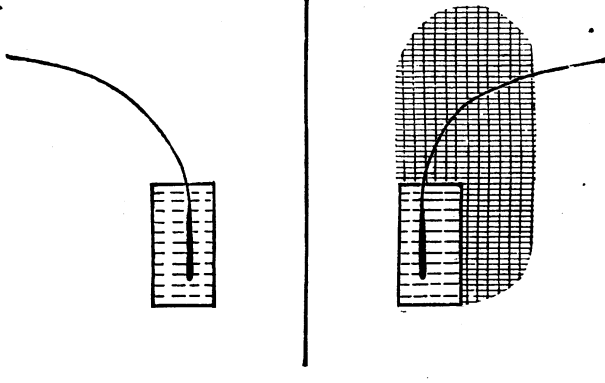


Fig. 8.

CASE III.

Miss E. P., aged 28, was sent up from the country by her doctor for an opinion as to a suspected appendicitis. The general symptoms were ill-defined, and rendered more obscure by the presence of some looseness of the right kidney. Nothing else could be felt by the routine abdominal examination. On the strength of the size and situation of the adventitious dullness (Fig. 7) I called in Sir Wm. Bennett, who agreed to operate. The following is the report with which he has favoured me: "The appendix and its mesentery which was represented by a large pad of fat formed a pear-shaped mass lying between the kidney and the iliac fossa; there were no surrounding adhesions, but the end of the appendix was embedded in the fatty mass and was surrounded by an abscess of about the size of a cherry. The appendix and the fatty mass including the abscess were removed *en bloc* after the base had been ligatured. The pad of fat lay behind the appendix." Post-operative result: Type A.

CASE IV.

Case IV was that of a medical student with subacute symptoms. There was no objective localizing palpatory evidence on abdominal examination. But the dorsal indication, as seen in Fig. 8, was unequivocal. Mr. Crisp English's report was as follows: "Caecum firmly anchored to iliac fossa by adhesions. Appendix: (1) Retrocaecal, running directly upwards, and extending to within a short distance of the liver; (2) adherent to the posterior wall of the caecum and ascending colon, and to the posterior abdominal wall; (3) some thickening around it, owing to adhesions; (4) chronic inflammatory swelling; (5) some faecal material inside." Post-operative result: Type A.

CASE V.

This young lady had had two previous attacks; the present one was ushered in by vomiting, but otherwise subacute. There were no objective localizing signs on abdominal

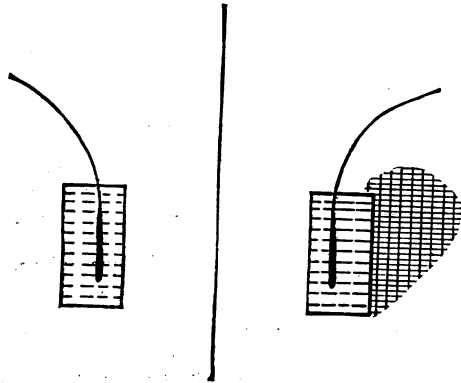


Fig. 9.

palpation. The tracing is shown in Fig. 9. Mr. H. P. Pendlebury's report was confirmatory, to the effect that the appendix was involved in retrocaecal adhesions and slightly thickened by previous inflammation. Post-operative result: Type A.

CASE VI.

Subacute appendicitis in a medical student. There were no localizing objective palpatory signs in the abdomen. The pre-operative tracing (Fig. 10), taken the day before Mr. Fedde Fedden operated, displays an adventitious iliac dullness in the usual situation and a resonant right iliac patch. This is his report: "The caecum was somewhat large, free from adhesions, but presented a slight thickening of the peritoneal coat. The appendix was situated at the pelvic brim, not surrounded by any adhesions or peritoneal exudation. It was very slightly swollen, and its mucous membrane was swollen and reddened; there was no stercolith." The convalescence was uninterrupted, and the post-operative tracing yielded a perfectly "clean" result of type A (Fig. 3). A point of special interest, when taken in conjunction with the fact that the caecum was noted to be

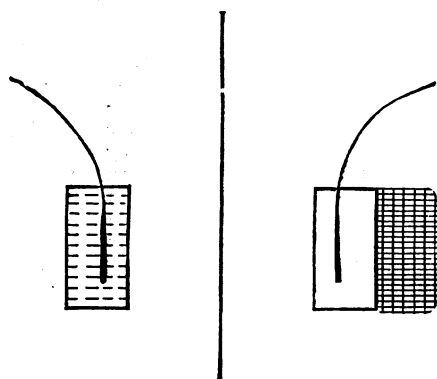


Fig. 10.

large, was the absence of the normal dullness of the right iliac patch before the operation.

To sum up the series: *In all of them the abdominal physical signs were absent, and the dorsal present and correct.*

III.—The Presence of Dorsal Signs in Cases Watched, but not Operated on, because of an Absence of the Usual Symptoms and Abdominal Signs, in Ignorance of the Dorsal Evidence.

In Master G. D. there was a large iliac dullness, and a history of three attacks in two and a half years. In another relapsing case, that of a French youth who had struck his right groin against an iron post, the iliac dullness persisted after an unusually searching dose of castor oil. Being much the better for a rest in bed I sent him back to Paris, where he was kept in bed for nearly three weeks, but again not operated on in ignorance

of the dorsal finding. In the entire hospital series five cases only were dismissed not operated on. One only was spurious, the symptoms due to gastric dilatation, and the dorsal standard normal. The others were discharged in ignorance of the dorsal evidence, which was confirmed by renewed tracings taken on the day of discharge. Fig. 11 shows an increase, within the patient's short stay in the hospital, in the original dullness, instead of any diminution. A similar increase was also noted in the second tracing taken of another case, J. E., before his discharge.

B.—The Significance of Abnormal Changes in the Percussion of the Posterior Iliac Dull Patches, and Adjoining Surfaces.

According to my transfexion experiments the greater dullness of the right patch might be accounted for

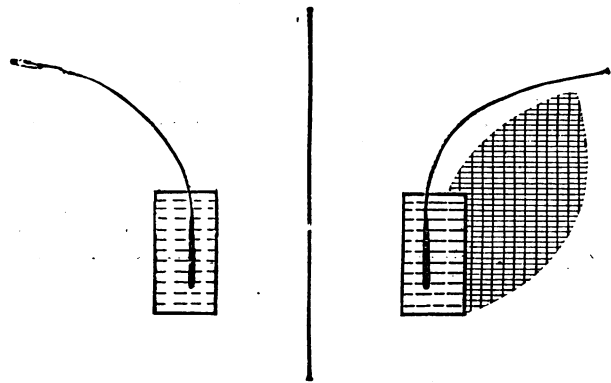


Fig. 11.—From one of the cases on day of discharge.

by the fact that the thick intestinal structures of the ileo-caecal junction, of the valve, and of the root of the appendix were found to be in sagittal line with the centre of the right dull patch. Any pathological thickenings would tend to intensify that dullness, whilst considerable inflations of the caecum or ileum might transform its dull note into a tympanitic one. *The standard of normality* as a negative test is therefore based upon a comparative percussion of the "patches." But the right "patch" also provides the surgeon with a novel and conclusive test for the local result of his operation. *The standard of post-operative normality*—that of a perfectly "clean" result (Figs. 3 and 4)—means a pervading resonance of the entire right dorsal field, of type A or B. It goes without saying that the left patch suffers no change. Exceptionally a transient inflation of the lower bowel

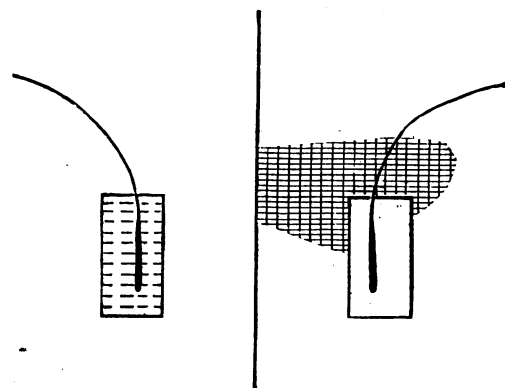


Fig. 12.—Large "remnant" soon after operation for abscess.

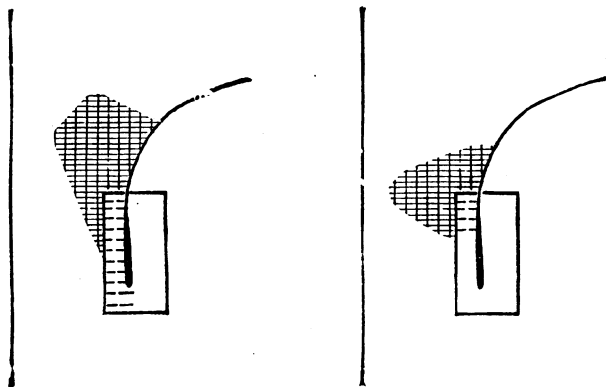
may occasion that there should be for a while no dull patch whatever either right or left of the middle line.

Besides contributing these two characteristic standards the patch often yields valuable indications for a positive diagnosis. (1) *An increased dullness* of the patch is sometimes noted early in association with collateral iliac or sacral dullnesses, whilst in several of the post-operative tracings some of it persists as a "remainder." These dullnesses are sometimes fractional in extent, part of the patch remaining dull, the rest of it resonant. "Maggie" iliac patches of that sort (Figs. 13 and 14) show how faithfully even small dullnesses are transmitted through the thick pelvic bony pleximeter, in proof of the reliability of our dorsal percussion.

2. *Diminished dullness and tympanitic resonance* are the opposite change. We might expect that, either by relative obstruction or by atony, the onset of inflammation would inflate the termination of the small intestine and the caecum coli. The later permanent inflations seem to be the result of the operative uprooting of the caecum from its delicate and yielding normal attachments, and of its reimplantation into unyielding adhesions; these would impede its free contraction, and keep its posterior surface spread like that of an unfolded air-bag. A persistence, after the operation, of the normal dullness of the patch, or of any adventitious iliac dullness (Fig. 12) would therefore point to a caecum undisturbed in its retrocaecal bed, or to "remnants" of some deep-seated thickening left uninfluenced by the operation.

3. In some deep-seated, severe, but self-contained appendicitis a *tympanitic patch* may assume a major significance as the *only physical sign* obtainable front or back.

The Abnormal Changes in the Percussion of the Sacral Surface.—These dullnesses differ from the iliac in not vanishing immediately as a result of the operation; though they may gradually disappear after the removal of the drainage tube and the healing of the *abscess*, for it is usually to abscess that they seem to owe their origin. The scope of the method is therefore not limited to the retrocaecal group, but includes some of the pelvic cases (if not



Figs. 13 and 14.—Changes and shrinkage of same "remnant" (see Fig. 12) subsequently during convalescence, with encroachment over sacrum and into patch ("magpie" patch).

all of them) which may give no other physical signs. Practically this leaves outside the pale of "direct" dorsal identification by "dullness" two groups of appendicitis only, the *anterior* and the strictly *central* ones. For the latter, which are the most difficult to identify, the dorsal method may be of unique service in furnishing some "indirect" evidence—that of a "tympanitic resonance" of the right patch, from atony and inflation of the caecum or ileum.

The Abnormal Changes in the Percussion of the Iliac Surface.—These are by virtue of the predominance of retrocaecal appendicitis, our most frequent indications, whether as pre-operative dullnesses or as post-operative remnants of dullness. Usually due to adhesions or thickenings, these *post-operative remainders* are much more common here than in the patch itself or at the sacral surface. They are chiefly of interest as a late comment upon the particular *modus operandi* adopted, and as a note which should be attached to the clinical record of the patient for the sake of helping the conclusions of his future clinical examiners.

C.—The Examination and the Technique.

(1) When the examination is made in the consulting-room, in normal or in ambulant suspected cases, the *patient* can be seated on a high stool, or sideways in a chair on a firm cushion. If standing—and this is the most convenient—he should be made to lean forwards, resting with both hands on a table or some other support, in as level an attitude as possible. The iliac crests are traced with a dermatographic pencil, beginning from below where the crest of the tuberosity is easily felt, and guides our deeper palpation for the upper iliac crest. Percussion is then made (cf. Fig. 2) for the

outline of the normal patch on both sides, starting preferably with the left patch, and noticing that it is rather less dull than the right one. (2) In more acute cases the pre-operative examination (and likewise the post-operative when it is undertaken in early convalescence) may have to be conducted in bed—for worst cases in the left lateral decubitus, for others in the sitting attitude. For the latter suitable arrangements should be made by removing the obstruction of the bolster, and if possible by raising the patient from the trough of the bed on a folded sheet or a firm pillow. If well enough he can be moved to the corner of the foot of the bed, where he can sit comfortably with legs overhanging; the back is then much more accessible for careful percussion—an important matter when the signs are not so obvious as those of a large retrocaecal abscess (such as in Fig. 5) which might easily be detected in any position. (3) For a successful percussion the only requirement is the use of a Sansom's pleximeter, which might be well worth learning for this purpose alone, if it had no further clinical employment. The technique is the same in all cases, namely, to keep the flange of the pleximeter from lying across the boundaries which have to be determined, and to resort to an alternate use of the short flange whenever the unknown outlines of any adventitious dullness have to be accurately worked out.

D.—Summary of Practical Conclusions.

(1) Hitherto in the larger aggregate, which is made up of the "suspected" cases, the symptoms had been the sole guide. In a small group only, chiefly of acute cases, the pre-operative diagnosis was complete in both directions—conclusive as to symptoms and localizing as regards physical signs. These are the cases of "anterior" appendicitis, and some of the "central" variety when the lesions are palpable. In all others not thus completely diagnosed a rectal examination is essential, as the trouble might chance to be pelvic, and perhaps identifiable. Some cases must remain objectively latent in any situation—namely, those of exclusively "internal appendicitis," without any peritoneal reaction, and also free from any perceptible thickening. More commonly there is sufficient thickening and density for anterior palpation or dorsal percussion if only the appendix is within reach. The fact that exceptionally they may be absent is the weak spot in our method. (2) Leaving these aside, and also the cases of "urgency" which largely gravitate into our hospitals, the great frequency of an *alleged latency* of physical signs is correlated with the predominance of the deep-seated and retrocaecal varieties, which is due to the normal remoteness of the root of the appendix. The lesions, if slight, are beyond abdominal palpation. This also explains why retrocaecal abscesses have sometimes escaped operative recognition. Also why some cases, watched for their abdominal symptoms, have not been operated on although the dorsal examination did afford clear signs of abnormality. It also explains why in a long series of hospital cases, whilst the "abdominal" identifications by actual palpation were in a small minority, hardly any cases failed to give definite "dorsal" signs. (3) For that "latency" there is another reason—the inability of the abdominal method to provide us with any negative test or standard of comparison with the normal physical condition, as it even fails to trace the abnormal conditions by physical evidence.

(4) The fresh possibilities offered by the dorsal method take three directions: (a) that of negative evidence, for the diagnosis of soundness; (b) that of positive evidence, confirmatory of our suspicion of an appendicitis; and (c) that of localizing physical evidence, after the diagnosis has been based upon unmistakable symptoms. (a) It furnishes a badly wanted *normal standard*, not by any means absolute, as it is only a dorsal standard, but valuable in conjunction with a searching abdominal examination, as it reports upon the district where the lesions are most likely to be situated. For any private or official assurance of complete soundness a dorsal examination is indispensable, and the only means of framing a first-class certificate. (b) As regards the general *clinical diagnosis* of a suspected appendicitis, any examination restricted to the front is inadequate for "objective evidence." In this inquiry the dorsal method has actually proved to be the more successful of the two in providing us with positive signs. (c) With regard to the pre-operative *localizing diagnosis*: In

the smaller group with severe symptoms the lesions are "latent" only because deep-seated. Even if no gravity should be manifested in the symptoms, the possibility of grave lesions demands for safety a dorsal percussion, as this almost invariably yields at least some minor indications not otherwise to be got. "Central" or "anterior" lesions may not be latent to an abdominal examination when they are extensive. In that event their manifest importance calls for the most complete examination available, in the light of our illustrative cases of an unsuspected backward extension, not otherwise to be diagnosed except by searching exploration on the operating table.

Lastly, the *post-operative examination* furnishes evidence as to the results of surgical interference. In the instance of Fig. 5 a dorsal examination, had it been undertaken two or three days after the operation, might have explained the persistence of the pyrexial symptoms. Similarly at a later date in other cases it has yielded information which might have been of clinical use. Any remnants of an abnormal dullness may therefore be worth noting for practical purposes; and they can only be detected by the dorsal method.

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THEORIES WITH REGARD TO SECONDARY GROWTHS IN CARCINOMA OF THE BREAST.*

By MAY THORNE, F.R.C.S.I.

THE after-history of cases of carcinoma of the breast shows great variety in the length of life accorded to the patient; and the occurrence of secondary nodules in the chest wall, or metastases in distant parts of the body, are still so common that it may be of interest to give a short account of some of the theories that have been held from time to time with regard to the secondary growths of carcinoma of the breast, and to briefly describe some of the operations that have been undertaken for the relief of this condition.

The earliest records speak of the operation as being complete. It consisted apparently in slicing off the entire breast and of freely applying the cautery to the exposed surface of the chest wall. One can imagine that in pre-anaesthetic days this operation was only undertaken in cases that were considerably advanced, and that to avoid the distress of a large, foul, discharging ulcer a patient here and there might be willing to undergo this ordeal, but one cannot think that many cases would be submitted to an operation of so great severity for what was for a considerable time at least a local and not necessarily painful disease. Many patients doubtless died from metastases long before the primary growth was more than a large, hard lump in the breast. The form of operation undertaken in the earlier years of the nineteenth century was a kind of revulsion from the old and complete method, and consisted in merely excising the prominent portion of the breast in which the tumour occurred, together with the skin adherent to it. It was not to be wondered at that the operation was performed in this very inadequate method, for before the days of growing pathological knowledge carcinoma of the breast was believed to be evidence of constitutional disease, and therefore incurable at whatever stage the operation was undertaken and whatever kind of operation was adopted. Hardly any surgeon dared open the axilla to even shell out large and hard glands because suppuration almost invariably followed the opening up of the loose tissues of the part.

In the early Sixties Moore apparently realized that cancer of the breast might be a local disease at its commencement, and Shield, writing in 1898, says:

Moore correctly estimated the method of the spread of disease, and actually described the complete operation now in vogue, an operation we have so largely adopted from foreign recommendations.

*Read before the Association of Registered Medical Women, November 5th, 1912.

Every one interested in the pathological and operative conditions of carcinoma of the breast—for the two run absolutely side by side—should read Sir Watson Cheyne's Lettsomian lecture delivered in 1896, and learn from him how necessarily restricted the operation for this condition was before Lister's introduction of antiseptic methods in the late Sixties. After the introduction of antiseptics Lister himself dared, not only to amputate the breast, but stripped off the pectoral fascia, and opened the axilla in every case and took away the glands and fat of that region.

The time had now come when the inseparable trio—anaesthetics, antiseptics, and pathology—began to exercise a vast influence on operations of all kinds. Still, surgeons as a whole hung back for some time from extensive operations on the breast, because the pathology that was then currently accepted did not offer a happy prognosis, and patients came often at so late a stage of the disease that operations were not indicated.

The pathology of the spread of carcinoma of the breast at that time was that of the embolic theory—that is, that cancer cells were carried by the blood stream from the primary growth to distant parts, where the cells were deposited and grew and multiplied, and gave rise to a tumour in all respects identical with that of the primary growth. This theory was very reasonable, and was believed to be proved to the hilt over and over again, not only in cases of carcinoma of the breast but in cancer occurring in all parts of the body. Thus a columnar-celled carcinoma of the rectum was found to be exactly reproduced in the liver, and what so reasonable as to suppose that this secondary growth was a direct implantation through the inferior or middle haemorrhoidal veins and the portal circulation to the liver? In cases of metastatic deposit in bone the growth was said so frequently to occupy the position of entry of the nutrient artery of the femur and humerus, the two long bones in which metastases usually occur, that again the embolic theory of infection by way of the blood stream seemed to be proved.

It had been observed by every one that the glands in the axilla were almost invariably enlarged in cases of cancer of the breast, and the local spread of the disease by way of the lymphatics was known to occur. But the cancer cells which gave rise to metastatic growths were believed to be carried by the blood stream. Stephen Paget, in a most interesting paper in the *Lancet* of March 23rd, 1889, enters fully into the occurrence of secondary growths, and raises the question as to what determines their distribution. Paget very clearly points out that if the embolic theory is to be held, then one must think that emboli will be impartially distributed to all the organs and that the lungs ought to be the most frequent seats of secondary growths; but on careful examination of records of *post-mortem* cases he found that this was not so. He found in the records of 735 *post-mortem* examinations on cases of cancer of the breast, that in about 70 cases only were deposits found in the lungs, and of these, he says, it is impossible to be sure whether some of these growths—unlike deposits in distant organs—were not due to direct extension from the primary growth. As regards the liver, he found that out of this same set of cases 241 of the 735 had secondary growths in the liver, while only 17 had secondary deposits in the spleen, an organ which, if the simple theory of embolism carried by the blood stream is to be credited, ought, he says, to show as much involvement as the liver, since the splenic artery is, if anything, larger than the hepatic artery. But Paget found that in cancer of the uterus the liver again showed the same character to become the seat of secondary disease, for in 244 *post-mortem* records of cases of cancer of the uterus the liver was involved in 35 cases, the lungs in 8, and the spleen in 1. Adding these numbers together, he found that secondary growths were found in the liver in 276 cases, in the lungs in 78 cases, while the spleen was only involved in 18 cases. Paget was therefore forced to the conclusion that certain organs have a *predisposition* to become the seats of secondary growths. Speaking of the deposits in bones, Paget not only gives the reports of cases that have been recorded by other observers, but gives some *post-mortem* reports of cases who died of breast cancer, on whom an examination had been held at Middlesex Hospital, and gives his conclusions of the predisposition of certain bones to be the sites of secondary